

Eduardo Tomé, Gaby Neumann, Blaženka Knežević  
(editors)

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## **Theory and Applications in the Knowledge Economy**

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## Foreword

A famous Portuguese Poet once said around one hundred years ago; *“before I was born all the words that should save the Humanity had already been written.., the only thing that was missing was to save Humanity.”* Fast forward to the 21<sup>st</sup> century services led and knowledge based economy, and we have myriads of theoretical study about the decisive assets – namely intangibles. Those analysis are made in several perspectives, namely Human Resources, Knowledge Management, Intellectual Capital, and also many sectorial perspectives like Trade, Economics, Logistics, Social Policy etc. However, today the question about the applicability of all these studies remains unsolved. So, it like, many of the words that will save the Knowledge Economy have already been written, all we need is to save the Knowledge Economy...Or is it not?

The idea behind TAKE Conference was to provide a multidisciplinary forum in which those multiple perspectives will come together. We believe it is a fruitful operation and we intend to continue the exercise in the future. The problem of the relation between theory and practice in the knowledge economy is getting more important and not less important with the development of the BRICS and other nations. TAKE main question will be one of the problems of the 21<sup>st</sup> century.

Following the promising start of TAKE 2016 in Aveiro, Portugal, TAKE 2017 was organized by the Faculty of Economics of Zagreb University, around Prof. Blazenka Knezevic. I would like to thank her and her team for the massive effort in putting TAKE 2017 together. It will be a very nice and memorable conference.

I would like also to thank the 5 keynotes, the special sessions and workshop organizes, the authors of the 60 papers and 5 posters, the stream leaders, the reviewers and the sponsors for the efforts. And to the 90 participants from 20 countries: Austria, Bosnia-Herzegovina, Canada, Croatia, Germany, Hong Kong, Hungary, Netherlands, Mexico, Portugal, Poland, Romania, Russia, South Africa, Serbia, Slovakia, Spain, Thailand, United Kingdom, United States.

A special word to Prof. Gaby Neumann from Wildau who organized the Proceedings.

Let us make TAKE 2017 a great occasion and help save the knowledge economy a bit.

**Eduardo Tomé, Conference Chair**

Zagreb, July 2017

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## List of Contents

<b>Keynotes.....</b>	<b>12</b>
<i>Gary N. McLean</i>	
The Case of the Misguided Researcher: A Fairy Tale of Ethnocentricity (the Evil Witch) versus Indigenization (the Good Witch).....	13
<i>Velimir Srića</i>	
Knowledge Economy and the Digital Transformation Era.....	15
<i>Constantin Bratianu</i>	
Strategic Thinking.....	18
<i>Markus F. Peschl, Thomas Findneider</i>	
How spaces can support knowledge and innovation work.....	21
 <b>Special Session .....</b>	 <b>24</b>
<i>José María Viedma Marti</i>	
Diagnosing nations' wealth creation potential in the knowledge economy. Theoretical foundations and practical implications .....	25
 <b>Accounting Systems and Auditing .....</b>	 <b>27</b>
<i>Ivana Pavić, Katarina Žager, Ana Rep</i>	
Significance of Notes to the Financial Statements in Business Decision Making.....	28
<i>Ivana Mamić Sacer, Ivana Pavić, Dijana Vuković</i>	
Supreme Audit Institutions Annual Reporting to Parliament and General Public – European Union Member States Experience .....	42
<i>Teresa Maszczak</i>	
Accounting policy in a modern enterprise.....	55
<i>Gunther Meeh-Bunse, Anke Hermeling, Stefan Schomaker</i>	
Non-financial reporting for small and medium-sized enterprises in a legal and empirical context.....	68
<i>Sanja Sever Mališ, Mateja Brozović</i>	
The Effectiveness of Audit Quality Control Mechanisms in Croatia.....	78

<b>Competitiveness, Globalization and the Organizations .....</b>	<b>93</b>
<i>Selma Gutlić, Ivana Bušljeta Banks, Mirela Kljajić Dervić</i>	
City branding - Analysis of awareness of Bihać as a tourist destination .....	94
<i>Sonia Chien-I Chen, Radwan Kharabsheh</i>	
Working smart or working hard?	
Investigating the role of technology in healthcare innovation in Taiwan .....	108
<i>Bogdan Cristian Chiripuci, Ioana Claudia Todirica</i>	
Stimulating the entrepreneurship spirit towards modernizing and developing fruit growing in Romania’s southern area .....	127
<i>Natalia Khazieva, Dagmar Caganova, Aleksandr Kovalev</i>	
How to Increase the Competitiveness of SMEs? .....	139
<i>Mia Delić, Nikola Knego, Ines Dužević</i>	
Motor vehicle production and trade sector performance: the influence of Croatian motor vehicle trade on the European Union motor vehicle production trends .....	148
<i>Vesna Bosilj Vuksic, Mirjana Pejic Bach, Dalia Suša Vugec</i>	
Understanding the Soft Side of BPM as a Competitiveness Driver: a Preliminary Research .....	161
<i>Goran Petkovic, Saša Pešić</i>	
Private Label and the Competitiveness of the Retail Stores .....	172
<b>Consumer Satisfaction and Retail .....</b>	<b>185</b>
<i>Ivana Plazibat, Mario Dadić, Duje Petričević</i>	
Do the millennials make a difference in retail? .....	186
<i>Marin Fatović, Tunjo Perić</i>	
Selection of Retail Chain for the Average Consumer by Using AHP Method .....	197
<i>Suzana Kolesar, Blaženka Knežević, Petra Škrobot</i>	
Online Dispute Resolution Platform as an Advanced Tool for Consumer Protection .....	210
<i>Małgorzata Kieźel, Magdalena Stefańska, Bożena Frączek</i>	
Application of New Technologies by Retail Banks in the Context of the Knowledge Economy .....	224
<i>Miroslav Mandić, Ivana Skočibušić</i>	
Research into the influence of parents’ incomes on the purchasing of healthy foods for children in Croatia .....	235
<i>Anna Dewalska–Opitek, Joanna Wiechoczek</i>	
Customer Citizenship Behaviour towards customers and enterprises operating in medium high-tech sector .....	248

<i>Katarzyna Bilińska-Reformat, Beata Reformat</i> Knowledge about Customer Behaviour as the Basis for Development of Loyalty Programmes of Retail Chains .....	263
<i>Nikola Vlahovic</i> Overview of Radio Frequency Identification Technology Implementations in Retail Industry .....	273
<i>Ksenija Dumičić, Berislav Žmuk, Blaženka Knežević</i> Concentration Level of the Largest World Retailers Based on Various Concentration Measures as Knowledge Needed by Decision Makers .....	288
<b>Doctoral Workshop.....</b>	<b>300</b>
<i>Jutta Sehic</i> Innovation Novelty and International Linkages of SME in the new and potential EU member states of Central and South Eastern Europe.....	301
<i>Florian Fahrenbach</i> What is the relation of mental time travelling and life goals? Proposing a field experiment.....	304
<i>Ivana Rukavina</i> The Impact of Political Election on Exchange Rate – the Case of Croatia .....	308
<i>Vera Lúcia Pinto, Eduardo Tomé</i> What is the relationship between tax literacy and intellectual capital of the certified accountant in Portuguese SMEs tax performance? .....	323
<b>Education and Human Resource Development .....</b>	<b>328</b>
<i>Judy B. Smetana, MeLisa Rogers, Sherrie Welfel</i> Organizational Culture and Leadership’s Impact on a Safety Program Change Model .....	329
<i>Elena Veretennik, Natalia Khazieva</i> Analysing Intellectual Capital in Secondary Schools of St Petersburg.....	342
<i>Andrew P. Hatch, Eduardo Tomé</i> MSDs: Overlooked Opportunity for Health Care Cost Savings and Productivity Loss Prevention .....	351
<i>Nopparat Phaopat, Chee Wai Mak</i> Human Interaction of the Organization and the Organization of Human Interaction: A 7R View .....	366

<i>Carlos Madeira, Ana Paula Rodrigues, Pedro Cardoso</i> Does exist a way to Manage HR in Portugal? An Analysis from German Multinationals HRM Practices .....	380
<i>Francisco Cesário, Eduardo Tomé</i> Should I accept this job, or not? Overqualification, an emergent dilemma .....	395
<i>Luz Maria Gonzalez Hernandez, Gary N. McLean</i> Human Resource Roles in Pre-Mergers .....	400
<i>Sandra Cristina dos Santos Costa, Carlos P. Morais, Eduardo Tomé</i> Does Minimal or Inconsequent Organizational Changes Matter? .....	413
<b>Gaming in Education, Scientific and Market research and Business activity .....</b>	<b>429</b>
<i>Szymon Truskolaski, Justyna Majewska</i> The impact of international digital distribution on “indie” sector of Polish video games industry .....	430
<i>Mirjana Pejić Bach, Jovana Zoroja, Maja Fašnik</i> Teaching Business Simulation Games: Preliminary Current Practice Overview.....	432
<i>Rui Silva, Ricardo Rodrigues, Carmem Teresa Leal</i> Gamification in Higher Education: Motivation, Engagement and Knowledge .....	444
<b>Innovation and Entrepreneurship .....</b>	<b>456</b>
<i>Nikolina Dragicevic, WB Lee, Eric Tsui</i> Design-based method for service innovation: a case study in a public utility company in Hong Kong.....	457
<i>Florian Kragulj, Florian Fahrenbach</i> From Needs to Satisfiers: How Design Thinking Can Inform Organizational Learning Processes .....	470
<i>Crystal Cole</i> Project Management Evolution to Improve Economic Success of Infrastructure Projects.....	483
<i>Carla Azevedo Lobo, Isabel Maldonado</i> Business Internationalization Inducing Factors - the importance of Knowledge and Relational Networks .....	498
<i>Thomas Grisold, Markus F. Peschl</i> On the Role of the Organizational Predictive Mind in Change Processes.....	509
<i>Maria José Sousa, Eduardo Tomé</i> Higher Education Skills for Entrepreneurship.....	524

<i>Carlos P. Morais, Sandra Cristina dos Santos Costa, Eduardo Tomé</i> Endomarketing: An approach to motivate employees and enhance leadership .....	525
<b>Intellectual Capital and Assets Dynamics .....</b>	<b>528</b>
<i>Gang Liu, Eric Tsui, Eric W.K. See-To</i> Flourish or Perish: An Empirical Study of the Telecommunication Equipment Vendors from an IC Perspective .....	529
<i>Corry Ehlen</i> The Co-Creation-Wheel, Instrument for Successful Innovation Networks in Knowledge Economy .....	545
<i>Juthamas Kaewpijit, Chee Wai Mak, Thiri Kyaw</i> The FRIENDship Program: Sampran as a Center of Innovative Leadership Development in Thailand .....	557
<b>Knowledge Management .....</b>	<b>571</b>
<i>Eduardo Tomé, Madeleine Block</i> KM in companies - an empirical study .....	572
<i>Ruxandra Bejinaru</i> Knowledge management models to be implemented within the university.....	575
<i>Johann Kinghorn</i> Rethinking ‘Knowledge’ in ‘Knowledge Economy’ .....	576
<i>Dmitry Kudryavtsev, Miroslav Kubelskiy</i> Using Enterprise Architecture Management Methods and Technologies for Knowledge Structuring in Strategic Management.....	589
<i>Cidália Oliveira, José Carlos Pinho, Anabela Silva</i> The relevance of learning and growth in organizations that adopt and do not adopt the BSC-characterization of the cultural profile .....	600
<i>Carlos Peixeira Marques, Carmem Teresa Leal, Carla Susana Marques, Vanessa Ratten</i> Beliefs, Behaviours, and Outcomes: an Application to Knowledge Sharing in Healthcare Services .....	616
<i>Marlene Loureiro, Carmem Teresa Leal, Rui Silva</i> Management of internal communication as a strategic tool for employee satisfaction ....	626
<i>Artem Alsufyev, Tatiana Gavrilova, Liudmila Kokoulina</i> Knowledge Management in Russian Companies: Overall Score .....	637
<i>Carlos Alberto Esparza Hernández</i> Facebook - the Business Model Rooted in the Social .....	645

<i>Gaby Neumann</i> Knowledge Management and Corporate Social Responsibility in Logistics Companies .....	656
<i>Maria Lopes da Cruz, Carmem Teresa Leal, Carlos Peixeira Marques</i> Knowledge Sharing and Healthcare: A Bibliometric Analysis .....	668
<b>Poster Session.....</b>	<b>681</b>
<i>Dora Naletina, Tomislav Baković, Mate Damić</i> Competitiveness of Port of Rijeka .....	682
<b>Public Policy.....</b>	<b>697</b>
<i>Hrvoje Jošić, Mislav Jošić</i> Application of Lagrange Multipliers in the Analysis of the Stolper-Samuelson Theorem...	698
<i>Md Abdus Salam</i> A Framework for Developing Sustainability Index for Ready-made Garments Sector in Bangladesh.....	710
<i>Mile Bošnjak, Vlatka Bilas, Sanja Franc</i> Long memory property of (un)employment in Croatia .....	727
<i>Barbara Grabińska, Katarzyna Stabryła-Chudzio</i> Increasing importance of EU spending on business research and innovation - evidence from Poland .....	738
<b>Index of Authors .....</b>	<b>752</b>

# Keynotes



## **The Case of the Misguided Researcher: A Fairy Tale of Ethnocentricity (the Evil Witch) versus Indigenization (the Good Witch)**

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Human resource development (HRD), as a field, continues to expand to universities in countries where it has not previously been located and into governments who are recognizing anew or increasingly the need to develop its people to be successful in this increasingly competitive world. Several other factors are driving this movement. Scholars from other countries continue to pursue graduate degrees in developed countries in the west with strong HRD university programs and then return home to initiate such programs in their home countries. Governments look to universities in their countries to provide assistance, advice, and research support in the development of their workplace development programs and even national HRD policies. Multinationals, most of which have strong HRD programs, continue to have a strong influence in those countries in which they operate. Companies of all sorts look to universities not only for skilled human resources for their workforces, but also for skilled HRD professionals who can help them develop their workforces and improve their policies, practices, and systems.

So far, so good. Workforce development is a good thing. But here's where we begin to explore our fairy tale analogy. The evil person in fairy tales is almost never obviously identifiable. They mask themselves in the appearance of good. So it is with how HRD is expanding into new and developing countries. The underlying evil of ethnocentricity is masked in doing good things for such countries. And so, in the U.S. and the U.K. (and certainly other countries) we import students to study in our universities in our curriculum learning our systems and our practices in our business forms. As academics and consultants, we generously share our expertise by going to other countries and, consciously or unconsciously, export our ways of doing things. So, whether the approaches fit the culture or not, we find action learning in Korea, coaching in Thailand, balanced scorecards and key performance indicators in Malaysia, and everywhere the demand for publishing in SSCI (Social Science Citation Index) journals and universities being ranked in the world's top 100, even in universities that do not meet the basic criteria for such rankings. Why is this so? Because governments and academics and businesses and consultants make one really bad assumption—that one shoe fits all. Even the Prince knew that the lost shoe would fit only his magical dancing partner, Cinderella. So, he made the necessary efforts to find the one woman who could be his princess. Why do all of these entities not make the same decision and search for the practice that fits their culture?

In this conference, we gather together to celebrate the value of research in expanding our theories and impacting our practices. But whose theories? Whose practices? We come to this conference from many countries, and we have heard and will hear many papers situated in these multiple countries. But on what theories are they based? What instruments have been used? In what journals will they ultimately be published? In contrast, in what journals would they make the greatest impact on practice in their countries? I doubt that the answer to the last two questions will be the same. A major issue is language. An examination of the SSCI list of journals (Source Publications, n.d.) shows hundreds of journals in English and very few in any other language. Even those published in countries in which English is not the first language are often published in English. This immediately disadvantages non-native English writers and may very well keep the literature from those in-country who do not read English.

Another problem is that most theories and validated instruments used in research come from the west. So, even when research is conducted in an indigenous context, it is based on a culture that is not compatible or in alignment with the country culture in which the research is being conducted. Translating (and back-translating) does not solve the problem. While making tweaks in the instrument helps, it is still far from providing indigenous (and, therefore, the most effective) research. But there remains another evil witch (or wizard) in the story. For, even if researchers undertake to develop their own indigenous theories and instruments, international editors and journal reviewers (especially of SSCI journals) are notoriously opposed to publishing such research. How often I have read editors or journal reviewers asking, for example, “Who cares about indigenous research in Portugal? It’s such a small country.”

These are only two of the poison apples found in the evil witch’s basket. Drawing on McLean (2009, 2010), I will suggest antidotes from the good witch’s basket to counter the poison apples, including those directed at western universities, universities in developing countries, dissertation advisors, researchers globally, multinational corporations, developing country governments, consultants, locally based corporations and family businesses, journal editors and reviewers, SSCI, and university ranking systems.

Our current system (the evil witch) extends historical colonialism to scholarly colonialism. If we are to throw off such a mantle and embrace true indigenization (the good witch), we must take seriously the desire to achieve such a state and be willing to put in place systems globally that will make indigenization desirable and achievable.

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## Knowledge Economy and the Digital Transformation Era

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We are on the road to the 4th Industrial Revolution. Each organization, each profession and each individual are facing the dilemma: Digital or Dead. Disruptive innovation changes everything. Software will disrupt most traditional industries in the next 5-10 years. Everybody wonders who will become the next Uber and Airbnb, how will it change business and society? Artificial Intelligence provides humanity with technology and methodology to become exponentially better in overall understanding of the world and solving most of its problems in a new way. The biggest issues in IT leadership will center on business needs, capabilities and availability related to Digital Transformation.

According to Peter Drucker, we are witnessing the last years of the concept known as the corporation. More than two decades ago, he wrote that “the corporation as we know it, which is now 120 years old, is not likely to survive the next 25 years. It should survive legally and financially, but not structurally and economically.” Why? Mostly because corporations, government bureaucracies and most other institutions (including schools and universities) are old-fashioned organizations based on fear. They have developed strange concepts like cubicles and standard operating procedures. In their rigid hierarchies, the bosses and teams are appointed by senior management, and the goal attainment is based on command and control. Working within such environment causes alienation and depression.

In a society and economy dominated by knowledge, we need new types of “corporations.” Instead of organizations based on fear, we should build organizations based on love. The traditional corporations have been developed in times of hard physical work. Today, most employees are knowledge workers. Their source of motivation is not dependent upon control and fear, but on appreciation and love for what they do, on accomplishment and self-fulfillment. Brain-based organizations need a value system, aligned with passion, enthusiasm, the appetite for life, engagement, commitment, great causes, and determination to make a difference. The students and workers of the future must be trained for innovation, shared adventures, bizarre failures, and appetite for change. Otherwise, as stressed by Tom Peters, why bother?

Over the last couple of decades, a new Knowledge Economy culture spontaneously emerged on the Internet. Imagine that a huge corporation with an elaborate hierarchy decided to build The Web, based on a long-term plan, a clearly defined budget and a set of precise goals. No way! The Internet self-developed, step by step, as a self-organized endeavor, feeding on endless creativity, full adaptability, loving and inspirational environment in which ideas compete on equal footing, tasks are selected and not administered, teams are self-organized and authority is not based on position but on the quality of an idea and its execution.

Knowledge economy and the Digital Age don't go together with the more-than-a-century old military-like perfect bureaucratic organization called the corporation. Truth be told, traditional

corporations are nothing but inhuman hierarchies, resembling concentration camps. Based on rigid plans, often absurd rules, fear of bosses, constant control, obedience, and punishment, they are everything but desirable places to work, enjoy and be passionate about. New economy calls for new, digitally-favorable environments designed to support creativity, innovation, and change. In traditional hierarchies, for one thing, the boss is there to catch employees in what they do wrong. We need organizations with bosses who catch the subordinates in what they do right!

Organization of the digital era should be built on love, friendship, creativity, candor and integrity. We are talking about organizations where people are educated and trained to research and explore, to tell the truth, keep a promise, take responsibility, admit mistakes, abide by the rules and change the bad ones, win the right way, enjoy life with humor, joy and humility. If you think that's impossible, remember that every crazy idea is considered totally insane until it wins.

We are immersed in the new economic environment which combines traditional values like hard labor, capital investment and old fashioned resources with digital transformation, brand, image, culture, and innovation. There is a new way how creativity contributes to the economy; we may call it the Creative Economy. The term first appeared more than a decade ago in a John Hawkins book, and it describes the economic systems where the value is based on creative qualities rather than the traditional resources like land, labor, and capital. Compared to creative industries, which are limited to specific sectors, the term is also used to describe creativity throughout a whole economy. There is also a narrower, culture-based notion of the creative economy that focuses on arts, design, and media.

Simply stated, the creative economy occurs wherever individual creativity becomes the main source of value. As such, the creative economy covers a wide area, including information and communication technology, audiovisual products, design, new media, performing arts, publishing, and visual arts, and it is one of the most rapidly growing sectors of the world economy.

The creative economy is also a highly transformative sector in terms of income generation, job creation, and export earnings. It strongly affects all other business sectors and activities. Interestingly enough, its progress is not characteristic of the developed world only; between 2002 and 2011, the developing countries averaged 12.1 % annual growth in exports of creative goods.

The creative economy is just one side of the story; there is a growing global interest for the advancement of creative education, creative music, creative politics, creative technology... It seems that we can start talking about a general trend towards a digitally transformed Creative Society. What is it? The term reflects the need to innovate and make more creative every facet of the present human environment. There's a propensity for change because, as Albert Einstein pointed out, we cannot solve our problems with the same thinking we used when we created them. What are the biggest problems of the contemporary world that need new, creative thinking and innovation? The list is rather long, and it starts with **the institutions** (democracy, the market, corporations, universities), followed by **culture** (harmonious values, cooperation vs. competition), **leadership** (win-win attitude, creativity, multiculturalism), and **infrastructure** (crowdsourcing, crowdfunding, bitcoin, social networks, cloud computing).

The Knowledge Economy and Smart Society are becoming possible only through digital transformation and creativity-based (r)evolution of all institutions, and, before that, of the values on which they stand. Because, as we all know, the values lead to behavior, and the behavior creates outcomes.

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# Strategic Thinking

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## Introduction

Strategic thinking is about the future and it reflects the capacity of making decisions in complex situations with high levels of uncertainty. Our school education gives us a low level of understanding these phenomena and our mind has a natural tendency of avoiding uncertainty. My presentation is focused on the different thinking models we use currently in making decisions and shows which of these models are capable of understanding the future and making decisions for the future. My presentation is addressed to all people who are interested in developing their capacity of thinking and making decisions for the future in conditions of complexity and uncertainty.

## Strategic spectrum

Metaphorically we may consider *strategic thinking* like a spectrum composed of several monochromatic thinking models similarly to the white light. In order to identify those monochromatic thinking models which compose the spectrum of strategic thinking it is necessary to choose a framework based on the some basic dimensions of understanding and explaining the reality we are living in. I shall consider a framework composed of the following four dimensions: time, complexity, uncertainty, and novelty. On each dimension I shall consider three well-defined monochromatic thinking models and by analyzing their features I can choose those models which fit the requirements of strategic thinking and assemble them into a spectrum. For each dimension I shall consider these models from the simplest form to the most complex one and for each form I shall describe the main attributes with respect to the capability of the model to work for the future.

It is a truism that we live in the present time and *future* exists only in our mind. We imagine the future by using *space* as a metaphor for *time*. Basically there are two such metaphors. In one metaphor the time domain is analogue to space domain when the observer is moving from an initial position to a future position. It is like going towards a certain station into the future. This metaphor influenced mostly the act of planning for the future like designing a road map for a trip. In the other metaphor, the observer is stationary and the time is moving towards the observer. That metaphor develops a different perception of time which stimulates the emergent attitude in strategy design. Integrating both metaphors we understand that time is a dynamic entity reflecting the dynamic changes in the political, social, and economical environment. Future is not anymore an extrapolation of the present but a time domain with its own dynamics, and strategic thinking must be aware of that.

### **Time thinking models**

The simplest monochromatic thinking model in time is *inertial thinking*. It is a model where there is no time variable. It is a static model which considers that the present state will continue without any changes. It is based on the inertia phenomenon from physics. The inertial thinking gives us a sense of security and helps us in creating some functional automatism. However, due to the fact that change is done in time, people with a well-developed inertial thinking will oppose change. And that is the most important feature of inertial thinking. Since it opposes change, it cannot be a component of the strategic thinking spectrum. Upgrading the thinking model on the time dimension means to define a *dynamic model* able to accept change. The *dynamic thinking model* contains time as a fundamental variable, but it is only a quantitative time like in the Newtonian logic which applies to reversible processes. Since in a reversible process there is no direction of time, past, present and future appear only as different instances in time. That means that future may become past and vice versa. This thinking model cannot be an option for strategic thinking. Finally, we can define the *entropic thinking model* which is based on irreversible processes. If reversible processes are norms for Newtonian physics, irreversible processes are those that reflect real life. We call these models *entropic* since entropy is a measure of irreversibility and it introduces an “arrow of time”. Thus, we conceive time as a continuum with past, present and future which follow one after another. Past and future cannot be anymore interchangeable. The entropic thinking model allows us to think for the future, and to direct all of our actions for achieving the projects we have designed. It is the only time model of thinking which can be a part of the strategic thinking spectrum.

### **Complexity thinking models**

Along the complexity dimension we define three monochromatic thinking models: linear, nonlinear and systemic. The *linear thinking model* is the simplest one and it is based on the Newtonian logic. A linear process is that process where inputs and outputs are related through a linear equation. That means that the output of a give action is proportional with the input of that action. Society developed linear thinking as an approximation to the complex issues. For instance, all metrics developed for measuring physical properties of different objects are designed as linear processes. All budgetary salaries are linear. All European university Diplomas are linear since they are based on the time metric, which is linear. However, economic and managerial problems are not linear and they cannot be understood properly by using linear models. For them we should develop *nonlinear thinking models* where the outputs of a given process are related to inputs by nonlinear relations, like polynomials, exponentials, logarithms, and so on. For instance, a demographic evolution is close to a logarithmic function while an innovation is based on an exponential function. When we consider systems and we try to correlate several variables as inputs and outputs we speak about a systems thinking models. These kinds of models have been explained and analyzed among the first researchers by Peter Senge from MIT. Nonlinear and systems thinking models belong to strategic thinking spectrum.

### **Uncertainty thinking models**

Our education in schools has been focused on certainty and *deterministic thinking models*, since it is based on scientific laws and the logic of technology. These models are characterized by complete information, well-formulation and mathematical formulas for obtaining solutions. However, the real life and especially the future is not certain and well-determined. There is a lot of uncertainty and events may appear with some probabilities which can be computed or not. Thus, from a managerial perspective we need to develop a *probabilistic thinking model* which is able to deal with probable events. Also, we have to underline the fact that uncertainty is always associated with risks and making decisions in conditions of uncertainties request identifying and evaluating the risks. To design for the future and to elaborate strategies we need probabilistic thinking models.

### **Novelty thinking models**

Finally, we shall consider the novelty dimension, which means to evidence how much novelty there is in a potential solution. On this dimension, the *template thinking model* is the simplest since it is based on reproducing an existing solution. Thus, the novelty content is zero. Then, we define the *intelligent thinking model* which is characterized by the fact it analyzes the best solution out of a potential array of possible solutions. The degree of novelty is minimum. For complex and new problems we need to develop a *creative thinking model* which is able to provide a new perspective to the problem and a new solution. The degree of novelty is much larger than in the previous case. For strategic thinking spectrum both intelligent and creative thinking models are compatible and necessary since the future always will come up with new situations and problems.

By analyzing the monochromatic thinking models presented so far we choose for the strategic thinking spectrum the followings: entropic thinking model, nonlinear thinking model, systems thinking model, probabilistic thinking model, intelligent thinking model and creative thinking model.



## How spaces can support knowledge and innovation work

### Why space is crucial for enabling innovation

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**Keywords:** cognition, cognitive science, enabling, enabling space, epistemology, future-driven innovation, knowledge creation, socio-epistemological technology, space.

How can we bring about new and thriving futures facing complex (global) challenges in a rapidly changing world? This is one of the most pressing questions of today's knowledge economy in which innovation and (disruptive) change have become one of the key drivers for social, economic, educational, cultural, as well as technological dynamics. The more the focus is on creating novelty, in particular on creating novelty that brings forth *thriving change* and *sustainable innovations*, the more we are tempted to search for recipes or mechanisms that generate new knowledge by applying or following rules or well-proven methods.

Taking a closer look reveals however that such an approach is doomed to failure. For reasons of formal logic, rules or algorithms cannot generate radically new knowledge, as, by definition, they rely on *past knowledge* and only *make explicit* what is already implicitly given in these rules/algorithms. Innovation cannot be "made". And even, if we apply creativity methods or "out-of-the-box" thinking, this is no guarantee that the resulting "creative" solutions or so-called radical innovations will be sustainable or lead to a thriving future (compare the innovation paradox; Peschl & Fundneider (2017)).

In a first step, we will show that it is necessary to turn things on their head: instead of learning from the past (e.g., Kolb 1984) and extrapolating past knowledge/experiences into the future, we have to start from the future. In this context Scharmer's Theory-U (Scharmer 2007) plays an important role as one of its main claims is to understand change and innovation as „Learning from the future as it emerges.“ (Scharmer 2007, p 52) We will discuss the limitations why it is so difficult to innovate in a future-driven manner and briefly show an alternative: *Emergent Innovation* (Peschl & Fundneider 2017),

In order to overcome these limitations, we propose a shift in perspective that is based on the following premises: (i) We will show that the mechanistic approach to innovation has to be replaced by the concept of *enabling*. I.e., instead of applying rules one has to establish a framework of constraints that supports and facilitates processes of knowledge creation and innovation. (ii) Innovation is primarily an *epistemological* and *social* process. Hence, such a framework of constraints has to take into consideration to facilitate these processes. (iii) Innovation being a socio-epistemological process implies that we have to understand its

underlying cognitive processes: recent developments in cognitive science show that cognition is (a) a process that *extends into its environment* (“we are thinking with our environment”, the extended cognition approach in cognitive science; e.g., Clark 2008); (b) cognition is heavily driven by top-down processes that predict the future by applying past experiences (rather than being open to yet unknown future potentials) [predictive coding/mind approach in cognitive science; e.g., Hohwy 2013; Clark 2016].

Based on these premises, we propose an approach that establishes spaces enabling these processes of future-oriented knowledge creation—we refer to them as *Enabling Spaces* (e.g., Peschl & Fundneider 2012, 2014). Enabling Spaces are multi-dimensional spaces (architectural space, social space, emotional space, epistemological space, etc.) that are orchestrated in an integrated manner in order to best possibly support innovation activities with a focus on game-changing or radical innovations. In our approach we are following a rather broad understanding of space: space is understood as a container providing a set of constraints which is responsible for holding this container together as well as giving it a minimal structure and dynamics. It is a space providing enabling structures as well as constraints allowing knowledge processes to flow and to develop their own dynamics in such a way that radically new knowledge may break forth.

Enabling Spaces are interdisciplinary, passive, as well as active: It is necessary to consider and design for constraints and forms of enabling interventions from many different disciplines, such as social, emotional, cognitive, cultural, technological, epistemological, organizational, and, of course architectural constraints and interventions. The challenge is to integrate these aspects into a *holistic* ensemble which functions as an Enabling Space. It is the interdisciplinary interaction between these elements that brings about a seamless flow of knowledge and interaction between the participating cognitive systems and their environment. This is a typical design process/task which does not have a single “best solution”, but has to be approached in a “designerly manner”. Besides the theoretical foundations, we present the characteristics/functionalities, the design process, as well as a concrete case study for Enabling Spaces.

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## **Special Session**

# Diagnosing nations' wealth creation potential in the knowledge economy

## Theoretical foundations and practical implications

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After an introductory approach on the definitions and main characteristics of the knowledge economy the presentation focuses on the three following purposes:

- 1) Discovering from the existing relevant literature on Austrian School of Economics, New Institutional Economics, Knowledge-based Development, Competitiveness, Innovation and Intellectual Capital at the macro level, which are the principles and theories that guide nations' wealth creation in the knowledge economy context. This part tries to answer two fundamental questions: Who does create wealth? How wealth is created?
- 2) Finding out the suitable methodology or framework to enable an in-depth diagnosis of a nation's wealth creation potential, with the aim to aiding in the definition of the possible vision, objectives and lines of action to enable innovation and sustainable economic growth. According with principles and theories of wealth creation discovered in purpose 1, there is a close relationship between wealth creation and competitiveness and consequently trying to find out methodologies and frameworks for an in-depth practical diagnosis of a nation's wealth creation potential, leads us to the World Competitiveness Report from World Economic Forum (WEF) and World Competitiveness Yearbook from International Institute for Management Development (IMD), the two most relevant considering their up to date data bases, historical performances and scientific approach. Intellectual Capital community methodologies at the macro level are also considered as alternative approaches to the competitiveness frameworks.

Finally, we finish the review and valuation of competitiveness and IC macro dimension frameworks considering NICBS (Nations' Intellectual Capital Benchmarking System) and enhanced NICBS methodologies as the more suitable for the above in-depth mentioned diagnosis, because they consider the latest relevant contributions from New Institutional Economics. In essence, the approach followed in purpose 2 has been a review of scientific literature on New Institutional Economics, competitiveness and IC macro dimension with the exclusive aim of finding out the practical framework that could make it possible an in depth analysis of a nation wealth creation potential.

- 3) Applying the suitable methodology or framework for an in-depth diagnosis of wealth creation potential of Spain and using the insights given by the in-depth diagnosis for having some light on the future economic development possibilities and on lines of action to be taken. The presentation is fully original because focuses on the

fundamental role of strategic management of intangibles at the macro level for sustainable wealth creation in the knowledge economy context. The reflections arising from the presentation have mainly practical implications and will guide in the decision-making process not only savers and investors but also government and institutional authorities.

**Keywords:** Wealth, institutions, competitiveness, innovation, intellectual capital, intangibles, knowledge based development, nation

# Accounting Systems and Auditing

Ivana Mamic Sacer

As an important part of information systems, accounting is an inevitable source of information for business decision making. The importance of accounting system is recognized by different users. It is the most regulated information system within the entity. It offers a wide variety of information; planned and realised, detailed and summarized, etc. On the other hand, internal controls and different types of auditing increase confidence in accounting information. Internal control systems express managements' effort in the improvement of business operation. Since international financial reporting standards are principle oriented standards, gathering knowledge about different techniques and methods that arise from their application can be an interesting field of research. Papers of this stream remark that internal controls, the application of accounting standards, and different types of auditing can influence financial information disclosed in principle financial statements.

## Significance of Notes to the Financial Statements in Business Decision Making

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**Abstract:** The notes, together with other annual financial statements, represent an important source of information for the shareholders and other financial statements' users in business decision making. Over the last decade, relevant accounting organizations point to an increasing length and complexity of disclosures in the financial statements. Disclosure of a large volume of the notes with irrelevant information makes it difficult for the users to find and recognize material information for decision making process. This paper provides an overview of the most important projects of relevant accounting and non-accounting organizations related to improvement of disclosures in the notes. Furthermore, an empirical research regarding the content and structure of the notes to the financial statements of large domestic and foreign companies from confectionery industry has been conducted. The purpose of the research was to identify deficiencies in the notes and to provide recommendations for its' improvement. The focus of this paper has been put on disclosure requirements listed in IFRSs. The research results indicate that a significant part of the notes to the financial statements consists of IFRSs' provisions transferred from a particular standard. The research has shown that IFRSs lists to many disclosure requirements which leads to increasing length of the notes. Based on the research results, paper provides some recommendations to increase the quality of the notes.

**Keywords:** notes to the financial statements, business decision making, financial statements, financial information, non-financial information

### 1 Introduction

Financial reporting represents one of the most important ways of providing useful information about financial position and financial performance of a company to the financial statements users. The preparation and publication of annual financial statements is mandatory for all micro, small, medium and large companies. Balance sheet, income statement and notes to the financial statements are the financial statements that all companies should prepare, regardless of their size. Since the balance sheet and income statement should present synthesized information in a systematic, transparent and understandable manner to the users of financial statements, it should not contain unnecessary details that would reduce its transparency. Therefore, an explanation of material significant elements from these financial statements which are important for decision making users can find in the notes to the financial statements. Although the notes are always mentioned as the last mandatory financial statement, they represent an important source of information for financial statements users.



The notes are primarily focused on explanation of the financial information presented on the face of balance sheet, income statement, statement of changes in equity and cash flow statement but they could also contain a certain degree of non-financial information which is very important in understanding of all business aspects of certain enterprise. The content of the notes to the financial statements is prescribed by accounting standards, but the form in which it should be presented to the users is not prescribed by any standard or regulation. The entity that prepares notes decides which information is relevant for financial statement users. Important question is whether the enterprises present all information relevant for evaluation of its' business quality in the notes to the financial statements.

The focus of the paper has been put on the disclosure requirements according to International Financial Reporting Standards and on the quality of the notes prepared according to these standards. With the aim of obtaining information about the quality of the notes an empirical research has been conducted. Special attention was also given to the relevant projects of international accounting organizations related to improvement of the notes to the financial statements. Based on the theoretical and empirical research some recommendations for improving notes to the financial statements have been provided.

## **2 Analysis of the notes to the financial statements' quality**

### **2.1 Accounting standards as a basis for preparing the notes**

Accounting standards represent a detail elaboration of accounting principles and provide the basis for the preparation and presentation of annual financial statements. There are two types of accounting standards: national and international accounting standards. With the aim of harmonization, in 1973 the International Accounting Standards Board issued International Accounting Standards. Those standards were modified over time and its' name was changed to International Financial Reporting Standards in 2004. Many countries accepted International Financial Reporting Standards. In Croatia, large companies are obliged to use IFRSs while micro, small and medium-sized enterprises can choose between Croatian Financial Reporting Standards and IFRSs. Since most companies have a significant share of property, plant, equipment and inventories in its' total assets, and taking into account that revenues are materially the most important element in calculating profit, special attention in this paper was given to the analysis of the notes related to those elements of financial statements. IFRSs related to property, plant, equipment and inventories are International Accounting Standard 16 – Property, plant and equipment and International Accounting Standard 2 – Inventories, while International Accounting Standard 18 – Revenues prescribes the accounting treatment for revenues. All mentioned standards prescribe the data that should be disclosed either in the balance sheet and income statement or in the notes to the financial statements. The main requirements for disclosure in the notes from IAS 2, IAS 16 and IAS 18 are shown in section 2.2.

### **2.2 Quality of the notes to the financial statements – results of empirical research**

To assess the content and quality of the notes to the financial statements, a research of the notes for financial year 2015 has been conducted on a sample of large domestic and some foreign companies from confectionery industry. The source of data was Financial Agency, the

Croatian agency to whom companies should deliver annual financial statements, as well as official web sites of foreign companies where its' financial statements were found. Using the method of comparison, the research results were compared. The main objective of the research was to determine whether the companies disclose the information required by the standards. As mentioned above, the main emphasis was put on disclosure requirements associated with inventories, property, plant, equipment and revenues by using the method of induction. In order to gain insight into whether the companies disclose information other than required, non-financial information were also observed.

Table 1 summarizes the main information required by the standards and disclosed in the notes of selected companies. According to the research results, it can be concluded that companies disclose most information required by IFRSs, but there are also some requirements which are not relevant for most companies i.e. the carrying amount of inventories recognized at fair value less costs to sell, the amount of any reversal of any write-down of inventories and the circumstances or events that led to the reversal of a write-down of inventories. The information presented in the notes to the financial statements is very similar for most companies, both domestic and foreign. Most of companies disclose more detail information about items from financial statements. Thus, IFRSs' requirements are met, but financial statements' users do not receive all the information they need for a comprehensive financial statement analysis. Although IAS 2, IAS 16 and IAS 18 are materially significant standards, the research results show that those standards contain too demanding disclosure requirements.

**Table 1: The main disclosures in the notes to the financial statements**

	Notes to the financial statements (main requirements)	Domestic companies					Foreign companies				
		Kraš	Koestlin	Zvečevo	Kandit	Karolina	%	Nestle	Lindt	Cloetta	%
IAS 2	the accounting policies adopted in measuring inventories (measured at the lower of cost and net realisable value), including the cost formula used (weighted average cost formula for domestic companies and FIFO for foreign companies)	+	+	+	+	+	100 %	+	+	+	100 %
	the total carrying amount of inventories and the carrying amount in classifications appropriate to the entity	+	+	+	+	+	100 %	+	+	+	100 %
	the carrying amount of inventories carried at fair value less costs to sell	-	-	-	-	-	0.00%	-	-	-	0.00%
	the amount of inventories recognised as an expense during the period	-	-	-	-	-	0.00%	-	-	-	0.00%
	the amount of any write-down of inventories recognised as an expense in the period	-	-	-	+	-	20.00%	+	+	+	100 %
	the amount of any reversal of any write-down that is recognised as a reduction in the amount of inventories recognised as expense in the period	-	-	-	-	-	0.00%	-	-	-	0.00%
	the circumstances or events that led to the reversal of a write- down of inventories	-	-	-	-	-	0.00%	-	-	-	0.00%

		Domestic companies						Foreign companies			
	the carrying amount of inventories pledged as security for liabilities	-	-	-	-	-	0.00%	+	-	+	66.7%
IAS 16	the measurement bases used for determining the gross carrying amount	+	+	+	+	+	100 %	+	+	+	100 %
	the depreciation methods used (straight-line method)	+	+	+	+	+	100 %	+	+	+	100 %
	the useful lives or the depreciation rates used	+	+	+	+	+	100 %	+	+	+	100 %
	the gross carrying amount and the accumulated depreciation (aggregated with accumulated impairment losses) at the beginning and end of the period	+	+	+	+	+	100 %	+	+	+	100 %
	a reconciliation of the carrying amount at the beginning and end of the period showing										
	- additions	+	+	+	+	+	100 %	+	+	+	100 %
	- assets classified as held for sale or included in a disposal group classified as held for sale in accordance with IFRS 5 and other disposals	+	-	-	-	-	20 %	+	-	+	66.7%
	depreciation, whether recognised in profit or loss or as a part of the cost of other assets, during a period	+	+	+	-	+	80 %	+	+	+	100 %
	accumulated depreciation at the end of the period	+	+	+	+	+	100 %	+	+	+	100 %
	the existence and amounts of restrictions on title, and property, plant and equipment pledged as security for liabilities	+	-	-	-	-	20 %	+	-	-	33.3%
IAS 18	the accounting policies adopted for the recognition of revenue, including the methods adopted to determine the stage of completion of transactions involving the rendering of services	+	+	+	+	+	100 %	+	+	+	100 %
	the amount of each significant category of revenue recognised during the period, including revenue arising from the sale of goods	+	+	+	+	+	100 %	+	+	+	100 %

Source: created by the authors

Research results point that domestic and foreign companies from confectionery industry mainly do not disclose most of non-financial information in its notes. This type of information can usually be found in the annual report. The notes usually contain information about number of employees, rather than its structure, while the information about principal customers, marketing strategy, competition, research and development, environmental considerations, corporate social responsibilities etc. are presented in the annual report. It has also been noted that the annual reports of foreign companies contain more images, graphs and charts than domestic companies. Finally, it can be concluded that there are no significant differences between the disclosures of domestic and foreign companies.

### 3 Review of relevant projects related to improvement of the notes to the financial statements

#### 3.1 Projects of accounting and non-accounting organizations related to notes to the financial statements

The notes to the financial statements have a very important role in understanding the basic financial statements because they contain more detailed information about items presented at the synthetic level in the balance sheet and income statement. Most accounting standards, both International Financial Reporting Standards and national accounting standards, have changed over the time in a way to increase the disclosure requirements in the notes to the financial statements with purpose to ensure the quality information for the users of financial statements. Each IFRS specifies information that should be disclosed in the notes to the financial statements. The entity that prepares financial statements decides which information and disclosures will be presented in the notes to the financial statements and in which form. Furthermore, the entity evaluates which information is material to the users of the financial statements. This approach in preparing the annual financial statements, primarily the notes, usually results with a large volume of irrelevant information presented in the notes. This also leads to increasing volume of the notes. Thus, in the large volume of the notes, it is difficult to find important and material information relevant for decision making. *One study of Annual Reports in the United Kingdom (U.K.) noted that they grew on average from 26 pages in 1965 to 75 pages in 2004, reflecting increases in both voluntary and mandated disclosures. Further, a recent Deloitte U.K. publication indicated that in 1996 the average length of a U.K. Annual Report was 44 pages, whereas in 2010 it grew to 101 pages. This increasing length and complexity of disclosures has drawn the attention of many parties in the financial reporting supply chain (Beattie and Dhanani 2008). It has been suggested that part of the reason for the increasing length and complexity of financial statements may be that accounting standard setters have increasingly emphasized the fundamental qualitative characteristic of relevance over reliability (IAASB 2011).* In the Conceptual framework issued by the IASB in 2010, there is no longer a concept of reliability but it is replaced by concept of faithful representation that implies the publication of complete and neutral information that does not contain errors (IASB 2010). These problems in financial reporting, especially in the compilation and presentation of the notes to the financial statements have been identified by numerous accounting and non-accounting organizations that conducted research projects at national and international level in order to find out ways to remove or minimize existing problems. Table 2 shows some of the work that others have undertaken regarding the disclosure.

**Table 2 Key projects related to disclosure improvements in the financial statements**

Organization	Project
AASB (Australian Accounting Standards Board)	Rethinking the Path from an Objective of Economic Decision Making to a Disclosure and Presentation Framework
ANC (Autorité Des Normes Comptables) - French Accounting Standards Authority)	Proposal to simplify accounting obligations for "small listed companies" in Europe
CFA (Chartered Financial Analyst)	Institute Financial Reporting Disclosures: Investor Perspectives on Transparency, Trust and Volume

Organization	Project
EDTF (Enhanced Disclosure Task Force)	Enhancing the risk disclosures of banks
EFRAG (European Financial Reporting Advisory Group), FRC (Financial Reporting Council), ANC (French Accounting Standards Authority)	<i>Towards a disclosure framework for the notes</i>
ESMA (European Securities and Market Authority)	<i>Considerations of materiality in financial reporting</i>
FASB (Financial Accounting Standards Board)	Disclosure Framework
FRC (Financial Reporting Council)	<i>Thinking about disclosures in a broader context and Cutting Clutter: Combating clutter in annual reports</i>
IAASB (International Auditing and Assurance Standards Board)	The Evolving Nature of Financial Reporting: Disclosure and its Audit Implications
ICAEW (Institute of Chartered Accountants in England and Wales)	Financial Reporting Disclosures: Market and Regulatory Failures
ICAS (The Institute of Chartered Accountants of Scotland) / NZICA (New Zealand Institute of Chartered Accountants)	Losing the Excess Baggage- reducing disclosures in financial statements to what's important
KPMG	Disclosure in the balance: Investors' perspective on information streamlining

Source: IASB, available at: <http://www.ifrs.org/Meetings/MeetingDocs/IASB/2014/April/AP11-Disclosure%20Initiative-Principles%20of%20Disclosure.pdf> [10.05.2017.]

The results of researches and projects of relevant organizations related to the compilation of the notes to the financial statements are presented below. **ANC (Autorité Des Normes Comptables)** French Accounting Standards Authority published in 2011 a proposal for the simplification of the accounting requirements for small listed companies. All listed companies in the EU, regardless of their size, should prepare consolidated financial statements in accordance with IFRSs (Regulation No. 1606/2002). The application of full IFRSs for small entities, especially in preparing the notes to the financial statements, represents a notable administrative burden. Consequently, ANC proposed simplifications primarily related to the notes to the financial statements. Thus, the ANC is not suggesting to introduce a set of accounting standards such as the IFRS for SMEs which are designed for unlisted entities. Two ways of simplifying IFRSs for small listed companies were suggested: (1) *reduce the volume of the notes by simplifying the current disclosure requirements under IFRSs and (2) facilitate the preparation and improve the readability and relevance of the notes to the financial statements by offering an illustrative set of simplified financial statements*. The ANC makes detailed suggestions as to where disclosure requirements can be simplified and has compiled an illustrative set of financial statements (Deloitte 2011).

**CFA (Chartered Financial Analyst)** CFA Institute is a global association of investment professionals. It conducted a survey of its members in 2012 with a purpose to provide investors' views on the effectiveness of financial reporting disclosures. The results of this study were presented in document "*Financial Reporting Disclosures - Investor Perspectives on Transparency, Trust, and Volume*", which contains recommendations to improve overall disclosure effectiveness. Related to the compilation of the notes to the financial statements CFA suggested: (1) *development of a disclosure framework that allows management to decide what disclosures are relevant and necessary and (2) removal of disclosures to reduce the volume of financial statements (Financial Reporting Disclosures 2013)*.

**EFRAG** (European Financial Reporting Advisory Group), **FRC** (Financial Reporting Council), **ANC** (French Accounting Standards Authority) issued in July 2012 a Discussion Paper (DP) '*Towards a Disclosure Framework for the Notes*'. The DP discussed ways to improve the quality of information in the notes to the financial statements and reduce the excess of immaterial disclosure. Those organizations jointly launched the project in 2012 with the aim to assist the IASB in creating IFRSs with its suggestions and recommendations in terms of enhancing the quality of financial reporting (EFRAG 2013). In April 2014 a document "*Towards a Disclosure Framework for the Notes - feedback statement on discussion paper*" (EFRAG 2013) was issued. It contains conclusion and comments received on previously issued Discussion Paper. This project was initiated due to the problems identified in preparing notes to the financial statements that are increasingly gaining volume that does not contribute to the quality of information provided to users. Moreover, according to the opinion of many relevant organizations, it led to a decline in information quality. The research involved various interested groups in financial reporting; users, accountants, consultants, standard-setting organizations, regulators, entities that prepare financial statements and academics from 9 EU cities. *The Discussion Paper suggests that improvements should be made in two areas: (1) ensuring that all and only relevant information is provided in the notes and (2) enhancing the way information is communicated.* The DP does not suggest removing or changing disclosures, it suggests principles for a new framework for disclosures. Therefore, they suggest developing a disclosure framework which ensures that disclosure requirements under International Financial Reporting Standards (IFRS) are based on sound principles and yield relevant information for users of financial statements (IASPlus 2012). In the discussion paper EFRAG/ANC/FRC list five points that need to be considered when developing the framework: *(1) the purpose of the notes since this drives what information should be included in the notes in the first place, (2) principles for identifying what information should be included in the notes, (3) the form of disclosure requirements, i.e. detailed disclosure requirements that require specific items to be disclosed or more principle based requirements that require greater judgment and consideration of an entity's circumstances, (4) materiality considerations so that the only information disclosed is the what is necessary to understanding an entity's financial performance and position, and (5) key features of effective communication that deal with the way disclosures are organized and presented.*

**FASB** (Financial Accounting Standards Board) issued in 2014 a proposed Concepts Statement aimed at improving its process for evaluating future and existing disclosure requirements for the notes to financial statements (KPMG 2014). The proposed guidance is intended to provide a framework to help the FASB to: *(1) develop disclosure requirements that provide more useful and relevant disclosures for financial statement users and (2) be more consistent in developing disclosure requirements in new standards and in evaluating existing disclosure requirements.* In 2015, FASB initiated the project "Disclosure Framework". *The objective and primary focus of this project was to improve the effectiveness of disclosures in notes to the financial statements by clearly communicating the information that is most important to users of each entity's financial statements. Although reducing the volume of the notes to financial statements is not the primary focus, the Board hopes that a sharper focus on relevant information will result in reduced volume in most cases (FASB 2015).*

**FRC** (Financial Reporting Council) The Financial Reporting Council (FRC) is the UK's independent regulator responsible for promoting high quality corporate governance and reporting to foster investment. FRC issued in 2011 Discussion Paper titled "*Cutting Clutter -*

*Combating clutter in annual reports” (FRC 2011). „Clutter undermines the usefulness of annual reports and accounts by obscuring important messages...“. FRC used the term ‘clutter’ throughout this paper as comprising two problem areas: (1) immaterial disclosures that inhibit the ability to identify and understand relevant information and (2) explanatory information that remains unchanged from year to year. In addition to attempting to cut clutter, FRC also borne in mind the three principles of effective communication. Namely, the reports should be: *open and honest; clear and understandable; and interesting and engaging*. The FRC provides a layout proposal for a comprehensive annual report, including, inter alia, a detailed review of the notes to the financial statements, whereby the notes should include the following (1) *accounting policies; (i) basis of accounting, (ii) accounting developments and changes, (iii) choices permitted under IFRS, (iv) critical accounting policies i (2) sensitivities to accounting estimates and (3) share based payments*.*

**ICAEW** (Institute of Chartered Accountants in England and Wales) issued in 2013 document *“Financial Reporting Disclosures: Market and Regulatory Failures”* (ICAEW 2013) in which it deals with disclosure problems in financial reporting. According to this organization, the main problem can be found in a *“trade-off between increasing regulation and reducing the scope for professional judgement”*. ICAEW provides four kinds of ways in which the problem can be tackled: (1) reform the process for setting disclosure requirements (2) change the requirements themselves (3) change the way in which the requirements are implemented and (4) place more reliance on non-regulatory solutions. Several of the recommendations refer to standard-setters. ICAEW primarily has the IASB in mind with these proposals, but they may also be applicable to other, national standard-setters. The most significant recommendations of this organization regarding the compilation of notes to the financial statements are: (1) *disclosure requirements should allow firms to report separate information sets to different types of users, (2) standard-setters should regularly review their disclosure requirements to weed out unnecessary disclosures, (3) to reduce the incentives to provide immaterial disclosures, enforcement agencies should clarify that they will not take action against firms that omit immaterial disclosures, and they should encourage firms to omit immaterial disclosures (4) preparers and users should engage directly to discuss voluntary public disclosure of information that is not currently provided, rather than rely entirely on standard-setters to introduce new disclosure requirements*.

**ICAS** (The Institute of Chartered Accountants of Scotland) and **NZICA** (New Zealand Institute of Chartered Accountants) were asked in October 2010 by the International Accounting Standards Board (IASB) to undertake a project to review the levels of disclosure requirements in existing International Financial Reporting Standards (IFRS) and to recommend deletions and changes to disclosure requirements. Consequently, in 2011 ICAS and NZICA issues document *„Losing the Excess Baggage – reducing disclosures in financial statements to what's important“* (ICAS 2011). ICAS and NZICA consider the disclosure requirements and recommended (1) *deleting specific requirements in IFRSs and (2) enhancing the use of materiality in financial reporting disclosures*. These recommendations are designed with the purpose to reduce the length of financial statements, remove unnecessary detail and enable clearer communication. This document sets out concrete proposals to improve disclosure requirements in specific IFRSs and it also states which disclosure requirements should be removed from individual IFRSs. The conclusion is that the notes are too extensive and regulators should allow *more principles based disclosure regime*.

### 3.2 IASB activities related to improving the disclosure requirements in the notes

As a result of the identified problems and motivated by organizations listed in the table 2, the IASB (*International Accounting Standards Board*) launches a research project „*Principles of Disclosures*“ in 2014. The titles of discussion papers issued as a part of this project are presented in table 3. The focus of this project has been put *on the principles regarding the organization, placement, format, and linkage of information as well as the objectives and boundaries of the notes* (Disclosure Initiative - Principles of disclosure - Staff Paper 2014). Furthermore, IASB intends to review general disclosure guidance in IAS 1 *Presentation of Financial Statements* and IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors*. The aim is to develop a Disclosure Standard that improves and brings together the principles for determining the basic structure and content of the financial statements, *in particular the notes*. This project will not consider the removal or addition of specific disclosure requirements in individual Standards IASB 2017. The fundamental purpose of this project is to develop the principles of disclosures in the financial statements.

**Table 3 The discussions and papers issued in the Project Principles of Disclosure**

Date	Disclosure Initiative – Principles of Disclosure
October 2016	Due process and permission to ballot
September 2015	Drafting of disclosure requirements
June 2015	Content of Discussion Paper
	Comparability of disclosures requirements
	<b><i>Non-IFRS information</i></b>
May 2015	<b><i>Disclosure of accounting policies</i></b>
	<b><i>Presentation on the face or in the notes?</i></b>
April 2015	Aggregation and summarization of information
	Materiality and Principles of Disclosure
	<b><i>Content of the notes</i></b>
	Drafting of disclosure requirement
	Disclosure principles and objectives
March 2015	Application of materiality to financial statements
	Role of the financial statements excluding the notes
February 2015	<b><i>Non-IFRS Information</i></b>
	Alternative Performance Measures
	<b><i>Other Non-IFRS Information</i></b>
December 2014	Cohesiveness in financial statements
	Cash flow statements – 'cash and cash equivalents' and the management of
November 2014	<b><i>Format of information in the notes</i></b>
	Cross-referencing
October 2014	<b><i>Role of the primary financial statements and the notes</i></b>
	Communication principles
	Issues relating to cash flow statements and related disclosures
September 2014	Cover note
July 2014	Cross-referencing
April 2014	Scoping the project

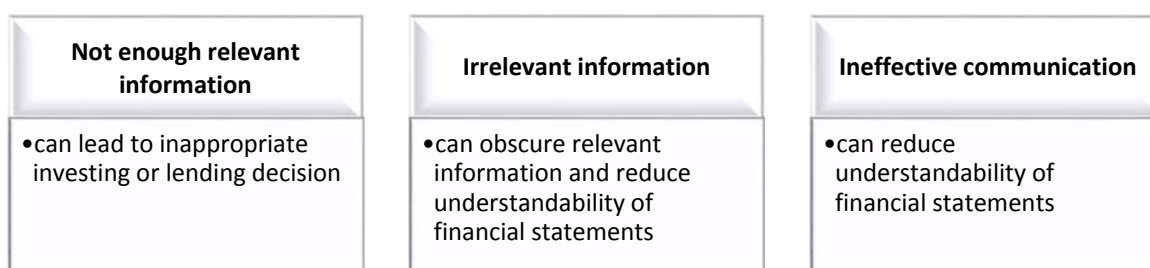
Source: created by the authors

The Board has identified three main concerns about disclosures in the financial statements, collectively termed the 'disclosure problem' (chart 1). In practice, it is noted that the notes to



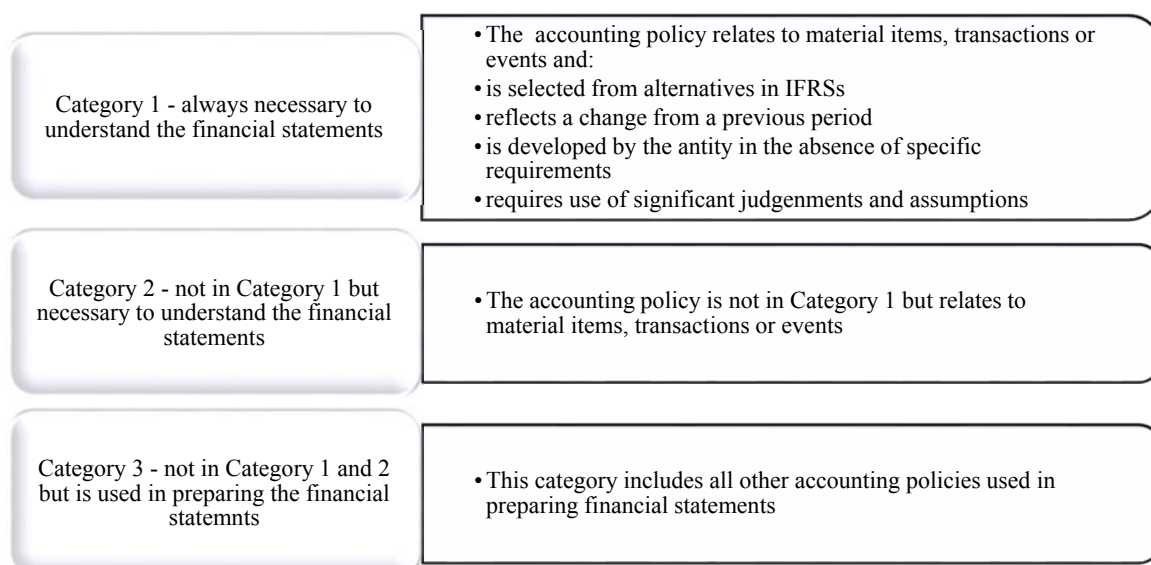
the financial statements sometimes do not contain relevant information because entities often prepare notes "mechanically" without considering which information is important to users of financial statements. Furthermore, the lack of guidelines for the preparation of the notes, together with the detail disclosure requirements listed in individual standards, discourages subjects from using their own judgment in preparing the notes. Also, a large volume of notes which contains irrelevant information make it difficult for users of financial statements to find important and materially significant information. The IASB issued in 2017 Discussion Paper "*Disclosure Initiative—Principles of Disclosure*" (IASB 2017). IASB in this DP identifies several principles to help entities communicate information more effectively in the financial statements: (1) *entity – specific*, (2) *clear and simple*, (3) *free from unnecessary duplication*, (3) *an appropriate format*, (4) *comparable*, (5) *organized to highlight important matters* and (6) *linked to related information*.

**Chart 1 The Disclosure problem according to IASB**



Source: IASB - Snapshot: Disclosure Initiative—Principles of Disclosure, available at: <http://www.ifrs.org/Current-Projects/IASB-Projects/Disclosure-Initiative/Principles-of-Disclosure/Documents/Principles-of-Disclosure-Snapshot-2017.pdf> [10.05.2017.]

One of the problems identified in practice is a judgment whether certain information should be disclosed in the primary financial statements or in the notes to the financial statements. *Evidence suggests that users of financial statements pay more attention to the primary financial statements than to the notes. This implies that the role of the primary financial statements differs from the role of the notes in meeting the objective of financial statements. This problem has also been considered in this project.* The Discussion Paper also suggests introducing a principle for situations when information necessary to comply with IFRS Standards can be disclosed outside financial statements. The Discussion Paper suggests that an entity should not be prohibited from disclosing information in its financial statements that it has identified as 'non-IFRS information'. However, entities should seek to minimize such information and it should be clearly identified and explained (IASB 2017). Furthermore, the Discussion Paper considers guidelines for higher quality disclosures on selected accounting policies of the company and considers that the accounting policies in the notes could be selected in three categories - chart 2.

**Chart 2 Three categories of accounting policies in the notes**

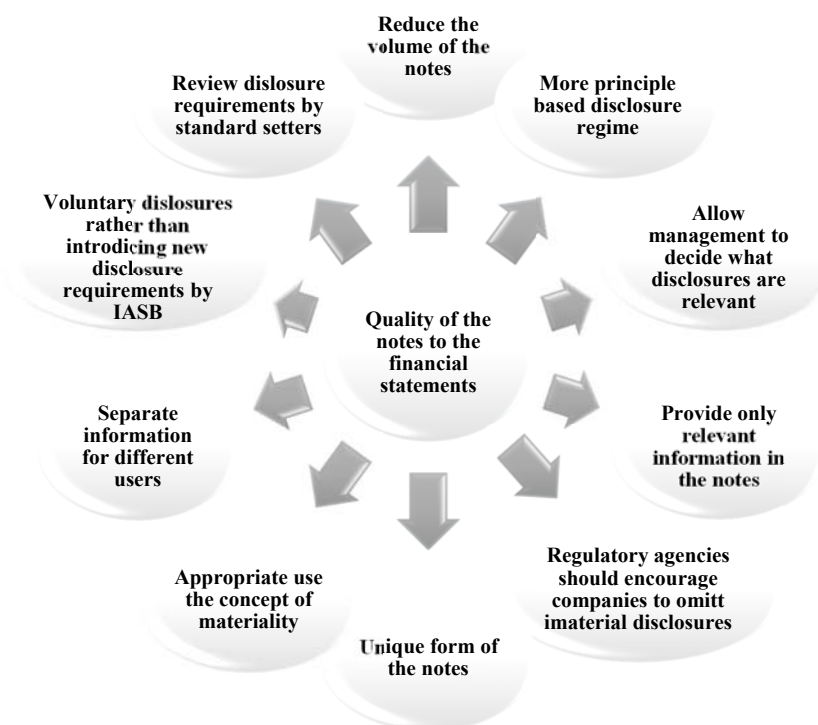
Source: IASB - Snapshot: Disclosure Initiative—Principles of Disclosure, available at: <http://www.ifrs.org/Current-Projects/IASB-Projects/Disclosure-Initiative/Principles-of-Disclosure/Documents/Principles-of-Disclosure-Snapshot-2017.pdf> [10.05.2017.]

The Discussion Paper explores possible methods for developing centralized disclosure objectives. It also discusses the possibility of placing all disclosure objectives and requirements in a single Standard that sets out all disclosures in the financial statements. In developing the disclosure requirements, the IASB uses the views of the New Zealand Accounting Standards Board (NZASB). NZASB suggests defining overall disclosure objective for each standard in order to ensure disclosure of important information in the notes. In addition, disclosure of essential (material) information in a single document and the remaining information in a separate document would also improve notes to the financial statements. It remains to see which access to disclosure requirements will be adopted by the IASB.

### 3.3 Suggestions for improving the notes to financial statements

In recent years, relevant accounting and non-accounting organizations have recognised problems in providing information to users of financial statements through the notes to the financial statements. Suggestions for improving the notes to the financial statements are presented in chart 3. In discussion papers of most organizations, the main problem of the notes is its' large volume so the main recommendation can be *to reduce the volume of the notes*. Furthermore, regulators should allow *more principles based disclosure regime*. To achieve this goal, standard setters should define and incorporate principles of disclosures in its' standards. Consequently, standards setters should *revise existing disclosure requirements*. For example, in IFRSs, disclosure requirements are specified in each standard. Each standard has many disclosure requirements and reporting entities, satisfying these requirements, disclose immaterial information that leads to large volume of the notes.

Chart 3 Improvements to the notes



Source: created by the authors

In order to maintain transparency, the entities should disclose in the notes only *relevant and material information*. Management should also use *more professional judgment* when deciding what information should be disclosed in the notes. *Regulatory agencies should encourage reporting entities* in this approach. Today, reporting entities publish more information than needed, fearing the possible sanctions of regulatory bodies. A *unique form* of the notes would also make it easier for users to find relevant information in the notes. Adequate application of the *concept of materiality* is also important in the compilation of quality and understandable notes to the financial statements. Since there are different types of users of financial statements, one of the possible solutions is *the compilation of two or more sets of notes* tailored to the information needs of different financial statement users. Furthermore, entities should be encouraged to disclose some information voluntarily, in an appropriate manner, without introducing new disclosure requirements in standards.

#### 4 Conclusion

Financial statements and the notes to the financial statements are important part of the annual report of the company. In the notes users can find useful information about financial position and performance which clarifies items presented in the basic financial statement. The notes are primarily focused on explanation of the financial information presented on the face of balance sheet, income statement, statement of changes in equity and cash flow statement, but they could also contain a certain degree of non-financial information which is very important in understanding of all business aspects of certain company. Notes have crucial

importance in obtaining a complete picture of the company and that is the reason why they are mandatory for all companies, regardless of their size.

The content of the notes is prescribed by accounting standards, but the form in which it should be presented to the users is not prescribed by any standard or regulation. Since the form of the notes is not standardized, different technical approaches for their presentation can be found in business practice. Consequently, it affects the comparability of the information, and therefore its quality. This can cause some difficulties in decision making process. According to the results of conducted research it can be concluded that there is regulated base for making notes in the form of accounting standards, but there are too many disclosure requirements which are prescribed by the standards. It especially refers to inadequate structure of the notes and high level of details which may cause difficulties for users of financial statements in finding relevant information. The results of conducting empirical research also contribute to this thesis. According to the empirical research it can be concluded that companies disclose information required by IFRSs but there are also a lot of requirements which are not relevant for all companies. On the other hand, some important nonfinancial information was not required and presented to the users.

The increasing length and complexity of disclosures have recently drawn the attention of many interested parties. Business practice, as well as relevant accounting and non-accounting organizations have pointed to the complexity and usefulness of the notes, especially for the smaller entities. In order to improve the quality of information presented in annual financial statements, especially in the notes, those organizations have recently conducted several projects on national and international level. As a result of these projects some recommendations for improving the quality of the notes have been provided. Recommendations refer primarily to reducing the volume and creating unique form of the notes. In that sense, only relevant and material information should be presented to the users. These recommendations can improve the quality of the notes to the financial statements and legitimate its purpose.

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## Supreme Audit Institutions Annual Reporting to Parliament and General Public – European Union Member States Experience

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**Abstract:** Supreme audit institutions (SAI) are institutions in charge of performing governmental auditing in a certain country. While performing audits, supreme audit institutions follow the International Standards of Supreme Audit Institutions framework and should exercise transparency and accountability by informing Parliament and general public on their activities. The paper investigates the ISSAI principles on SAI's annual activity reporting. Furthermore, the analysis of annual reports of Supreme Audit Institutions in the European Union Member States was done. The paper provides a detail comparative analysis of SAIs annual activity reporting specifics in whole European Union. The content and volume of annual reports were investigated and the paper presents the most common information which is available in the form of annual activity report. Other possible ways which SAIs use for the communication with general public were also explored. The obtained research results are compared to the identified requests from ISSAI Framework. We concluded that the majority of SAIs use similar practice for annual activity reporting which is in accordance with ISSAI requests. Also, there are certain differences in reporting noticed by this research. However, the research results indicate areas for further reporting improvement.

**Keywords:** annual activity report, general public, Parliament, SAI

### 1 Introduction

Supreme audit institutions add value, strengthen public responsibility and represent the guardian of public money. They play a key role in enhancing public efficiency. Besides that, they contribute to accountability and good governance and advocate value for money management. In doing so, they carry out financial, performance and compliance audit. Associated with that, the main tasks of supreme audit institutions are to enhance legality, regularity, efficiency, effectiveness and economy of financial management in public sector. By performing these tasks, SAIs take care of their annual activity reports since they represent the institutions activity, support their spending money and in general, have the great impact on different stakeholders. Still, there are some risks regarding inappropriate annual activity reporting. First of all, in case where supreme audit institution doesn't communicate its activity on a proper way, the risk of miscommunication arises. General public and other stakeholders could consider SAIs only as costs, without providing any or minimal benefits. On the other

hand, the evidence on the audit performed and obtained results could act preventive. The publication of taken recommendation in the form of cost savings could make even stronger impact. Annual activity report has the strength to inform interested users on main supreme audit institution's activities. It should be prepared carefully taking into consideration difference between the users (stakeholders) such as Parliament, general public, audited entities, external and internal auditors, scientists, media representatives, etc. In case where the SAI's messages on its activities come to the users, this can affect citizens' willingness in reaching two-way communication.

The scientific goals of this research were:

- to analyse ISSAI Framework and excerpt principles of SAI's annual activity reporting,
- to explore annual activity reports of supreme audit institutions in the EU,
- to compare the collected results on the activity report content to the nominated criteria recognized in ISSAI Framework,
- to investigate is there any impact of supreme audit institution's organisation type on the frequency of activity reporting,
- to research main type of audits in EU SAIs, audit methodology/standards,
- to find out most common social networks used as the communication tool of supreme audit institutions.

Two types of analysis were done for the purpose of this study. First analysis is about the investigation of ISSAI Framework on annual activity reporting principles and guidelines. This analysis represents the theoretical part of the research. The results from this stage will be used as the criteria for the evaluation of empirically obtained research results. In that context, the analysis of annual activity reports and websites of 28 supreme audit institutions in the European Union was done and the obtained results were compared to the abovementioned nominated criteria. Final conclusions are based on the comparative analysis of theoretical and practical issues on SAIs activity reporting.

## **2 ISSAI principles on supreme audit institution's annual activity reporting**

The International Standard of Supreme Audit institutions (ISSAI) Framework represent the collection of professional standards and best practice guidelines for public sector auditors divided into four main parts (ISSAI 2017):

- *"Founding principles in the form of The Lima Declaration.*
- *Prerequisites for the functioning of SAIs – state and explain the basic prerequisites for the proper functioning and professional conduct of SAIs.*
- *Fundamental auditing principles - contain the fundamental principles for carrying out auditing of public entities.*
- *Auditing guidelines - translate the fundamental auditing principles into more specific, detailed and operational guidelines that can be used on a daily basis for auditing tasks".*

There are several documents in the Framework which deal with annual activity reporting. Unfortunately, our analysis of ISSAI Framework has shown that, there isn't a single standard which prescribe the purpose and the content of SAI's annual activity reporting and the communication issues regarding Parliament and general public. Therefore, the analysis of

ISSAI Framework was done and the main principles on SAI's annual activity reporting are presented as follows. It has to be mentioned that the following principles refer to annual reports. However, there are many other principles and guidelines in the Framework which refer to individual audit reporting i.e. reporting on specific entity, project, activity or theme. These principles and guidelines aren't a part of this research.

## **2.1 Lima and Mexico Declarations on SAI's annual reporting**

Lima Declaration from 1977 is one of the first documents explaining founding principles for supreme audit institutions. This important document of governmental auditing has experienced a new edition of the Declaration but still prescribes vital directions, among other, in the field of reporting. Lima Declaration deals with reporting to Parliament and to the general public (INTOSAI, 1998):

- *"The Supreme Audit Institution shall be empowered and required by the Constitution to report its findings annually and independently to Parliament or any other responsible public body; this report shall be published.*
- *The Supreme Audit Institution shall also be empowered to report on particularly important and significant findings during the year.*
- *Generally, the annual report shall cover all activities of the Supreme Audit Institution; only when interests worthy of protection or protected by law are involved shall the Supreme Audit Institution carefully weigh such interests against the benefits of disclosure.*
- *The reports shall present the facts and their assessment in an objective, clear manner and be limited to essentials. The wording of the reports shall be precise and easy to understand.*
- *The Supreme Audit Institution shall give due consideration to the points of view of the audited organisations on its findings."*

In 2007 International Congress of Supreme Audit Institutions (INCOSAI) approved the Mexico Declaration. Although Mexico Declaration arranges SAI's independence issue, there are certain directions on SAI's annual reporting too. Some of the principles on SAI's reporting are the same as Lima's principles. This Declaration stresses that SAI should provide annual activity report to the Legislature or similar body and to make the report available to the public. Also, Mexico Declaration makes the distinction between the SAIs annual activity report and the reporting on the results of their audit work.

## **2.2 ISSAI 12 The Value and Benefits of Supreme Audit Institutions – making a difference to the lives of citizens**

ISSAI 12 The Value and Benefits of Supreme Audit Institutions deals with SAIs activities in the way they can make a difference to the lives of citizens. Despite the content of the ISSAI 12 is wider than reporting topic, the significant directions on annual reporting could be find out here. The most important principles on activity reporting are excerpted and presented in table 1. These principles seek from SAI to present the summary of common findings but also SAI should analyse trends and find out the root causes of certain problems. Further, it provides information on reports style, language used, communication tools, some parts of reports (mission, strategy, standards and methods used, ethic issue, external audit and peer review). Also, it stresses that SAIs should collaborate internationally.



**Table 1:** The excerpt from ISSAI 12 on SAI's annual activity reporting**Principle 3**

*SAIs should analyse their individual audit reports to identify themes, common findings, trends, root causes and audit recommendations, and discuss these with key stakeholders.*

*SAIs should report, as appropriate, on the follow-up measures taken with respect to their recommendations.*

**Principle 4**

*SAIs should report objective information in a simple and clear manner, using language that is understood by all their stakeholders.*

*SAIs should make their reports publicly available in a timely manner.*

*SAIs should facilitate access to their reports by all their stakeholders using appropriate communication tools.*

**Principle 6.**

*SAIs should periodically assess whether stakeholders believe the SAI is communicating effectively.*

**Principle 7.**

*SAIs should collaborate internationally within INTOSAI and with other relevant professional organisations in order to promote the role of the SAI community in addressing global issues related to public sector auditing, accounting and accountability.*

**Principle 8.**

*SAIs should make public their mandate, responsibilities, mission and strategy.*

*SAIs should use, as appropriate for their circumstances, auditing standards, processes and methods that are objective and transparent, and make known to stakeholders what standards and methods are used.*

*SAIs should manage their operations economically, efficiently, effectively and in accordance with applicable laws and regulations, and report publicly on these matters, as appropriate.*

*SAIs should be subject to independent external scrutiny, including external audit of their operations, and make available these reports to stakeholders.*

**Principle 9.**

*SAIs should adopt and comply with good governance principles and report appropriately thereon.*

*SAIs should periodically submit their performance to independent review, for example peer review.*

**Principle 10.**

*SAIs should publish their core values and commitment to professional ethics.*

SOURCE: ISSAI 12 The Value and Benefits of Supreme Audit Institutions – making a difference to the lives of citizens, available at [www.issai.org](http://www.issai.org)

### 2.3 ISSAI 20 Principles of transparency and accountability

SAIs play an important role in enhancing accountability and seek from audited entities appropriate level of transparency. On the other hand, SAIs should be a role model when it comes to transparency and accountability. It means, that a special care should be taken when preparing activity reporting in order to SAIs satisfy ISSAI 20 principles on reporting. The selected principles on reporting from the ISSAI 20 suggest that SAIs should present their financial statements and the opinion on audited statements, external assessment and other feedback of stakeholders, information on different types of conducted audit and overall audit outcomes. Moreover, the financial indicators such as budget, the usage of SAIs funds and other performance indicators are desirable. Next to possible elements of the report, ISSAI 20

gives recommendations for the visual identity of the report. It suggests the usage of summaries, graphics, video presentations, press releases.

**Table 2:** The excerpt from ISSAI 20 on SAI's annual activity reporting

<p><b>Principle 6.</b></p> <ul style="list-style-type: none"> <li>- SAI's financial statements are made public and are subject to external independent audit or parliamentary review.</li> <li>- SAI's assess and report on their operations and performance in all areas, such as financial audit, compliance audit, jurisdictional activities (SAIs constituted as Courts), performance audit, programme evaluation and conclusions regarding government activities.</li> <li>- SAI's make public what their total budget is and report on the origin of their financial resources (parliamentary appropriation, general budget, ministry of finances, agencies, fees) and how those resources are used.</li> <li>- SAI's measure and report on the efficiency and effectiveness with which they use their funds.</li> <li>- SAI's may use performance indicators to assess the value of audit work for Parliament, citizens and other stakeholders.</li> <li>- SAI's follow up their public visibility, outcomes and impact through external feedback.</li> </ul> <p><b>Principle 7.</b></p> <ul style="list-style-type: none"> <li>- SAI's constituted as courts report on sanctions and penalties imposed on accounting officers or managers.</li> <li>- SAI's also report publicly on overall audit outcomes, e.g. the government's overall budget implementation, financial condition and operations and, overall financial management progress and, if included in their legal framework, on professional capacity.</li> </ul> <p><b>Principle 8.</b></p> <ul style="list-style-type: none"> <li>- SAI's communicate openly with the media or other interested parties on their operations and audit results and are visible in the public arena.</li> <li>- Abstracts of audit reports and court judgements are available in one of the official INTOSAI languages, in addition to the country languages.</li> <li>- SAI's initiate and conduct audits and issue the relevant reports in a timely manner. Transparency and accountability will be enhanced if the audit work and related information provided are not obsolete.</li> <li>- SAI reports are available and understandable to the wide public through various means (e.g. summaries, graphics, video presentations, press releases).</li> </ul> <p><b>Principle 9.</b></p> <ul style="list-style-type: none"> <li>- SAI's publicly report the results of peer reviews and independent external assessments.</li> </ul>
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SOURCE: ISSAI 20 Principles of transparency and accountability, available at [www.issai.org](http://www.issai.org)

### 3 Empirical research results on European Union SAIs activity reporting

The second part of our research belongs to the empirical research conducted on the supreme audit institutions in the European Union. For the analysis purposes, web pages of 28 supreme audit institutions were investigated. A special attention is given to the annual activity reports which are sometimes displayed as an annual report, annual activity report or a performance report. Since not every supreme audit institution has published its full activity report, the reports displayed in mother tongue and/or abridged reports were observed too. In order to collect the data, we did research of SAIs web pages, available scientific and professional articles and books as well. The used methodology is common in this scientific area. For instance, Garde Sánchez, et.al. used the websites of all the Spanish SAIs to conduct a thorough review of them and to gather the necessary information for the research on best practices code of transparency and accountability. (Garde Sanchez, et.al. 2014). EUROSAI conducted the analysis of EUROSAI member SAIs websites on reaching supreme audit institution communication goals. (EUROSAI, 2017).

We explored total population of supreme audit institutions and the main research results are presented as it follows.

First, we explored the content of annual activity reports of supreme audit institutions in the EU and compare it to the nominated criteria recognized in ISSAI Framework.

The analysis of activity reports of supreme audit institutions in the European Union announces that, regardless of their organisational structure, all 28 EU SAIs prepare and disclose annual reports which portray the description of main activities engaged by the institution (table 3). This is not surprising since Lima Declaration prescribes that SAIs should publish their findings annually and independently to Parliament or any other responsible public body.

**Table 3:** The main content of annual activity report of Supreme audit institutions in the European Union

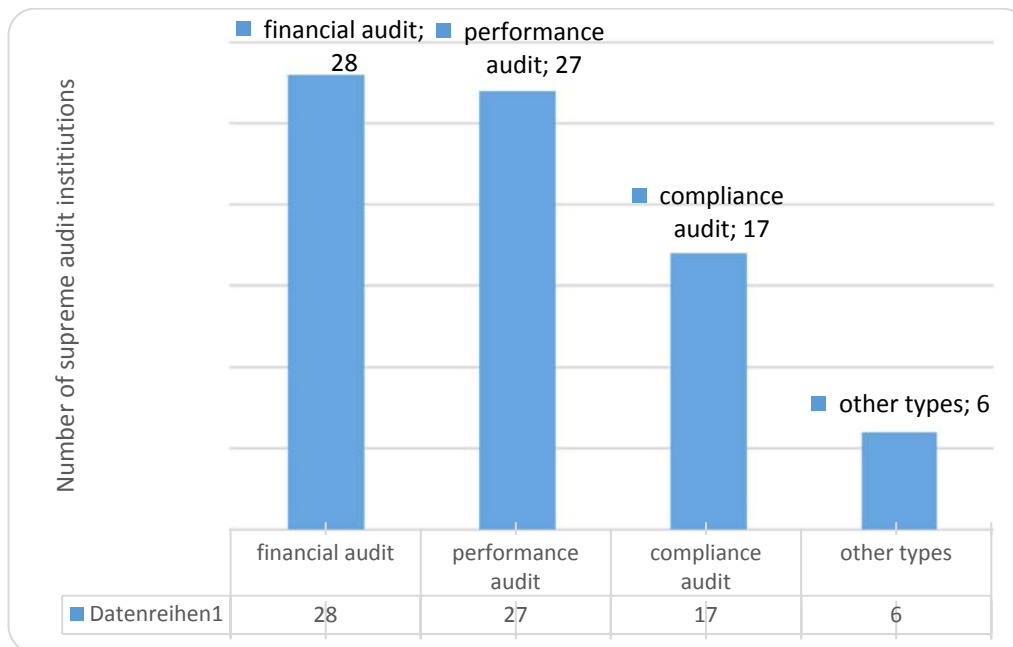
Mission and vision
Organisational structure
Key economic indicators, SAI's budget, cost savings
Number of employees, education
Activities, methodology, results per financial, performance and compliance audits, trend in financial management, recommendations, follow-up of recommendations
Assessment of audit work planned
Priorities for the following year
Analyses and responses to parliament
Internal control overviews
Legislation overview
Relation with other institutions
International activities
Environmental protection
Internal audit opinion
SAI's financial statements and independent auditor's opinion

The content and volume of investigated annual reports vary from country to country. However, the analysis has shown that some information is always presented in such reports.

Mission, vision and SAI's organisational structure, budget and number of employees are usually described as the introduction of a particular report. This is common, because in the very beginning the reader is informed about the institution. Further, principle 8 of ISSAI 12 seeks the publication of SAI's mandate, responsibilities, mission and strategy. Since SAI's budget is financed by state budget, SAIs aim to stress key economic indicators, especially, cost savings and the contribution of SAIs in the form of financial measures. The significant part of annual activity report belongs to the description of conducted financial, performance, compliance audit as the principle 6 of ISSAI 20 prescribes.

Our empirical research results show that every supreme audit institution in the EU performs financial audit. Other than that, performance audit is highly recognised. Only Greece doesn't make performance audit. *"On 11-12 June 2015, the Belgian Court of Audit representatives introduced the performance audit in public accounting in an evolutive context during the 24 Hour Belgian-Dutch Meeting of Publicists."* Compliance audit is conducted as a separate type of audit in 61% of the explored SAIs. This doesn't indicate that other SAIs do not test compliance. More comprehensive analysis of the SAIs annual activities reports' content points

out that compliance and regularity issues have been tested as a part of financial and performance audit, rather than as an individual audit subject. In six countries, it has been noted that SAIs also give advices, do some technical audits, special audits and investigations or specific audits. Cooperative audits are also an example of possibilities how SAIs cooperate, share knowledge and experience.



**Figure 1:** Types of audits

In accordance with ISSAI 20, the activities conducted during a year, as well as the applied methodology, are presented in the report. The special attention is given to the summarised results of financial, performance and compliance audits.

According to ISSAI 100 SAIs "should declare which standards they apply when conducting audits, and this declaration should be accessible to users of the SAI's report."

**Table 4:** Audit methodology and standards

	national methodology/standards	INTOSAI/ISSAI	ISA
number of SAIs	15	21	3
percentage	53,57	75,00	10,71

More than half of supreme audit institutions have developed their own national standards or policies and rules. Besides, 21 SAIs also use ISSAI and/or INTOSAI standards. Three supreme audit institutions have stressed that their methodology is related to the International Standards on Auditing (ISA) issued by the International Auditing and Assurance Standards Board (IAASB) of the International Federation of Accountants (IFAC). Since the ISSAI framework includes ISA standards on the fourth level Auditing Guidelines, this set of standards is also used by other SAIs for performance of financial audit.

Not rarely, SAIs provide statistic information about the types of auditor's opinion in the case of conducted financial audits. Further, the summary of identified weaknesses and recommendations are discussed in the report. This is done because, ISSAI 12 The Value and

Benefits of Supreme Audit Institutions requires from SAIs to analyse common findings, trends, root causes and audit recommendations, and present taken follow-up measures.

The analysis of annual activity reports of SAIs in the EU has shown that SAIs emphasise follow-up audit information, as ISSAI 12 seeks. In addition, ISSAI 20 calls for the presentation of *overall audit outcomes, e.g. the government's overall budget implementation, overall financial management progress*. Seeing that SAIs have often been asked to give their opinion about legislation regarding public spending money and financial management, a part of SAI's report could be a legislation overview. Those SAIs who perform audit of financial management, present the main overview of state financial management. In the same way, the reader of the report will find out internal control overviews.

In order to interchange the information on state audit profession, supreme audit institutions are usually the members of professional institutions such as INTOSAI, EUROSAI, EURORAI etc. Since ISSAI 12 requires that *SAIs collaborate internationally within INTOSAI and with other relevant professional organisations*, information on the membership of the investigated EU SAIs is disclosed in the paragraph which informs the relation with other institutions. Also, international activities often include joint, concurrent or coordinated audit, professional visits among the institutions, so this segment is also explained in the report. It should be pointed out, that our analysis' results indicate also information which is not so often disclosed. A very few supreme audit institutions disclose information regarding their role in environmental protection. Today, the environmental issue is an important part of state audit. On one hand, environmental audit could be taken by a SAI and on the other, there are challenges in front of a supreme audit institution in the form of its environmental friendly attitude. In 2016, the INTOSAI Working Group on Environmental Auditing has published the guidelines for SAIs' Greening Initiatives. The guidelines *"encourages SAIs to carry out more audits of environment and sustainable development issues and encourages SAIs to be environmentally responsible, resource efficient and minimize pollution of the environment"* (WGEA, 2016). Since the guidelines are issued in 2016, it can be expected that in the future, environmental issue will have growing significance in the activity report.

Lima Declaration gives the opportunity to SAIs to report on particularly important and significant findings during the year. In that context, supreme audit institutions provide some additional reports regarding their yearly activities or prepare reports at the request of parliament. For example, Luxembourg Court *"can present at any time, either at the request of the Parliament or on its own initiative, its findings and recommendations on specific areas of financial management in a special report. At the request of the Parliament, the Court of Auditors can express its opinion on draft legislation which has a significant financial impact on public funds, as well as on the management of the budget and on proposals for legislation relating to the accounting system of the State and other public sector bodies."* (Luxembourg Corte dei conti, 2015) Further, every four months the Italian "Corte dei conti" *"transmits to Parliament a report on the coverage of spending of the laws adopted during the period, as well as observations regarding the techniques of quantification of the burdens."* (Italian "Corte dei conti", 2010).

Considering the state audit work is important for achieving public accountability, the appropriate control of supreme audit institution is also needed. Other than that, some institutions use some other types of controls over SAI. For instance, in Croatian case, the

results of independent survey of external stakeholders and the results of internal audit are put in the report. Again, Ireland SAI has External Stakeholder Survey and Peer Analysis of comparative public audit organisations in other jurisdictions (Crowe Horwath, 2016) Interesting is an example of Latvian SAI which explains the quality management system of the State Audit Office in the report. According to the report, *"the supervision of the activity is ensured by tasks integrated in the everyday activities (approval, coordination, work quality assessment, division of duties and responsibility) and by targeted control measures (supervision of audit quality, assessment of audited systems, internal audit, conformity inspections)."* (Lativan SAO 2015)

ISSAI 20 prescribes that *"SAIs employ sound management practices, including appropriate internal controls over its financial management and operations; this may include internal audits and other measures"*, *"SAIs may also use audit committees, made up of a majority of independent members, to review and provide input to their financial management and reporting processes."* Besides, according to ISSAI 12 principle 8 *"SAIs should manage their operations economically, efficiently, effectively and in accordance with applicable laws and regulations, and report publicly on these matters, as appropriate."* This is why the institutions publish some indicators of their performance. Furthermore, ISSAI 12 states that *"SAIs should be subject to independent external scrutiny, including external audit of their operations, and make available these reports to stakeholders."* In certain cases, SAI's financial statements and independent auditor's opinion are a part of annual activity report. Also, a few SAIs publishes internal audit opinion as well. Such transparency is significant for improving confidence in state audit work. In Bulgarian example *"The annual financial statements of the National Audit Office shall be audited by an independent panel comprising at least two registered auditors. The members of the panel, as well as their number, shall be determined by the National Assembly."* Some other SAIs have been audited by audit firms (PWC, KPMG, Mazars) or by an independent chartered accountant. Usually, it is a word about financial statements audit.

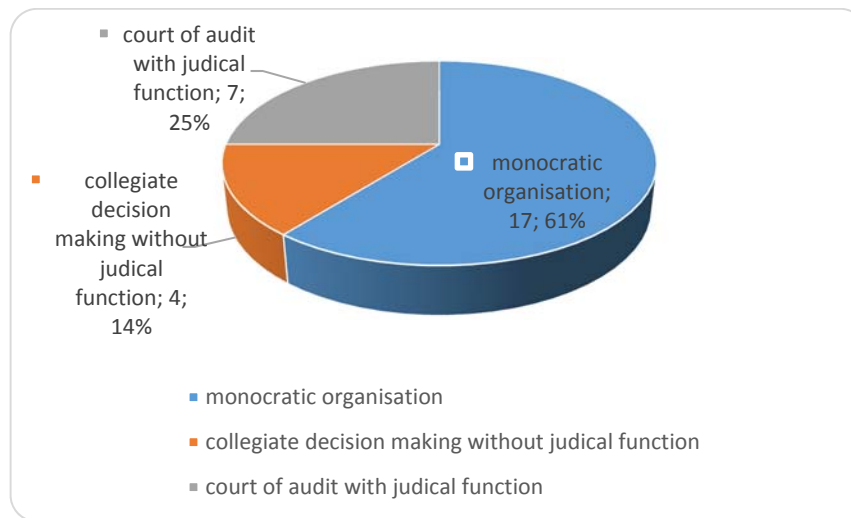
The style of writing the reports is very formal and informative. For instance, Hungarian SAI has taken the opportunity to inform about internal controls background when describing its internal controls system and risk management. (Hungary, 2016)

Finally, according to ISSAI 20 *abstracts of audit reports and court judgements should be available in one of the official INTOSAI languages, in addition to the country languages.* Our research has shown that SAIs use mother tongue for preparing annual activity report. However, the full content of reports are usually translated in English too. Also, some jurisdictions display their reports multilingually. Although, the majority of SAIs publish their full reports in English, in certain cases only abridged English version is available at the SAI's web page. Beside the SAIs web pages, some supreme audit institutions publish annual activity reports in their journals, national gazette or even use social networks for stressing some parts of the reports.

As for the tools used in the report preparation, beside text, there are tables, figures, even photos used for the activity presentation of a certain institution. The similar observation has been concluded by EUROSAI research: *"The use of infographics and interactive materials and subpages is becoming more common in the public sector."* (EUROSAI, 2017)

The length of SAI's report varies from country to country. Some reports are very extensive with the content of more than 500 pages (for instance Greece), while some others are narrower and institution's activities are explained within around 50 pages.

In order to investigate is there any impact of supreme audit institution's organisation type on the frequency of activity reporting we explored whether the SAIs provide activity reports for the periods shorter than one year.



**Figure 2:** The organisation of supreme audit institutions

As the figure 1 shows, 17 SAIs have the monocratic organisation of the institution. Seven countries have SAIs organised as the court of audit with judicial function and there is a collegiate decision making body without judicial function in four SAIs. The tendency in organisation of supreme audit institutions is in favour of monocratic organisation. According to the research results from 2009 (Žager, 2009) 41% of SAIs were organised as a monocratic audit office and now this percentage has been increased to 61%. The investigation results show that there isn't any impact of supreme audit institution's organisation type on the frequency of activity reporting. As it has already mentioned, all the EU SAIs disclosed their activity reports annually.

If SAIs do not communicate their results, stakeholders will notice only their costs without pointing out all the benefits that could achieve a SAI. Therefore, as ISSAI 12 says *"SAIs should interact appropriately with the media in order to facilitate communication with the citizens."* According to EUROSAI research, *"Parliamentarians have highly appreciated the initiative of producing youtube videos on the audit report findings"* (EUROSAI, 2017).

Twenty of twenty eight explored countries use social networks to present themselves and to communicate with public (table 5). Only eight SAIs do not use any social networks. Some of them has opened a certain social network, usually Facebook, however the networks are empty. The most common used social networks are Facebook, Twitter and LinkedIn. Our results are similar to the EUROSAI's results. Namely, EUROSAI's analysis of the current practice of the use of digital solutions by 50 EUROSAI SAIs indicates that *"most popular social networks among SAIs are LinkedIn - mostly used for recruiting purposes, Twitter - as a tool for dissemination of messages and gathering responses, Facebook – for the creation of the institution's narrative in which mere 35% of the EUROSAI members are present"* (EUROSAI, 2017).

**Table 5:** Social networks as communication tool of Supreme audit institutions in the EU

COUNTRY	SOCIAL NETWORKS
1. Austria	Facebook, Twitter
2. Belgium	No
3. Bulgaria	Facebook
4. Cyprus	No
5. Czech Republic	No
6. Croatia	No
7. Denmark	Twitter
8. Estonia	Facebook, Twitter
9. Finland	Facebook, Twitter, LinkedIn, Google+
10. France	Twitter @Courtdescomptes, Facebook
11. Germany	Facebook, Twitter
12. Greece	Facebook
13. Hungary	Youtube, Facebook
14. Ireland	LinkedIn
15. Italy	Twitter, Google+, Youtube
16. Latvia	Facebook, Youtube, Twitter
17. Lithuania	Facebook, Youtube, Twitter
18. Luxembourg	Facebook, Twitter
19. Malta	Facebook
20. Netherlands	Youtube, Twitter, LinkedIn
21. Poland	No
22. Portugal	No
23. Romania	No
24. Slovakia	Twitter
25. Slovenia	No
26. Spain	Facebook
27. Sweden	Facebook, Twitter
28. United Kingdom	Facebook, Twitter, LinkedIn, Google+, RSS Feeds, Slideshare

#### 4 Conclusion

Supreme audit institutions as the guardians of state budget have tasks to take care on financial management, financial reporting, economy, efficiency and effectiveness of public activities and projects and should have an impact on improving public compliance with the legislation. In all these activities SAIs should, as ISSAI Framework asks, add value to society and make a difference to the lives of citizens. In doing that, supreme audit institutions apply fundamental auditing principles and specific auditing guidelines. Further, each supreme audit institution develops its own policies and procedures about performing audits. In addition to individual reports for audit engagements or individual audit subject, they prepare and submit annual activity report to the Parliament or some other similar public body. Such reporting is important as reflects SAI's annual activity. After the Parliament's acceptance, the annual report is usually published to the general public. SAI can submit its complete or abridged report on the web site of the institution. Some institutions disclose the reports in the national official gazettes or in the supreme audit institution's journal. Mostly, supreme audit institutions share their audit reports with public or media through their official websites. As a useful tool for communication with public, SAIs use social networking websites, as Facebook, Twitter and LinkedIn. Annual activity reports should serve as an instrument of strong control



environment enforcing its preventing role and should provide an insight in SAIs activities and main achievements. Considering the great importance of this report, the annual activity reporting of supreme audit institutions in the European Union is in focus of this research. The research results point out that the observed SAIs follow the requests on annual reporting made by the ISSAI Framework. We noticed that there are some differences regarding the content and the volume of the report among the countries. However, this can be a result of the fact that there isn't one specific standard which prescribe all the requests regarding annual activity reporting. Good practices are presented within several parts of the Framework. However, the certain freedom is given to the SAIs and their national legislations. We found out that this could be the main reason for the noticed differences. Still, there are some areas for further improvement of annual activity reporting. As an example, the explanation of SAI's role in environmental protection is expected, since environmental audit has become hot topic worldwide and there are some new guidelines about "greening" SAIs available.

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## Accounting policy in a modern enterprise

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**Abstract:** In today's world in a globalization of economy and strong competition, business entities are interested in a wide range of multifunctional financial and non-financial information in the implementation of business processes. The aim of this article is to present the role of accounting policy in a modern enterprise based on an example of a selected entities in Poland.

**Keywords:** accounting policy, documentation of the accounting system, integrated report.

### 1 Introduction

The changing socio-economic transformations in the global world bring both development opportunities and threats to the functioning companies. Entrepreneurs wanting to remain on a highly competitive market and achieving their goals must have the right information to feed the decision-making process. The accounting policy plays an important role in today's business because it determines the form of reporting, which generates relevant information for stakeholders. It should be emphasized that the quality of the accounting policy will determine the value of generated information for users.

The aim of the article is to present the role of accounting policy in a modern enterprise based on an example of selected entities in Poland.

An applied research procedure determined the structure of this article, which consists of three parts together with an introduction and conclusion, containing a summary and conclusions. The first part discusses the essence of macro and microeconomic accounting policy, its objectives, and organizations involved in the development and promotion of accounting standards as guidelines for shaping accounting policies in a given country. The second part presents legal conditions regarding the obligation to conduct accounting policies. The concept and scope of the accounting policy and its impact on shaping financial reporting are presented. In the third practical chapter the structure of accounting policies in three surveyed entities was indicated, their imperfections were indicated and directions of improvement were proposed.

The method of analyzing subject literature, contents of legal regulations (national and international), internal documentation of the examined entities and the methods of comparison and reasoning were used to solve the presented research problem.

## 2 The essence of accounting policy - theoretical approach

Accounting policy in the economic literature is defined differently - in the wider (macroeconomic) or narrower (microeconomic) meaning. In the wider aspect the accounting policy is considered in the light of the policy of the State as well as the institutions and national and international organizations in the field of shaping the balance sheet<sup>1</sup>. As claimed by W. Brzezina the accounting policy is "the whole sphere of the activity of state bodies or institutions who are appointed by the national association of accountants, the purpose of which is standardisation of accountancy (Brzezina 1998). Similarly the accounting policy is defined by E. Jezierska as "the activities of state authorities, private organizations (national and international), enterprises and other entities in shaping the measurement system, description and interpretation of economic activities (accounting system) (Jezierska 2008). Also W. Brzezina points out that the accounting policy is "the whole sphere of normalisation through various type of legal provisions, the standards, methodological directives, in order to determine more general and detailed rules of the functioning of accountancy in a particular state in a certain period" (Brzezina 2000).

The presented views of the authors indicate the role, which the institutions and organizations of accounting play in the process of shaping the accounting system, including accounting policy. It is worth emphasizing that in the contemporary world, in the age of socio-economic changes, the need to improve the accounting system is justified so that it is adapted to the present times and global market conditions. A large role is played here by international institutions and organizations of accounting, which deal with the elaboration and promotion of international accounting standards. Their objective is to work towards minimising the differences in the accounting systems of individual states and harmonisation (comparability) of financial statements on the international arena. Taking into account the territorial coverage you can indicate three levels of the institutionalization of accounting (see figure 1):

1) international level

- International Council of Accounting Standards. International Accounting Standards Board (IASB), the effect of the work of which are International Financial Reporting Standards,
- Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting. The Intergovernmental Working Group of Experts on International Standard of Accounting and Reporting, (ISAR), controlled by the Conference in charge of Trade and Development (UNCTAD). The United Nations Conference on Trade and Development, (UNCTAD), the objective is to promote the creation of national and regional accounting standards, particularly in developing countries; reports from the annual sessions are published "International problems of accounting and financial reporting", guidelines for small and medium-sized enterprises, newsletters "ISAR Update,
- International Federation of Accountants The International Federation of Accountants, (IFAC), which aims to develop and strengthen the profession of accountant in the world,

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<sup>1</sup> It should be noted that the accounting policy in the English literature and the Polish law is defined as the accounting policy while in the German literature as a balance policy, but for economic practice it is not that important. In the article the definition of accounting policy was accepted.

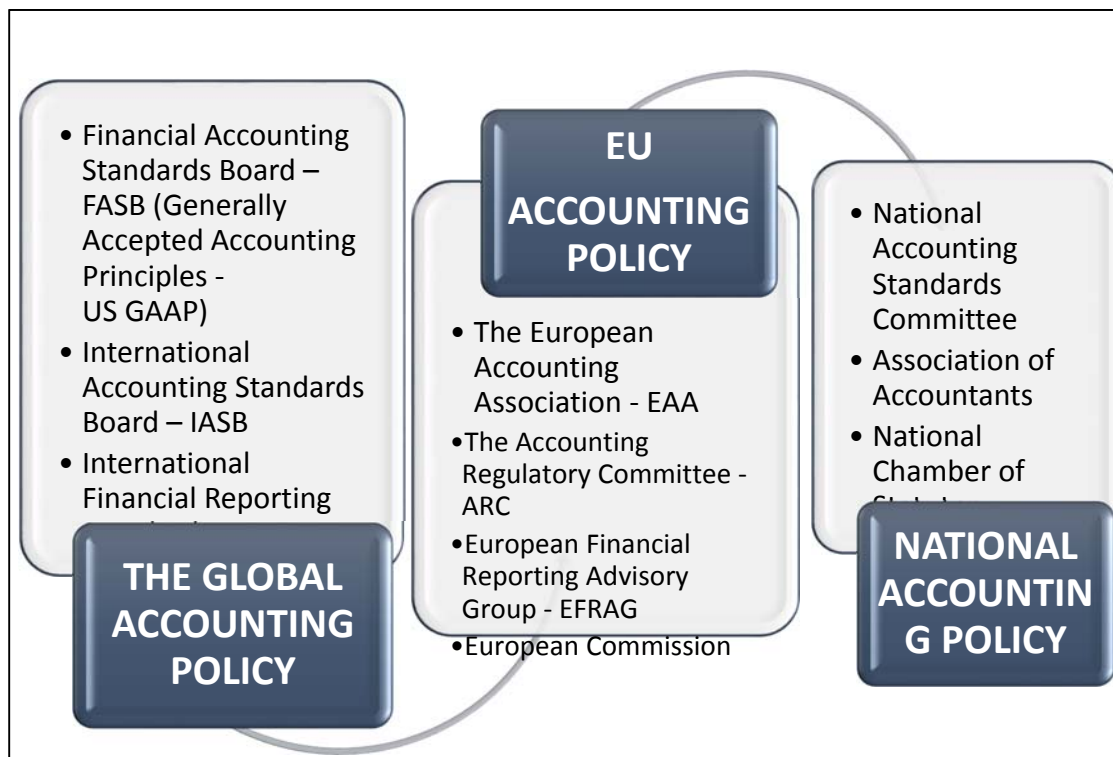
and support the process of the harmonisation of accounting through inter alia, publishing international directives of financial auditing,

2) regional level

- European Commission (European Commission), which is the executive body of the European Union, which issues directives, on the basis of which member states of the Union introduce their own regulations, among others, from the scope of the accounting policy

3) national level

- National Accounting Standards Committee,
- Association of Accountants,
- National Chamber of Statutory Auditors.



**Figure 1:** Accounting policy levels (Source: Own elaboration based)

You can generally assume that "there are two separate systems for the adjustment of accounting on an international scale. These are the accounting standards represented by accounting adjustments mainly in the United States, issued as Generally Accepted Accounting Principles. Nowadays Accepted Accounting Principles, US GAAP and accounting adjustments in the European Union, on which International Financial Reporting Standards are based. International Financial Reporting Standards - IFRS)".

It is worth emphasizing that the International Standards of Financial Reporting have an important impact on the shaping of the accounting system in the countries of the European Union including the accounting policy in Poland. "Directives of the European Union are part of the European company law, but do not constitute mandatory law for Member States. They include, inter alia, general rules for drawing up financial statements and as a general patterns, many solutions which take account different legal environment in various countries. Their

design is such that individual countries can retain specific solutions resulting from their legal regulations" (Dratwińska-Kania 2011).

The accounting policy in a narrower approach is identified with the policy of enterprise in the functioning of this accounting system. P. Kabalski concludes that the accounting policy is a collection of opinions, rules, accounting standards, interpretations and regulations used by units to draw up financial statements, selected from the accounting rules defined by the institutions of the higher level (Kabalski 2009). In the opinion of N. Artienwicz the accounting policy in the enterprise defines "optional rules provided for in the Accounting Law, which is selected by the head of unit so as not to violate any of the master rules a possible failure to observe will always expose the unit to the allegation of improper keeping the accounting" (Artienwicz 2011). In turn E. Walińska writes that "accounting policy includes rules, methods and procedures adopted by the management of enterprise when drawing up and presenting financial statements and its choice is the law of economic entity, guaranteed by the regulations of balance law and custom (Walińska 2010).

The presented opinions of authors indicate the mandatory and optional character of the rules, methods, principles, standards of legislation in the process of creating documentation of the accounting policy in the enterprise.

In the literature of the subject and business practice, the accounting policy is also seen from the perspective of achieving the objective of enterprise. M. Gawart thinks that "both international and national accounting policy in the form of statutory law regulations, professional standards of conduct, detailed guidelines and procedures are shaped by the legal and custom framework, in which enterprises pursue the strategic objectives assumed such as guaranteeing the continuation of activities, maximization of profit, increase of the market value of the company, maintaining liquidity" (Gawart 2008). In the opinion of E. Walińska and M. Michalak "Accounting policy is to reflect the efficiency and efficiency of the objective of the activities of the enterprise - growth of economic value and market value in the long term". In such an approach the accounting policy must take account the internal and external conditions of the functioning of enterprise, including (Walińska and Michalak 2014):

- predominant sources of funding (owner`s capital or creditor`s capital),
- characteristics of the market in which it operates,
- adopted strategy of operation,
- methods and management instruments used"

The views shown of the authors indicate a high role the accounting policy plays in the management of contemporary enterprise.

### **3 Legal conditions of the accounting policy**

The accounting policy is defined in both domestic and international law. In the light of the Accounting Act (Article 3 (11)), the accounting policy is defined as "... chosen and applied by

the entity authorized by law, including those defined in the International Accounting Standards (IAS), to ensure the required quality of financial statements."

According to the IAS 8, "Accounting Policies, Changes in Accounting Estimates and error correction", the accounting policies are "the specific principles, methods, conventions, rules and practices used by the entity in the preparation and presentation of financial statements" (International Financial Reporting Standards 2014).

Taking into account the legal regulations (the Accounting Act) in force in Poland, the accounting policy should include accounting rules concerning, inter alia, (See Article 10 (1) of the Accounting Act):

- determination of the financial year and its reporting periods,
- methods of valuation of assets and liabilities and determination of financial result,
- how to keep account books, including the company's chart of accounts, accounting records (...), description of the data processing system (...)
- a system for data protection and their collection (...).

In the absence of regulatory regulations, by adopting accounting policies, individuals may apply the national accounting standards issued by the Accounting Standards Committee. In the absence of a suitable domestic standard, individuals may use the International Accounting Standards (see figure 2). Adopting of the accounting policy and its updating are the responsibilities of the unit manager.



**Figure 2:** The connection between accounting policy in the international (global) and country sense in Poland (Source: Own elaboration)

According to the provisions of the Accounting Act (Articles 4 (1), 1a, 1b), the entities are obliged to apply the adopted accounting policies to fairly and clearly present the financial position and financial result. It should be added that (...) the entity is required to submit any additional information necessary to meet this obligation in the notes. Events (...) are recognized in the accounting books and disclosed in the financial statements in accordance with their economic content.

In the light of Art. 5 sec. 1 "(...) accepted accounting policies should be applied on continuously, making in the following financial years the same grouping of economic operations, valuation of assets and liabilities, including depreciation or amortization, determining a financial result and preparing financial statements so that in the coming years the information resulting from them is comparable (...)".

The legal regulations of the accounting policy point to the following aspects:

- obligatory application of accounting policies in entities,
- scope and detail of economic content of accounting policies,
- maintaining the principle of true and fair view of the property and financial situation and the financial result and presentation thereof in the financial statements,
- the obligation of the unit manager to approve and permanence of its updating.

When analyzing the legal conditions of accounting policy, it is important to pay attention to financial reporting as it constitutes the final stage in the processing of accounting data. It generates relevant information for stakeholders. Among the stakeholders are external customers - domestic and foreign, such as potential investors, lenders, customers, the public as well as internal users, eg. the board of directors, employees. Their information needs are focused on a variety of thematic aspects. They concern, among others, decision-making, economic and financial transactions, obligatory public-law settlements, settlements with contractors, maintaining financial liquidity, continuation of business, future (Maszczyk 2012). It is worth adding that the challenges of the modern world tend to seek development solutions aimed at the cooperation of economic, social and ecological innovations.

The wide range of information needs of stakeholders persuades to look at accounting policies through the prism of information users. Rightly according to A. Szychta, "Contemporary companies are obliged to extend their accounting goals, and consequently modify their registration structures, principles of measurement of economic events and the scope and type of information provided to a wide range of users. The purpose of accounting as a practical activity is to provide financial and non-financial information useful for economic, social and ecological decision-making through various stakeholders, and to account for economic and environmental responsibility for the individual's activity - to ensure social well-being "(Szychta 2003).



Recently significant changes in reporting have been introduced in the Polish accounting law in connection with the implementation of two EU directives<sup>2</sup>. These changes cover two issues (Kamela-Sowińska 2016):

- the structure of the financial statements, including the scope of the financial information disclosed therein, mainly by small and micro business entities (pursuant to Directive 2013/34 / EU),
- the obligation to cover financial reporting of non-financial disclosures related to the so-called Corporate Social Responsibility (CSR) and information on the diversity policy applied to the administration, management and supervisory bodies of an individual with respect to aspects such as age, sex or education and work experience, the objectives of this diversity policy, how it is being implemented, and the effects in a given period reported by some large units and groups (according to Directive No. 2014/95/EU). Changes in this case concern large public interest units.

Considering the legal conditions of accounting policy, it is worth emphasizing that the final form of accounting policy is defined by the legal regulations in force in Poland concerning the way of presenting in practice additional information. According to point 14 of Article 48 (1) of the Accounting Act the description of adopted accounting policies is disclosed in the notes to the financial statements.

Leading the discussion of the legislation in terms of the creation of the accounting policy it is reasonable to note that the existing regulations (Accounting Act) are both obligatory, meaning absolutely mandatory to ensure the presentation of a faithful picture of the financial position and the financial result of the company, as well as optional, giving the entity the right to choose certain methods, rules or solutions permitted by law, such as methods of valuation of assets and liabilities, method of accounting and presentation of financial information (Kiziukiewicz 2003). It is worth emphasizing that the accounting policy determines the value of financial information.

#### **4 Accounting policy in the Polish enterprises - case study**

Tests have been carried out in the three enterprises (facilities) marked as A, B, C. The selection of facilities to research is intentional - the entities shall meet the law criterion of the definition of a small unit in the light of Article 3.1c of Law on Accounting (Law dated 29th September 1994) (see table 1).

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<sup>2</sup> Directive 2013/34/EU of the European Parliament and of the Council of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC, and

Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups.

Table 1. Characteristics of small units tested

Name of entity	Object of business activity	Total assets of the balance sheet at the end of financial year (up to 17 million PLN)	Net revenue on the sale of goods and products in the financial year (Up to 34 million PLN.)	Average employment when calculating into full-time jobs (Up to 50 people)
Private Limited company „A”	Production - furnishings of the production department of meat processing plant (tables, hooks, metal racks, lockers)	15 million 460 thousand PLN	31 million 212 thousand PLN	142
Private Limited company „B”	Car transport, services	16 million 280 thousand PLN	32million 418 thousand PLN	180
Private Limited company „C”	Services - repair of devices and service of refrigeration equipment	12 million 800 thousand PLN	14 million PLN	47

Source: Own elaboration

The object of the research of author was the analysis of the source documentation of entities - accounting policy, financial statements and opinions of the employees of the accounting sections and managers of financial- accounting services, board and shareholders in the assessment:

- 1) compliance of content and elements of accounting policy with the requirements of the law on accounting, KSR and MSR,
- 2) method of disclosing the accounting policy in the financial statements,
- 3) selection of rules ( methods) of accounting to the size and character of (entity) in running economic business,
- 4) precision in the description of accounting rules,
- 5) description of economic events typical to the units researched,
- 6) frequency of documentation update for accounting policy
- 7) level of the satisfaction of the information needs of users,
- 8) impact of information on the nature and scope of decision taken.

Test of the opinion of employees of all financial and accounting sections has been carried out in the form of a survey and was added with the questionnaire of interview conducted with the managers and shareholders (individual conversations with the managers of all levels of management). The results of the research were presented in a narrative form.

According to the author's analysis of a documentation and interviews with the management board, the investigated entities "A", "B" and "C" did not accept the status of a small entity. In the opinion of the Management Board the simplification provisions adopted by small entities are too far-reaching and limit the scope of reporting information to the public, especially the external ones. They also add that, in the light of the provisions of the law, an adoption of the status of a minor is voluntary and not compulsory. Entities keep full accounting and prepare financial statements (introduction to the statement, balance sheet, profit and loss account,

additional information), according to Appendix No. 1 to the Accounting Act (basic information instead of simplified).

In accordance with the results of the surveys and the analysis of documentation carried out by the author, the accounting policy was drawn up in Polish and in writing and adopted by the resolution of the board of unit about the implementation of accounting policy rules. The managers are aware that it is a mandatory documentation of the rules of keeping accounting in the company and conditions the shape of mandatory financial statements. It is approved in the facility "A" and "C" by the manager of the unit and in the entity "B" by the board and supervisory board.

It results from the analysis of documentation performed by the author that the content and elements of accounting policy include (see table 2):

- general rules for keeping the accounting books,
- methods of the valuation of assets and liabilities, and the determination of financial result
- factory plan of accounts,
- list of accounting books
- description of data processing system,
- description of the system of data protection and their collections.

As results from the opinion of the surveyed, the accounting policy recognizes elements and content in accordance with the applicable provisions of the Accounting Law.

It results from the analysis of documentation that the accounting policy is disclosed in the 'Introduction to the financial statements', in accordance with the provisions of law on accounting. In the opinion of the employees surveyed, the scope of the information disclosed in the 'Introduction to the financial statements' is too synthetic.

The choice of the type of rules (methods) of accounting for the size and the nature of (entity) of running business in the opinion of the people surveyed is generally appropriate. The precision of their description raises some reservations. Respondents believe that the rules of accounting policy in all the companies studied are not described in detail. They are adopted in the content directly resulting from the Law on Accounting. Description of economic events as they demonstrated is too general to the specifics of business and service production run activities in the units studied. Respondents believe that they should be more precise and adapted to the specificity of the business run.

In the opinion of respondents, update of the documentation of accounting policy in all facilities is made up to date - in case of a revision of the legal provisions or new organizational projects implemented. Such action affects the quality of the reporting information.

It results from the conversations held with the managers that the level of the satisfaction of the information needs of users of financial statements (as the final stage of data processing from accounting), is insufficient. They pointed out to the limited scope of information with non-financial nature, e.g. on intangible resources (knowledge, access to the market and

participation in it, reputation of the company) which affect the relations of the company with the surroundings, determine business transactions concluded on the market.

Table 2. Content of accounting policy

<p>1. GENERAL RULES OF KEEPING ACCOUNTING BOOKS</p> <p>1.1. Place of keeping accounting books</p> <p>1.2. Specifying the financial year and reporting periods comprising it</p> <p>1.3. Opening and closing accounting books opening and closing of the accounts .</p> <p>1.4. Method of keeping the accounting books The keeping of the accounts .</p> <p>1.5. Accounting documents accounting Documents</p> <p>1.6. Adjustments of errors in accounting documents</p> <p>1.7. Records in accounting books</p> <p>1.8. Adjustment of errors in accounting records</p>
<p>2. METHODS FOR THE VALUATION OF ASSETS AND LIABILITIES, AND THE DETERMINATION OF FINANCIAL RESULT</p> <p>2.1. Values used in the valuation of assets and liabilities</p> <p>2.2. Methods for the valuation of assets</p> <p>2.3. Methods for the valuation of liabilities</p> <p>2.4. Methods and dates of the inventory of the components of the assets of unit</p> <p>2.5. Methods for determining the financial result</p>
<p>3. FACTORY PLAN OF ACCOUNTS</p> <p>3.1. List of general ledger accounts</p> <p>3.2. Rules for keeping the accounts of subsidiary books and their links with the accounts of general ledger</p>
<p>4. LIST OF ACCOUNTING BOOKS</p> <p>4.1. Register</p> <p>4.2. General ledger</p> <p>4.3. Subsidiary books</p> <p>4.4. List of turnover and account balances of general ledger</p> <p>4.5. List of account balances of subsidiary books</p> <p>4.6. List of assets and liabilities (inventory)</p> <p>4.7. List of data collections forming the accounting books on computer data carriers</p>
<p>5. DESCRIPTION OF DATA PROCESSING SYSTEM</p> <p>5.1. Description of data processing system using the computer</p> <p>5.2. Description of IT system:</p>
<p>6. DEASCRPTION OF THE SYSTEM OF DATA PROTECTION AND THEIR COLLECTIONS</p> <p>6.1. Data protection</p> <p>6.2. Data carriers</p> <p>6.3. Storage of collections</p> <p>6.4. Time of the storage of collections</p> <p>6.5. Rules for data sharing</p> <p>6.6. Data storage and their collections after cessation of business activity</p>

Source: Own elaboration based

In the opinion of respondents, update of the documentation of accounting policy in all facilities is made up to date - in case of a revision of the legal provisions or new organizational projects implemented. Such action affects the quality of the reporting information.

It results from the conversations held with the managers that the level of the satisfaction of the information needs of users of financial statements (as the final stage of data processing from accounting), is insufficient. They pointed out to the limited scope of information with

non-financial nature, e.g. on intangible resources (knowledge, access to the market and participation in it, reputation of the company) which affect the relations of the company with the surroundings, determine business transactions concluded on the market.

In the opinion of the managers financial information affects mainly decisions with respect to the analysis of the evolution of cost level, control of business activity result, profit division or loss coverage, profitability test, presentation of the image of unit in the settlements with public-legal and financial institutions.

## 5 Conclusion

Empirical research in "A", "B" and "C" companies has shown that accounting policies can play an important role in today's small business. It forms a mandatory financial reporting. It is worth emphasizing that the quality of accounting policies will determine the value of generated information for users. At the same time, the value of information is determined by the prism of its usefulness, meaning its usefulness and faithful presentation (International Financial Reporting Standards 2014).

Taking into account the importance of accounting policies in an enterprise, small business owners face important challenges in terms of its creation as well as the application of adopted solutions. It is therefore reasonable to present the requirements that define it.

- 1) The accounting policy must be consistent with the applicable legal regulations, including national and international accounting standards, which condition the presentation of a faithful picture of the entity's financial position.
- 2) The adopted solutions should be updated on a regular basis in the case of amendments to regulations or new innovative ventures so that reporting information can be useful.
- 3) The selection of accounting principles and methods should be appropriately tailored to the size and nature of the activity, eg production and service, in order to accurately measure and evaluate the performance.
- 4) Adopted accounting principles and methods should be precisely described in a clear and understandable manner for the user.
- 5) The description of economic events should be detailed and tailored to the specific nature of the business, which will allow for rational management of property and capital.

The accounting policy that respects these requirements shapes the value of financial information to users. These are mainly information about the financial situation to assess the liquidity and solvency of the entities, about the result of the activity to evaluate the performance and profitability, information on changes in the financial situation to assess the ability of the entity to generate cash and the needs of their use in the reporting period (Walińska 2011).

In the era of socio-economic changes and dynamically changing global market conditions, the reporting information does not fully meet the information needs of a small entity. Managers believe that in addition to traditional financial information, a non-financial information is essential to make economic, social and environmental decisions by stakeholders.

Considering the information needs of the users it was proposed to focus in the future on the design of the integrated reporting model or to improve the existing forms of financial

reporting for integrated reporting. The proposed model of integrated reporting generates multidimensional information, both financial as disclosed in the financial statements and non-financial in the social and environmental spheres. The disclosures are useful both to internal customers in the decision-making processes of a highly competitive international market and to external customers, eg potential investors (Maszczyk 2011).

It is worth mentioning that the construction of the integrated reporting model imposes automated re-engineering of accounting policies with tools that provide greater measurement, value evaluation and reporting capabilities.

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## Non-financial reporting for small and medium-sized enterprises in a legal and empirical context

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**Abstract:** Non-financial reporting as well as reporting of non-financial performance indicators are gain-ing in importance due to regulatory requirements (in particular the EU-Directive 2014/95 /EU and the German national CSR-Directive-Implementation-Act CSR-RUG). The EU-Directive 2014/95/EU on the disclosure of non-financial and diversity-related information as well as its implementation into national law obligates certain large companies within the European Union to submit a non-financial report from 2017. Although the EU-Directive 2014/95/EU has not made SMEs to compulsory preparers, this article adds to highlight the impact of the EU-Directive and the importance of non-financial reporting for SMEs. We expound at na-tional level first the new legal basis. On this we examine to which extend SMEs already pre-prepare and publish non-financial reports under common frameworks for non-financial report-ing. Databases are therefore analyzed in order to obtain a status quo on formally volunteer SME non-financial reporting. The results should support SMEs in assessing the significance of non-financial reporting as well as the suitability of available frameworks.

**Keywords:** non-financial performance indicators, Corporate Social Responsibility (CSR), small and medium-sized enterprises (SMEs), reporting

### 1 Introduction

Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU disclosure of non-financial and diversity information by certain large undertakings and groups, known as the “CSR Directive”, has been passed at a European Union level. The goal of the Directive is to take social and environmental reporting by companies in all sectors throughout the European Union to a comparably high level. At the same time, the CSR Directive is intended to help promote a sustainable global economy that takes the environmental, economic and social aspects of sustainability into account. To make available information of this nature, known as non-financial reporting, the companies to which the obligation applies may draw on national, European or supranational/international frameworks as they see fit. These involve, for example, the guidelines of the Sustainability Code (DNK) (Rat für Nachhaltige Entwicklung 2015), the European Eco-Management and Audit Scheme (EMAS) (European Union 2009) or the Global Reporting Initiative (GRI Standards) (Global Reporting Initiative 2016). The Commission is also being called upon to draw up non-binding guidelines for the future, to make it easier for companies to draw up non-financial information.



To enable the regulation to apply to the relevant companies for the financial year beginning 1 January 2017, the individual member states would have had to transpose the EU-Directive into their national legislation by no later than 6 December 2016. In Germany, the CSR Directive Implementation Act (CSR-RUG) was published in the Federal Law Gazette late, on 18 April 2017, with retrospective effect (Rat für Nachhaltige Entwicklung 2017). In accordance with s. 325 of Book IV of the German Commercial Code (HGB), interested members of the public can access the information to be supplied pursuant to the CSR-RUG by four months following the end of the financial year at the latest, i.e. from the end of April 2018 under normal circumstances (Kumm and Woodtli 2016).

In view of the growing interest in non-financial aspects of company operations, which is also becoming evident in the legislative process, and the resulting need for companies to report on their non-financial aspects, this essay will first expound the essential details of the German CSR-RUG and the affected preparer group. It will then expand on this to examine whether, and to what extent, the non-financial reporting obligation actually affects small and medium-sized enterprises (SMEs). In accordance with the EU-Directive, the CSR-RUG allows established frameworks to be used as a format for reporting. If such a framework is used, the fact must be made transparent. The frameworks generally follow the “comply-or-explain” principle. In terms of implementing the CSR-RUG, the Act makes provision for amendments to the HGB, particularly in connection with management reports and consolidated management reports.

## **2 Key details of the CSR-RUG**

In accordance with s. 289c HGB, the Act standardises the minimum requirements for non-financial reporting. Within this reporting framework, the business model of the companies covered by the reporting obligation must first be described in brief (s. 289c para 1 HGB). This is then followed by a minimum list of non-financial aspects on which the companies are required to report. Pursuant to s. 289c para 2 nos. 1-5 HGB, this minimum list must include the aspects identified in Fig. 1. S. 289c para 3 HGB states that non-financial reporting must include details on the listed aspects if they are needed to provide an understanding of the course of business, the business result, the situation of the corporation, and the effects of its activity on the specified non-financial aspects. The sequence of these aspects in the Act must not be understood as implying any specific priority order. If the reporting company does not submit any outline for the aspects in question, a “clear and reasoned explanation” must be given for the fact.

With regard to environmental matters, the non-financial report may contain details of current and foreseeable impacts of the business activity on the environment. Based on the wording of the Act, this may include information about greenhouse gas emissions, water consumption, air pollution, renewable and non-renewable energy use, or protection of biodiversity. With regard to employee matters, pursuant to s. 289c para 2 no. 2 HGB, information may be supplied on measures taken to ensure gender equality, on working conditions, observance of workers’ rights and those of the unions, and occupational health and safety. The aspect of social matters as per no. 3 may be accompanied by a description of measures relating to dialogue at a municipal or regional level, and ensuring protection for and development of local communities. With regard to observance of human rights, non-financial reporting may, in particular, include details on measures or guidelines in place to prevent human rights

violations. Finally, pursuant to no. 5, the aspect of combating bribery and corruption may be amplified with details on tools in place to deal with these offences (Bundesregierung 2016).

<b>Non-financial aspects</b>  as per s. 289c para 2 HGB	Environmental matters
	Employee matters
	Social matters
	Observance of human rights
	Combating bribery and corruption

**Figure 1:** Aspects of non-financial reporting, own representation.

Pursuant to s. 289 para 3 HGB, the appropriate non-financial performance indicators for these aspects must be included in the report insofar as they are relevant to an understanding of the course of business or the business situation. In our view it has to be clarified by the legislator whether preparers would have to publish a non-financial report every year in case they follow one of the accepted frameworks (see next section).

### 3 Scope of application of the CSR-RUG

In line with the requirements of the CSR Directive, the German CSR-RUG obliges large-scale enterprises of public interest to directly submit a non-financial report. Corporations, cooperatives and commercial partnerships with limited liability constitute large-scale enterprises of public interest if the following criteria are satisfied cumulatively:

- Classification as “large” as defined in s. 267 para 3 sentence 1 HGB
- Capital market orientation as defined in s. 264d HGB
- Headcount of more than 500 on average during the year

The same applies to banks and insurance companies with more than 500 employees. The regulations also apply in respect of Groups or for consolidated management reports.

The preparer group for mandatory non-financial reporting thus remains relatively small in numeric terms. In this, it follows the intention of the European Commission and Council to protect small and medium-sized enterprises (SMEs) against excessive administrative costs (European Union 2014), although in our opinion this does not mean that these entities are completely protected in this regard. In a public hearing by the Committee on Legal Affairs in Germany on 7 November 2016, the majority of invited experts expressed the view that all large-scale enterprises and groups, not only those with a capital market orientation, should be obliged to apply the non-financial reporting obligations. At the same time they criticised

the fact that the EU and German federal government were underestimating the cost to companies of meeting the regulations, in particular with regard to details of supply chains. A proposal by Germany’s Upper House therefore considers that limiting this reporting obligation to the first stage of the supply chain would be sufficient (Deutscher Bundestag 2016). SMEs in particular can be indirectly affected by the need to draw up a non-financial report or the need to provide respective data when the supply chain is included. Overall, we consider that there would be little practical benefit in entirely waiving the need to include aspects and details relating to supply chains.

<b>Preparer group</b>  as per s. 289b para 1 HGB	Large-scale company of public interest	Corporations
		Cooperatives
		Commercial partnerships with limited liability
	Large banks and insurance companies with a headcount of over 500	
	Large parent companies of public interest (for Groups)	

**Figure 2:** Preparer group, own representation.

It is observed that companies under common frameworks are not obliged to publish a non-financial report every year. E.g. under the DNK a two-year frequency is seen as appropriate. Hence, we see a major difference to financial-reporting obligations. This is also relevant for interpreting the investigation period of the empirical analysis (2010 – 2015).

#### 4 Object of empirical research

The object of the empirical research underlying this article is to investigate whether SMEs in Germany are being increasingly driven to publish non-financial reports (including on a formal voluntary basis) as a result of EU-Directive 2014/95/EU and its transposition into German national law by the CSR-RUG.

The hypothesis being examined in this article is as follows:

The number of non-financial reports by SMEs is increasing, particularly through the introduction process of EU-Directive 2014/95/EU.

The databases of two standard-setters, one with a distinct international focus and one national, have been used for the purposes of the review. This is where empirical analysis serves to “solve problems of content-based research involving systematic data gathering

and/or data analysis [...]” (Döring and Bortz 2016). The specific databases involved are those of the Global Reporting Initiative (GRI) and the Sustainability Code (DNK). Analysis using these databases requires the criteria under which the search must be performed to be specified in advance. These are selected in accordance with the possibilities afforded by the GRI and DNK databases to ensure that the result will contain the reports by those companies that are not obliged to submit a non-financial report under the CSR Directive. In multi-year review periods, the databases are evaluated by the number of non-financial reports by companies broken down by sector and the resulting developments are documented. If this method identifies a growing number of companies that publish a non-financial report, although they are not obliged to do so, the formulated hypothesis will have been validated.

The DNK user survey 2016 (Rat für Nachhaltige Entwicklung 2016) by the Council for Sustainable Development (RNE) is a central secondary source. It shows motifs for an application. The survey data is based on an investigation period from November 2015 to January 2016. Of a total of 21 responding SMEs, 12 reported that questions of reputation are the key reasons for applying the DNK. Likewise, the study reported that using the DNK had positive impacts on transparency for employees in terms of sustainability management (13 SMEs) and an improved understanding of subjects involved at an in-house level (16 SMEs). In addition, reporting forces the practice of sustainable trading within the company (13 SMEs). The main stakeholders in the reports are customers, employees and the broader public. This secondary data provides important findings which limit the strength of our investigation. However, it does not identify the number of non-financial reports from SMEs. The following empirical analysis provides data about a particular timeframe and highlights developments.

## **5 Empirical analysis**

To review the hypothesis of whether the introduction process of the EU-Directive has led to an increase in non-financial reporting by SMEs, the available databases from the two standard-setters identified above were searched. As the first step, the database of the supranational standard-setter “Global Reporting Initiative” (GRI) was searched. The period from 2010 to 2015 was considered in order to derive an appropriate trend from the relevant data. The database was selected based on the following parameters:

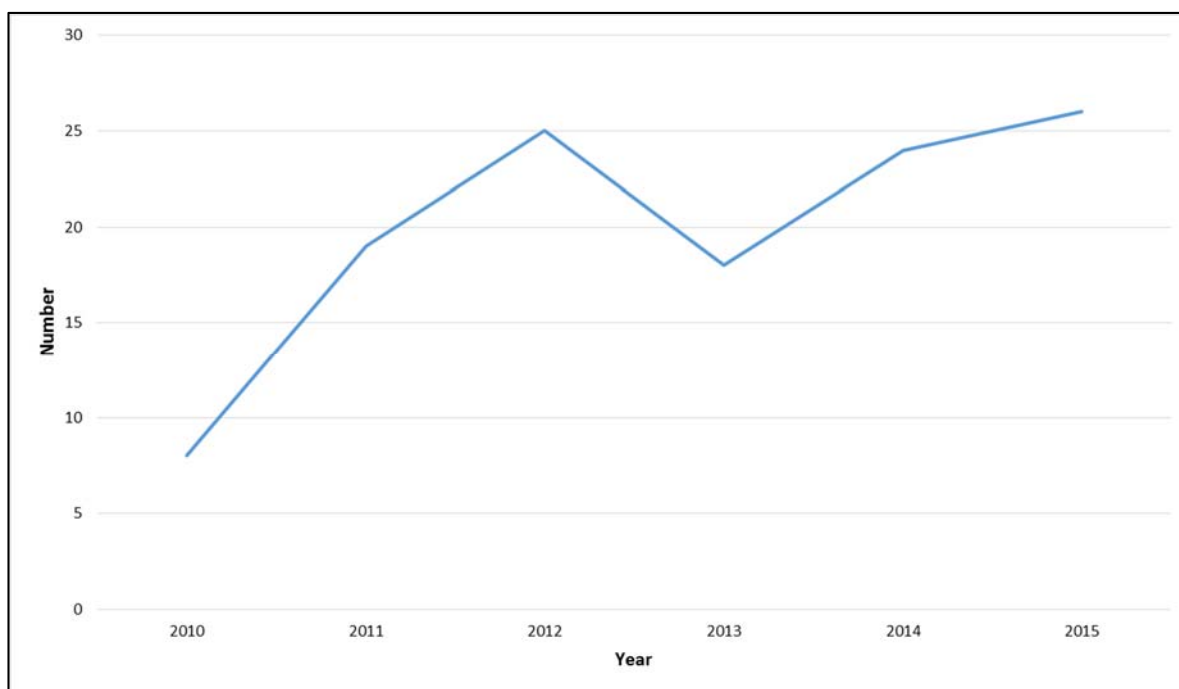
- Country: Germany
- Report Year: 2010 - 2015
- Size: SME

Table 1 shows the number of reporting companies for a six-year period. In 2015, a total of 26 organisations from Germany were identified that were classed as small and medium-sized enterprises and published a report in the GRI database for the 2015 reporting year. These organisations can be divided into different sectors. Because the GRI database by nature records only non-financial reports that companies independently upload to the database, it may be assumed that a larger number of companies prepare or draft a report but do not publish it with the standard-setters in question.

The data for the period under consideration shows a clear increase in the years 2011 and 2012. The illustration below makes the trend clear.

**Table 1:** Number of non-financial reports (GRI) by SMEs broken down by sector, own representation.

Sector	2010	2011	2012	2013	2014	2015
Aviation	1	1	1	0	1	1
Chemicals	0	0	1	0	0	0
Commercial Services	1	1	1	0	1	1
Conglomerates	0	0	0	0	1	1
Construction Materials	0	0	0	2	1	1
Consumer Durables	1	1	1	1	0	2
Energy Utilities	0	0	0	1	0	0
Financial Services	1	2	2	2	3	4
Food and Beverage Products	1	4	2	4	1	2
Health Care Products	0	0	0	0	1	1
Household and Personal Products	0	1	1	1	2	1
Logistics	0	0	0	1	0	1
Non-Profit/Services	0	0	3	1	2	1
Other	1	4	5	1	2	2
Public Agency	0	0	0	1	2	1
Real Estate	0	1	2	1	2	2
Textiles and Apparel	0	1	1	0	2	2
Tourism/Leisure	2	3	5	2	3	3
<b>TOTAL</b>	<b>8</b>	<b>19</b>	<b>25</b>	<b>18</b>	<b>24</b>	<b>26</b>

**Figure 3:** Changes in the number of non-financial reports (GRI) by companies, own representation

In a second stage, we examined the database of the “Council for Sustainable Development” in Germany, which published the Sustainability Code (DNK). The DNK database contains data only from 2010 onwards. Based on the selection criteria identified above, the database was selected using the following parameters:

- Company of domicile: Germany
- Reporting years: 2010 - 2015
- Stock market listing: none

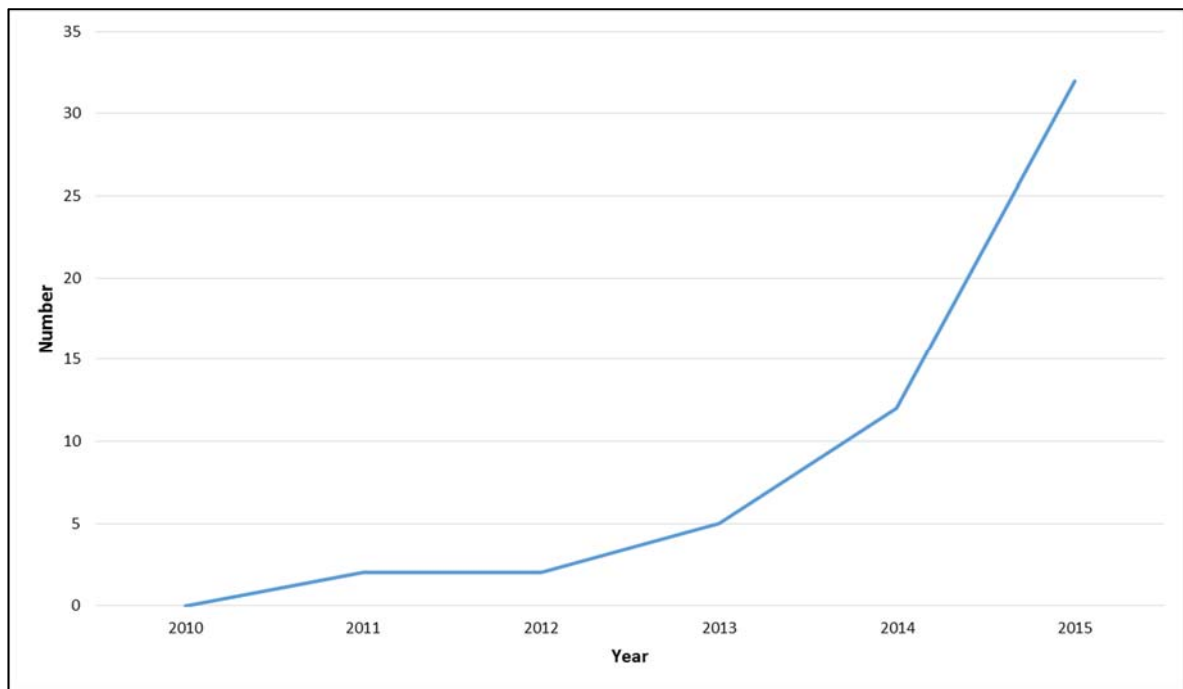
These criteria identified approximately 200 preparers over the years 2010 - 2015. Furthermore, the data from the DNK database has been adapted in order to identify SMEs from the 200 companies according to s. 267 para 2, 3 sentence 1 HGB. The Act sets limits with up to 250 employees, 20 Mio. EUR balance sheet total and 40 Mio. EUR sales proceeds. For identification, each preparer was investigated. Nevertheless, judgements needed to be applied in several cases. The result reduced the number of preparers to 44.

**Table 2:** Number of non-financial reports (DNK) by companies broken down by sector, own representation

Sector	2010	2011	2012	2013	2014	2015
Automotive	0	0	0	0	0	1
Consulting industry and agency services	0	0	1	1	4	11
Educational institutions	0	1	0	1	1	0
Electrotechnical and electronics industry	0	0	0	0	0	1
Raw materials industry	0	0	0	0	1	1
Trade	0	0	0	1	0	2
Craft industries	0	0	0	0	1	2
Information and communications	0	0	0	0	0	1
Consumer goods industry	0	1	0	1	0	2
Media and information service providers	0	0	0	0	0	2
Other	0	0	0	0	1	0
Other services	0	0	0	1	1	5
Tourism; hotel and hospitality	0	0	0	0	1	2
Events and trade fairs	0	0	0	0	1	0
Housing and real estate	0	0	1	0	1	2
<b>TOTAL</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>12</b>	<b>32</b>

The data for the period under consideration shows a clear increase from 2013 onward. The illustration below makes the trend clear.

In the DNK database for 2015, for example, the selection based on the adjusted parameters shows 32 non-financial reports from SME preparers. These preparers can be assigned to 15 different sectors, based on the parameters of the Council for Sustainable Development. The result of the analysis thus produces only those companies that are not listed on the stock market and therefore voluntarily publish a report based on the DNK standard.



**Figure 4:** Changes in the number of non-financial reports (DNK) by companies, own representation.

## 6 Critical discussion of results

The result of the GRI database evaluation shows that submission of a non-financial report by companies is not concentrated on any particular sector, but applies to a number of sectors. The number of identified non-financial reports by companies in the individual sectors is, however, very low. At the same time, the analysis shows that individual sectors (e.g. financial service providers) are conspicuous to publish non-financial reports of this type.

Moreover, the analysis of the GRI database shows that reporting picked up noticeably in 2011. Although EU-Directive 2014/95/EU was passed not before in December 2014, relevant activities on the part of the companies can be identified in the run-up. On the part of the EU, the European Commission services arranged a number of informal workshops between September 2009 and February 2010 that looked at the disclosure of non-financial information from the perspective of the various stakeholders. These were linked with appropriate consultations with the companies (European Commission 2010). In April 2011, the summary report on the public consultation regarding the disclosure of non-financial company information was published. This was followed by several sessions by the EU Expert Group and a Commission proposal for an amending Directive on the disclosure of non-financial and diversity information by certain large undertakings and groups in April 2013, which ultimately led to EU-Directive 2014/95/EU. It may be presumed that the efforts of the EU (consultations) started to have an effect before EU-Directive 2014/95/EU came into force, as some companies adopted to the forthcoming regulations at an early stage. This may be the case for now affected companies as well as those, which are now directly affected.

The result of the DNK database analysis shows 15 main sectors in which companies publish a non-financial report. Reporting is again not concentrated in a particular sector but once again

covers a number of sectors in this case. The relative majority in this analysis is from the sector consulting industry and agency services, from which 11 companies published a non-financial report. Although there are companies that publish a non-financial report in the other sectors, their numbers are low.

A clear increase in non-financial reports may be seen for the years 2014 and 2015 in Fig. 4. One possible explanation may be found in the anticipation of the legal expert opinion from 2015 that confirms, for the DNK, that companies preparing reports under the DNK will be fully able to meet the requirements on non-financial reporting required by the EU with effect from the 2017 financial year. In particular, the DNK, based on its 20 criteria and comparatively easy comprehensible to understand, in our view will be of interest for SMEs which want to get a start into non-financial reporting.

In summary, the analysis of the two databases indicates that only a minority of SMEs and large companies that are not listed on the stock market already publish non-financial reports. The analysis of the two databases also shows that under our search criteria the number of non-financial reports by preparers using the DNK, which we consider easier to follow, is higher than for the GRI standard, and that more sectors are therefore represented in the GRI database. Moreover, it is not clear whether companies have to publish a non-financial report every year according to law.

## **7 Summary**

We may note that the EU-Directive and/or the CSR Directive Implementation Act directly affect the large-scale, capital market-oriented companies with headcounts of 500 or more, as they now are required to publish a non-financial report. Analysis of the databases from two major standard-setters clearly shows, however, that (small and medium-sized) enterprises in various sectors are also publishing these reports, even on a formally voluntary basis. The number of companies involved is comparatively small, though. For SMEs, it is important to review the possibility of preparing a non-financial report and discuss the associated advantages and disadvantages. It stands to reason that SMEs will comply with customer data requests, particularly from those falling under the CSR-RUG and or other transformations of EU-Directive 2014/95/EU in other member states. This will help maintain their customer relationships. The step toward further genuine reporting is an obvious one.

The new CSR-RUG will increasingly lead to the inclusion of supply chains in non-financial reporting, and thus SMEs will also be called upon to submit non-financial reports, or at least data in this connection. EU-Directive 2014/95/EU expressly refers to the associated expanded scope of responsibility on the part of large-scale enterprises of public interest. The inclusion of supplier structures will therefore indirectly draw SMEs into the process of providing non-financial aspects. Another point is that Germany's sustainability strategy also expressly identifies the need for sustainable procurement. The change to public procurement legislation in 2016 also strives for the increased inclusion of sustainability criteria in public contract awards (Bundesregierung 2017). Procurement by the public authorities in Germany represents a volume of about €280 billion per annum (Auswärtiges Amt 2016). Non-financial reporting, even if structured on a voluntary basis, would appear to be a practical approach in this context, as a means of improving the chances of being awarded a contract. Analysis of the databases also shows that there is still substantial room for SMEs in this area, since the number of units submitting reports is still very low.



It is up to both the large-scale enterprises of public interest and the SMEs to enter into a joint dialogue, gather the appropriate non-financial data and draw up a non-financial report based on existing frameworks. Incorporating the reporting function into the corporate strategy at an early stage can be a deciding competitive advantage for SMEs. Those SMEs that have completed this integration process can function as (non-financial) data suppliers within the supply chain of large-scale enterprises. This could be a criterion by which large-scale enterprises will determine their selection of SME suppliers in future.

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# The Effectiveness of Audit Quality Control Mechanisms in Croatia

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**Abstract:** In order to protect the public interest and ensure confidence in auditor's performance, it is essential to implement certain quality control mechanisms into the audit profession. Quality control procedures can be established by audit firms, entities that are the subject of audit and regulators. The purpose of this paper is to investigate the importance of different mechanisms of audit quality control from the standpoint of auditors and audit users. In order to explore how various participants in the audit process value different audit quality control mechanisms, a survey was conducted among three main groups of respondents: auditors, internal and external audit users. Research results suggest that the respondents perceive that all mechanisms of audit quality control have a positive influence on audit quality. When mutually comparing the average responses for individual control mechanisms, it can be concluded that the respondents equally value actively involved audit committees and external supervision, but they also assign greater importance to the internal quality control systems that are implemented at the level of audit firms. The results are expected, due to the fact that these systems act preventive at the source of potential problems.

**Keywords:** audit of financial statements, internal audit quality control system, audit committee, external audit public oversight, Croatia

## 1 Introduction

The main result of the auditor's work is to provide reasonable assurance that the financial statements are free of material misstatement. The need for an independent and external audit of financial statements is usually explained through the agency theory. According to the agency theory, it appeared when the management and the ownership functions were separated. As a consequence, it is possible that the managers will not always act in the best interest of owners, which then generates the need for establishing different forms of control over the behaviour of managers. However, auditors that are hired to reduce the agency costs can also be considered as agents, which means that the same agency problems might appear in the owner-auditor relationship. Quality control should ensure that auditors carry out their responsibilities towards stakeholders that rely on the credibility of information presented in audited financial statements.

Audit firms, as well as their clients, have a variety of audit quality control mechanisms at their disposal. Audit firms are required to implement a quality control system, while supervisory or audit committees of clients are assigned with the function of monitoring external auditors. On the other hand, external quality assurance can be organized either as monitoring or peer review. The purpose of this paper is to investigate the importance of different mechanisms of audit quality control from the standpoint of auditors and audit users. Although it is reasonable

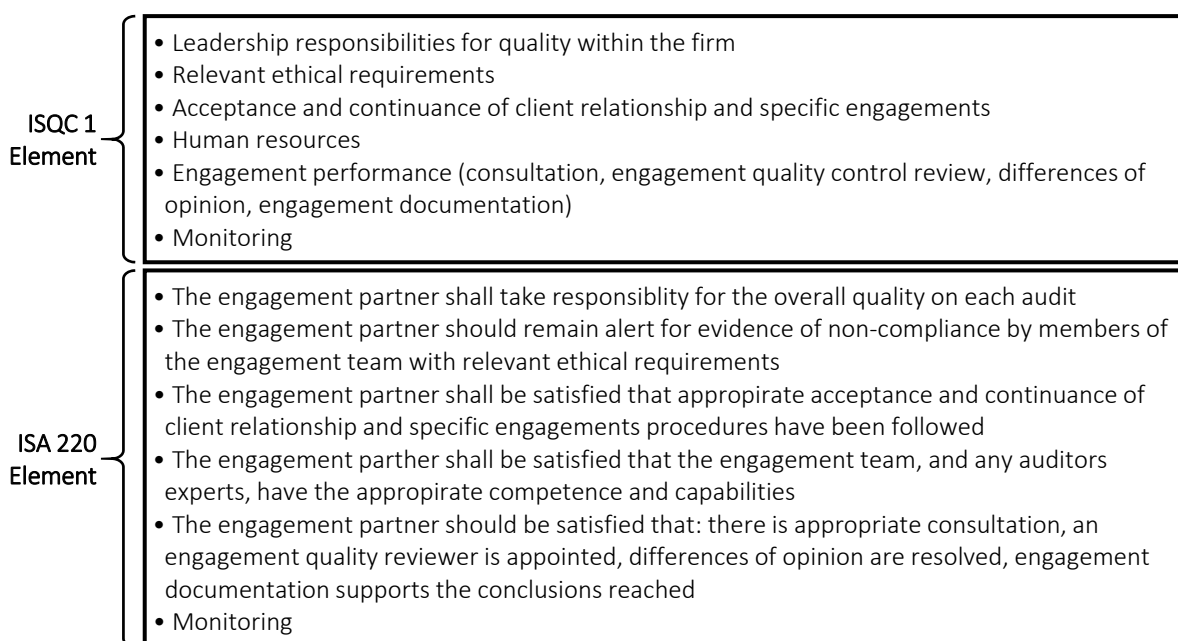
to expect that all types of audit quality control yield certain benefits to audit users, the aim is to investigate which mechanism is considered to be the most effective in the opinion of different stakeholders involved in the audit process.

## 2 Purpose and theoretical base of audit quality control mechanisms

Audit quality control mechanisms are aimed at improving audit quality in order to enhance transparent financial reporting. Presented financial statements constitute a significant information potential to various stakeholder groups in their decision-making process, which is possible only with relevant, sufficient and reliable information (Sever 2009). Due to the potential conflict of interest and opportunistic behaviour of management, different forms of control over financial reporting are necessary to increase the credibility of the financial information presented.

### 2.1 Internal quality control procedures

Quality control procedures implemented at the level of audit firms and audit engagements constitute the first line of quality control. “A key objective of quality control procedures is to improve audit quality by having experienced and competent staff reviewing the work performed by others, sharing their knowledge and expertise” (FRC 2017). The requirements for establishing audit quality control procedures at the firm level are set out through the International Standard of Quality 1 (ISQC 1), while the International Standard on Auditing 220 (ISA 220) contains requirements at the level of individual audit engagements. These quality control procedures and policies have to be implemented at every stage of the audit process, both before and after the audit opinion is issued. The elements of the audit quality control system are presented in Figure 1.



**Figure 1** Elements of a system of quality control (ISQC 1, Para. 16; ISA 220, Para. 8-23)

According to both standards, the objective of implementing audit quality control procedures at the engagement level and the audit firm level is to provide the audit with reasonable assurance that: 1) the audit/the firm and its personnel comply with professional standards, as

well as applicable legal and regulatory requirements, and 2) reports that are issues are appropriate in the circumstances (ISQC 1, Para. 11; ISA 220, Para. 6).

There are several benefits of effective system of quality control. It plays an integral part in ensuing consistency in every audit engagement by using standardised documentation and manuals (Bailie 2014). Apart from a positive impact on consistency, such solutions also serve as an effective training tools (Mansuco 1991). The risk of issuing inappropriate engagement reports should also be reduced, which in the end leads to lower litigation risk (Pang & Arnold 2014) and possible insurance premium savings (Mancuso 1991). In addition to these short-term benefits, the system of quality control may help audit firms in developing “a culture of quality in the long run” (Pang & Arnold 2014), resulting in higher client-retention rates, as well as continuous growth and professional development of audit staff. Although previous research has shown that the effect of establishing internal control systems generally has a positive effect on audit quality (Aobdia 2015), it has also been found out that the objectivity of the auditor that is in charge of internal oversight may be impaired by his own expectations and attitudes to individual audit engagement, as well as attitudes about a particular employee (Tan & Shankar 2010; Tan & Jamal 2001).

Due to certain changes in the audit environment, the standards setters have started to consider the need for revising standards that address quality control. The focus on audit quality has been intensified, which led to raising questions about whether the ISQC 1 and ISA 220 should be revised to better address encountered issues. Considering the feedback received, the IAASB supports the new *quality management approach* (QMA). Incorporation of the quality management approach in ISQC 1 would focus on the responsibility of the audit firms' leadership to take a more proactive role in managing quality risk in order to enable more easily accommodation to rapid changes in business environment. The main intention is to help audit firms in designing and implementing effective quality management systems that: 1) takes into account the specific characteristics of the audit firms (size and nature of the firm, the services it provides and the nature of the entities to whom the services are provided), and 2) provides enough flexibility to adapt to changes in the environment (IAASB 2015, Para. 57). These improvements should contribute to the effectiveness of the already implemented policies and procedures of the quality control system.

## **2.2 Audit committees**

One of the key internal corporate governance mechanisms through which shareholders influence the behaviour of managers to act in the direction of their interest is different committees (Tušek 2007). The tasks and organization of audit committee depends on whether the corporate governance system is organized as a one-tier or a two-tier system. Namely, an Anglo-American or one-tier model implies the establishment of a single board of directors, which unites the supervisory and management function. In such a system, the audit committee is a specialized sub-committee within the board of directors. On the other hand, a continental or a two-tier model of corporate governance implies establishing two boards: the management (which has the role of managing and controlling the company) and the supervisory board (consisting of non-executive directors who supervise and monitor company's operations). The members of the supervisory board then appoint the audit committee and assign their members with specific tasks. Despite the implemented model of corporate governance, the crucial elements for the effectiveness of audit committees are the

independence and expertise of professionals who are assigned with the function of supervising the financial reporting of the company.

The new accountability of auditors to audit committees was a result of large corporate scandals (namely including Enron). The concern about the quality and integrity of accounting information resulted in a drop in investor confidence, which triggered the reaction of regulators. The requirements for establishing an audit committee are set out in the United States Sarbanes-Oxley Act (ICAEW 2008) and the Directive 2014/56/EU of the European Parliament and of the Council. Some of the tasks of the audit committee include issues related to the appointment of an auditor, the contracting audit fees and other fees for the provision of non-audit services, the potential termination of the contract, as well as supervising the level of independence and auditor objectivity. The audit committee's responsibilities have further expanded as part of a major audit reform that began in 2010 as a result of the 2008 global financial crisis with the aim of strengthening the stability of the overall financial system. There was a need for detailed analysis and re-examination of the role of auditor and the existing regulatory framework. Since the audit committee should consist of independent and professional individuals who have knowledge of accounting, auditing and the activities in which the entity operates, the extension of its responsibilities should certainly contribute to the quality of financial reporting.

Previous research has shown that the audit committee effectiveness had a significantly positive relationship with financial reporting quality (Kamolsakulchai 2015; Miko & Kamardin 2015). Specifically, the audit committee's independence, experience of audit committee members and audit committee meetings have a significant negative correlation with discretionary accruals, which are used as a proxy for earnings management (Soliman & Ragab 2014). Companies that in general have effective monitoring mechanisms in the form of corporate governance are less likely to allow earnings management because such opportunistic behaviour causes uncertainty about the economic value of the company (Saleem *et al.* 2015). A survey conducted among the members of audit committees of US publicly traded companies also showed that 92% of the respondents think that the increased audit committee oversight has a positive impact on the overall audit quality, while 76% of them expressed a positive opinion about the fact that the external auditor is hired by and directly accountable to audit committees (ICAEW 2008). However, the effectiveness of audit committees is under the influence of many factors, such as financial literacy of their members, ability of members to ask relevant questions, provision of remuneration to members of the committee, committees' willingness to periodically evaluate itself and provision of regular training for members (Chukwunedu *et al.* 2014). As for the impact of recent regulatory changes regarding the responsibilities of audit committees, study on the UK new reporting regime showed that the changes are associated with an improvement in audit quality, while there were no significant consequences in the form of audit delay or increased audit fees (Reid *et al.* 2015). On the other hand, the results of the research conducted in the US indicate that "CFOs often continue to significantly influence the external audit fee negotiation despite regulatory requirements placing the primary responsibility for audit fees with the audit committee" (Haimowitz 2014), suggesting that the power of audit committees in practice is lower than anticipated when initiating the reform.

### 2.3 External audit oversight

Given that the purpose of an audit is to protect the public interest by providing credibility to presented financial statements, audit quality control cannot be entirely left to audit firms and their clients. There are two ways of organizing external quality assurance: oversight by independent supervisory institutions – *monitoring*, and oversight conducted by other auditors – *peer review*. In accordance with the 2000 European Commission recommendations, both audit control methods are acceptable. However, when the oversight is conducted by independent external authority, it is essential to secure that the appointed supervisors actively track changes in auditing standards. On the other hand, in case the supervision of audit firms is conducted by other auditors, there may be concerns about the objectivity of the supervisors, which can be mitigated by the establishment of public oversight over the conduct of supervision (European Commission 2000).

Under the Sarbanes-Oxley Act, Public Company Accounting Oversight Board (PCAOB) inspections replaces the peer review model (Gunny & Zhang 2006). Similarly, each EU Member State should delegate the responsibility for oversight to one or more audit oversight authority. “In order to enhance the credibility and transparency of the quality assurance reviews performed in the Union, Member States quality assurance systems should be governed by the competent authorities designated by the Member States to ensure public oversight of statutory auditors and audit firms” (Directive 2014/56/EU, Para. 14). Regardless of how the external audit quality control system is organized, it should be kept in mind that its costs do not outweigh the benefits.

As for the benefits of establishing external audit supervision system, previous research has shown that such initiatives generally have a positive impact on audit quality. According to DeFond and Lennox (2017), PCAOB inspections improve the quality of internal quality control audits by encouraging auditors to remediate deficiencies in their audits of internal controls. Research results obtained by Gunny and Zhang (2006) go in favour of PCAOB inspections when compared with peer-review, since it has been discovered that the opinions from the PCAOB inspections are able to distinguish earnings quality, which is not the case with the peer-review opinions. However, the usefulness of the inspection reports for decision-making is questionable. Although the research of Löhlein (2016) showed that both peer reviews and government inspections are positively linked with an improvement in audit quality, external users do not perceive their reports as very useful for decision-making. Moreover, Lennox and Pittman (2010) found out that audit clients do not perceive that the PCAOB inspection reports are valuable for signalling audit quality. This is confirmed by the fact that only 24 out of 1604 clients of non-US audit firms in the period between 2006 and 2011 have dismissed their auditors within one year following the disclosed audit deficiencies in PCAOB reports (Song & Ye 2014). Apart from the lack of informativeness of the inspection reports, the high rates of findings continue to be of concern to regulators. According to the International Forum on Independent Audit Regulators (IFIAR) Report on 2016 survey of inspection findings, there are numerous deficiencies encountered in the areas of accounting estimates, internal control testing, revenue recognition and audit sampling (IFIAR 2017). Therefore, the positive impact of inspections on audit quality is not sufficiently manifested through the reduction of inspection findings.

### 3 The degree of audit quality control mechanisms' development in Croatia

Measures that have been implemented to improve the audit quality justify their purpose only if they are effective. When comparing Croatia to developed western countries, it can be expected that, due to fact that the audit profession in Croatia in general is relatively young, certain deficiencies in the audit quality control mechanisms also exist.

Audit firms in Croatia are required to act in accordance with the International Standards on Auditing – ISAs (Auditing Act, Art. 5). Therefore, they are obligated to establish an internal quality control system as mandated by the ISQC 1. A description of the internal quality control system and the statement of the administrative or managerial body on the effectiveness of its work is an integral part of the transparency report of audit firms that audit public interest entities (Auditing Act, Art. 17a). Inspection findings of the Croatian Chamber of Auditors (Table 2) show that the percentage of inspected audit firms with no established internal quality control policies and procedures is constantly decreasing. However, it is concerning that there is a significant number of audit firms where there is no evidence of functioning of such systems. Even when there are established policies and procedures, there are serious deficiencies in implementing them, especially regarding the last two elements of internal audit quality control system – *performing engagement* and *monitoring*.

**Table 2** Findings of the inspections carried out by the Croatian Chamber of Auditors (HRK) regarding the quality control system of audit firms

	2011/ 2012		2012/ 2013		2013/ 2014		2014/ 2015		2015/ 2016	
	No.	%	No	%	No	%	No.	%	No.	%
<b>There are no established policies and procedures for all parts of the quality control system</b>	12	26	12	20	10	14	13	17	1	1
<b>There is no evidence of the functioning of the ISQC1</b>	-	-	10	16	49	70	70	90	47	69
<b>There are established policies and procedures, but the audit firm does not act upon them regarding:</b>										
<i>Responsibility for quality leadership within the company</i>	6	13	7	11	4	6	6	8	0	0
<i>Relevant ethical requirements</i>	3	6	2	3	2	3	7	9	1	1
<i>Acceptance and retention of clients</i>	9	19	10	16	5	7	10	13	2	3
<i>Human resources</i>	7	15	8	13	3	4	8	10	0	0
<i>Performing engagement</i>	23	49	20	33	22	31	30	38	27	40
<i>Monitoring</i>	23	49	22	36	41	59	62	79	37	54
<b>Total number of audit firms inspected</b>	<b>47</b>	<b>100</b>	<b>61</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>78</b>	<b>100</b>	<b>68</b>	<b>100</b>

Source: Croatian Chamber of Auditors 2012-2016

As well as other EU Member States, Croatia is required to implement provisions of EU Directives into its national laws. Since the Directive 2014/56/EU prescribes that public interest entities are obligated to form an audit committee, the Croatian Auditing Act also contains such provision (Auditing Act, Art. 27). The term *public interest entities* include listed companies, financial institutions and entities of strategic and special interest to the Republic of Croatia (Accounting Act, Art. 3). The main responsibilities of the audit committees are: 1) overseeing the process of financial reporting, 2) monitoring the effectiveness of the internal control system, internal audit, and risk management system, 3) supervising the independence of independent auditors or audit firms, especially regarding the contracts for additional services, 4) giving recommendations on the selection of and independent auditor or audit firm, and 5)

discussing the plans and the annual report of internal audit (Auditing Act, Art. 28). Without even considering the effectiveness of audit committees in performing these tasks, the important issue in Croatia is that a large number of public interest entities still does not have an audit committee, despite the sanctions specified in the Auditing Act. Until the last revision of the Accounting Act in 2016, all large companies were also considered as public interest entities. According to the research conducted on audit users in Croatia, which will be presented in chapter 4, only 41% of respondents that are employed by large companies stated that their company has an audit committee.

The authority assigned with the responsibility for conducting public audit oversight in Croatia is the Croatian Audit Public Oversight Committee (founded in 2008), which delegates the task of conducting inspections to the professional body – the Croatian Chamber of Auditors. The frequency of inspections is defined in accordance with the EU Regulation No. 537/2014 (Para. 24), i.e. at least every three years for audit firms that audit public interest entities and in other cases at least every six years. The Croatian Chamber of Auditors started with the inspections in 2010, when an initial inspection cycle was carried out. The analysis of the system of public oversight in Croatia has shown that the system is in line with the provision of the EU Directive, but these provisions represent basic requirements that are set up to strengthen harmonization among Member States. They are not necessarily sufficient to ensure the audit quality, which is why every Member State is given the freedom to implement more stringent requirements, depending on the needs. Therefore, the development of a country's public oversight system can be better assessed by comparing it with countries that are examples of good practice or countries similar in terms of economic and political situation. Comparison with a sample of European countries (Sever Mališ & Brozović 2015) has shown that there are significant differences between countries. By ranking countries based on the criteria such as transparency and experience in conducting public oversight, it is noted that Croatia lags behind countries whose public oversight systems are an example of good practice, such as United Kingdom and Switzerland. Such results can be partly attributed to the relatively short experience in carrying out public oversight over other analysed countries. Countries that for decades have a developed capital market or even a market economy system in general are justified leaders in this area. This is why one of the tasks of the EU Directive is to gradually raise the scale of the development of public oversight systems.

#### **4 Empirical research on the effectiveness of audit quality control mechanisms**

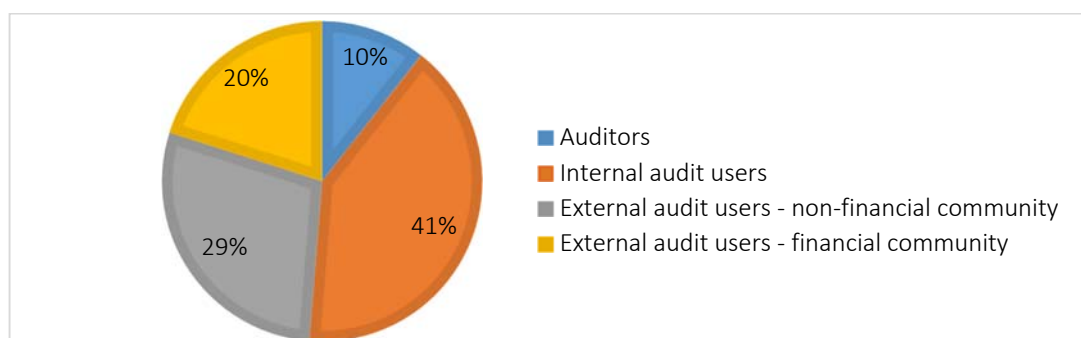
The purpose of the empirical research conducted in Croatia was to explore how different stakeholders in the audit process value audit quality control mechanisms. An overview of the previous research has shown a lack of research that would compare these mechanisms, instead of investigating them individually. A survey was conducted in the period from September 2016 to April 2017. The target group of respondents were people who are involved in the audit process or are the users of the auditor's report. Accordingly, three main groups of respondents were selected. The first group are *auditors* as employees of registered audit firms in Croatia. The second group are *internal audit users*, which refers to managers and accountants working in companies from the real economy that were subject to statutory audit in 2014. *External audit users* are the third group of respondents, which is the most diverse group. Although a variety of different stakeholders may be considered as the external audit users, the research was limited to two major groups of users. The first one refers to the financial community, under assumption that specialists such as brokers, financial analysts and



investment advisors have knowledge of the financial statements audit, but are not involved in the audit process. The second one are business partners, suppliers and buyers of companies that are subject to statutory audit, and are therefore interested in the content of their auditor's report. They are represented by the managers and accountants employed by companies from the real economy that were not subject to statutory audit in 2014 and have total revenues between HRK 12 million and HRK 30 million.

The survey was conducted electronically and consisted of closed-type questions. Apart from providing information on their characteristics, respondents were asked to rate the influence of suggested potential determinants of audit quality on a seven-point Likert scale. Measures of descriptive statistics were applied to draw conclusions on the attitudes of respondents regarding the importance of quality control mechanisms, observed at the level of separate groups of respondents and in total. Methods of inferential statistics were then used to examine if there is a statistical difference in the way the respondents value these mechanisms.

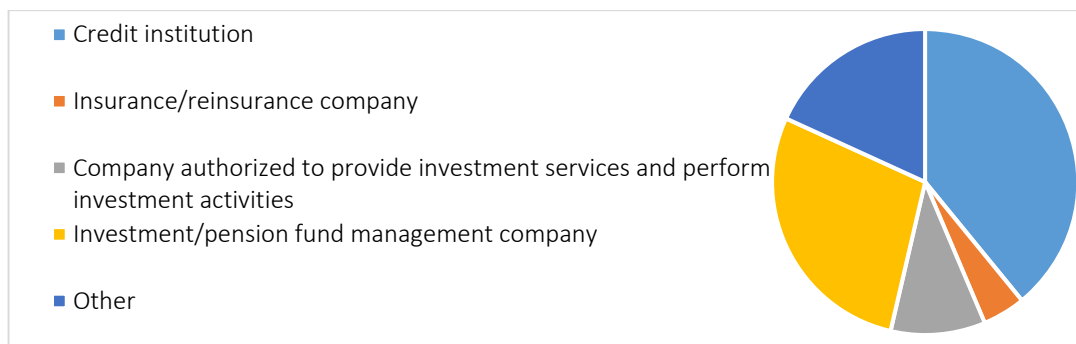
The total number of respondents who participated in the survey is 548 (Figure 2), which is divided according to groups of respondents as follows: 58 auditors, 223 internal audit users and 267 external audit users (157 representatives of the non-financial community and 110 members of the financial community).



**Figure 2** Structure of respondents by groups

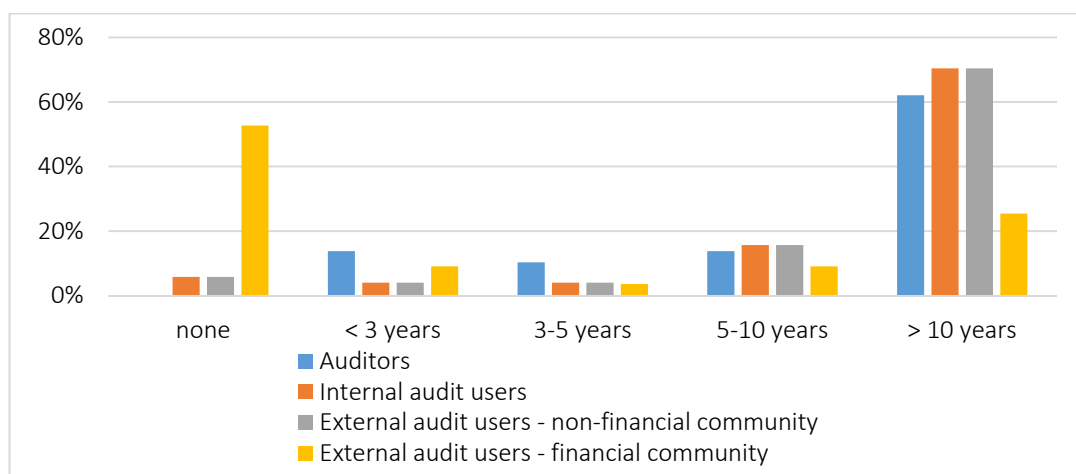
Given the frequency of responses, the typical respondent from the auditors' group is between 30 and 40 years of age, has over 10 years in the accounting/auditing profession and is a certified auditor by the Croatian Chamber of Auditors. The majority of respondents from the group of internal audit users are accountants with over 20 years of experience in their current occupation, with most of them belonging to the same age group that was dominant among auditors. As for the external users employed by companies that are not subject to statutory audit (referred as *the non-financial community*), accountants again prevail. More than half of the respondents are between 40 and 55 years of age, with more than 20 years of experience in their current profession. The majority of them are employed by companies engaged in trade as their main business activity, which also applies to internal audit users.

Representatives of financial community as external audit users are mainly working in credit institutions (Figure 3) and are between 30 and 40 years of age. In the profession that they currently engage, they mostly have 10-20 years of experience.



**Figure 3** Structure of respondents from *the financial community* group by the type of financial institution they work in

It is evident that the majority of respondents from all groups are have significant experience in their current occupation. Furthermore, as shown in Figure 4, they also have experience in accounting/auditing profession, which makes them competent to make conclusions about the effect of certain quality control mechanism on audit quality.



**Figure 4** The level of experience in accounting/auditing profession by groups of respondents

The determinants related to the audit quality control mechanisms that were included in the questionnaire are presented in Table 3. Respondents were asked to value their contribution to the audit quality on a seven-point Likert scale. The answers were coded as follows: 1 – *extremely negative impact*, 2 – *significantly negative impact*, 3 – *weakly negative impact*, 4 – *no impact*, 5 – *weakly positive impact*, 6 – *significantly positive impact*, 7 – *extremely positive impact*.

**Table 3** Potential determinants of audit quality evaluated in the questionnaire that are related to the audit quality control mechanisms

Code	Potential determinant
<b>A</b>	The audit firm has well-organized internal audit quality control procedures.
<b>B</b>	The client that is subject to audit has an expert and actively involved audit/supervisory board.
<b>C</b>	The audit firm is subject to external quality control (e.g. through inspections by public oversight bodies).

According to the research results summarised in Table 4, all four groups of respondents agree that the suggested audit quality control mechanisms have a positive impact on audit quality. If the mean value of responses is observed, the strength of the effect is between weak and significant, with the highest values assigned to internal audit quality control procedures

(determinant A). The coefficient of variation (CV) is in all cases below 30%, which means that the mean values are representative. The strength of the effect is even higher when taking into account median value, which is 6 across all groups of respondents.

**Table 4** Measures of descriptive statistics for responses at the level of groups of respondents

		<i>Mean</i>	<i>Me</i>	<i>Mod</i>	<i>StDev</i>	<i>CV</i>	<i>Min</i>	<i>Max</i>	<i>Sum</i>	<i>Count</i>
<i>Auditors</i>	<b>A</b>	5.93	6	6	0.95	16.06%	1	7	344	58
	<b>B</b>	5.50	6	6	1.10	19.93%	1	7	319	58
	<b>C</b>	5.31	6	6	1.45	27.37%	1	7	308	58
<i>Internal audit users</i>	<b>A</b>	6.05	6	6	1.02	16.92%	1	7	1349	223
	<b>B</b>	5.28	6	6	1.21	22.85%	1	7	1177	223
	<b>C</b>	5.31	6	6	1.19	22.46%	1	7	1184	223
<i>External audit users–non-financial community</i>	<b>A</b>	5.84	6	6	0.96	16.39%	3	7	917	157
	<b>B</b>	5.36	6	6	1.19	22.17%	2	7	841	157
	<b>C</b>	5.41	6	6	1.15	21.25%	3	7	849	157
<i>External audit users - financial community</i>	<b>A</b>	5.84	6	6	1.02	17.45%	2	7	642	110
	<b>B</b>	5.45	6	6	1.20	22.05%	1	7	599	110
	<b>C</b>	5.41	6	6	1.24	22.99%	1	7	595	110

Calculated mean values vary to certain extent between different groups of respondents. For example, the average grade assigned to determinant A by internal audit users is 6.05, while the average for external audit users is 5.84. In order to test if these differences are statistically significant, one-way ANOVA test was performed (Table 5). The number of treatments for every determinant is  $k=4$ , since the mean values of four groups of respondents are compared. The p-value corresponding to the F-statistic of the one-way ANOVA is higher than 0.05, suggesting that the mean values are not significantly different for that level of significance, which applies to all three determinants. Therefore, when the audit quality control mechanisms are considered separately, there is no major difference in the way that each group of respondents rate a single mechanism. In other words, means values of grades assigned to internal audit quality control procedures are statistically not significantly different for auditors, internal audit users, non-financial community and financial community. The same applies to actively involved audit/supervisory committee and external quality control.

**Table 5** One-way ANOVA – test of differences in the way that each of four groups of respondents rate different audit quality control mechanisms

	<i>Source</i>	<i>Sum of squares SS</i>	<i>Degrees of freedom</i>	<i>Mean square MS</i>	<i>F statistic</i>	<i>p-value</i>
<b>A</b>	<i>Treatment</i>	5.3798	3	1.7933	1.8057	0.1450
	<i>Error</i>	540.2552	544	0.9931		
	<i>Total</i>	545.6350	547			
<b>B</b>	<i>Treatment</i>	3.4373	3	1.1458	0.8111	0.4881
	<i>Error</i>	768.4605	544	1.4126		
	<i>Total</i>	771.8978	547			
<b>C</b>	<i>Treatment</i>	1.3321	3	0.4440	0.2980	0.8269
	<i>Error</i>	810.5658	544	1.4900		
	<i>Total</i>	811.8978	547			

The above analysis proves that, when the determinants are considered separately, the attitudes of different stakeholders in the audit process towards the audit quality control mechanisms are pretty uniform. In the next step, the means values of responses for all respondents together are mutually compared to investigate if a certain mechanism is considered to have a stronger impact on audit quality than the others. The number of treatments in the one-way ANOVA is  $k=3$ , since there are three suggested determinants (Table

6). According to the p-value, which is lower than 0.05, one or more mean values is significantly different.

**Table 6** One-way ANOVA – test of differences in the way that all respondents (pooled sample) rate different audit quality control mechanisms

Source	Sum of squares SS	Degrees of freedom	Mean square MS	F statistic	p-value
<b>Treatment</b>	121.4793	2	60.7397	46.8077	1.11E-16
<b>Error</b>	2129.4307	1641	1.2976		
<b>Total</b>	2250.9100	1643			

In order to identify which of the pairs of means values are significantly different, two post-hoc tests were performed – the Tukey HSD test and the Scheffé test (Table 7). Both tests showed that the mean value for determinant A is significantly different from the means of determinants B and C, while the difference between mean values for determinants B and C is insignificant. This means that the pooled sample of respondents value the impact of internal audit quality control procedures set up at the level of audit firms higher than the other two mechanisms (audit/supervisory board and external quality control).

**Table 7** Tukey and Scheffé test results at the level of all respondents (pooled sample)

Treatment s pair	Tukey HSD test results			Scheffé test results		
	Tukey HSD Q statistic	Tukey HSD p-value	Tukey HSD inference	Scheffé T-statistic	Scheffé p-value	Scheffé inference
<b>A vs B</b>	11.8500	0.0010	** p<0.01	8.3792	1.22E-15	** p<0.01
<b>A vs C</b>	11.8500	0.0010	** p<0.01	8.3792	1.22E-15	** p<0.01
<b>B vs C</b>	0.0000	0.9000	insignificant	0.0000	1.0000	insignificant

Although the tests have shown that the respondents are relatively uniform in the way they value suggested mechanisms across different groups of respondents, the mutual comparison of the three audit quality control mechanisms was also performed at the level of each group of respondents (Table 8). As expected, the one-way ANOVA for all four groups of respondents resulted in the same conclusion that was derived from a joint test, i.e. pooled sample, which is that there is at least one mechanism that is valued differently.

**Table 8** One-way ANOVA – test of differences in the way that individual groups of respondents rate different audit quality control mechanisms

	Source	Sum of squares SS	Degrees of freedom	Mean square MS	F statistic	p-value
<b>Auditors</b>	<b>Treatment</b>	11.7356	2	5.8678	4.1697	0.0171
	<b>Error</b>	240.6379	171	1.4072		
	<b>Total</b>	252.3736	173			
<b>Internal audit users</b>	<b>Treatment</b>	84.9895	2	42.4948	32.4980	3.41E-14
	<b>Error</b>	870.8700	666	1.3076		
	<b>Total</b>	955.8595	668			
<b>External audit users-non-financial community</b>	<b>Treatment</b>	22.2166	2	11.1083	9.1372	0.0001
	<b>Error</b>	568.9554	468	1.2157		
	<b>Total</b>	591.1720	470			
<b>External audit users - financial community</b>	<b>Treatment</b>	12.3455	2	6.1727	4.5998	0.0107
	<b>Error</b>	438.8182	327	1.3420		
	<b>Total</b>	451.1636	329			

As was the case when all respondents were observed together as one group, three of the four individual groups (internal audit users, financial community and non-financial community) agree that the internal audit quality control procedures have a significantly stronger positive effect on audit quality than the other two mechanisms (Table 9). However, the opinion of auditors differs to some extent. While they agree that the internal audit quality control procedures are more effective than the external quality control, they do not value internal audit quality control procedures higher than the actively involved audit/supervisory committee.

**Table 9** Tukey and Scheffé test results at the level of individual groups of respondents

	<i>Treatments pair</i>	<i>Tukey HSD Q statistic</i>	<i>Tukey HSD p-value</i>	<i>Tukey HSD inference</i>	<i>Scheffé T-statistic</i>	<i>Scheffé p-value</i>	<i>Scheffé inference</i>
<i>Auditors</i>	<i>A vs B</i>	2.7672	0.0126	insignificant	1.9567	0.1506	insignificant
	<i>A vs C</i>	3.9848	0.0149	* p<0.05	2.8177	0.0206	** p<0.05
	<i>B vs C</i>	1.2176	0.6521	insignificant	0.8610	0.6909	insignificant
<i>Internal audit users</i>	<i>A vs B</i>	10.0725	0.0010	** p<0.01	7.1223	2.42E-11	** p<0.01
	<i>A vs C</i>	9.6626	0.0010	** p<0.01	6.8325	1.59E-10	** p<0.01
	<i>B vs C</i>	0.4099	0.9000	insignificant	0.2899	0.9589	insignificant
<i>External audit users - non-financial community</i>	<i>A vs B</i>	5.5011	0.0010	** p<0.01	3.8898	0.0006	** p<0.01
	<i>A vs C</i>	4.9220	0.0016	** p<0.01	3.4804	0.0025	** p<0.01
	<i>B vs C</i>	0.5791	0.8999	insignificant	0.4095	0.9196	insignificant
<i>External audit users - financial community</i>	<i>A vs B</i>	3.5392	0.0342	* p<0.05	2.5026	0.0450	* p<0.05
	<i>A vs C</i>	3.8684	0.0180	* p<0.05	2.7354	0.0247	* p<0.05
	<i>B vs C</i>	0.3292	0.9000	insignificant	0.2328	0.9733	insignificant

Research results suggest that the stakeholders in the audit process value the contribution of the audit firms' internal quality control system to audit quality generally higher than the other potential control mechanisms. Since this conclusion is valid both for the separate groups of respondents and the pooled sample, it may serve as a signal to regulators and standard setters in their future actions aimed at improving audit quality. The results are also expected. The first reason is the nature of these control mechanisms. Internal audit quality control procedures are set up in every audit firm, which means that they may act preventive and motivating during the specific audit engagement, rather than detective as it is the case with inspections performed by the Croatian Chamber of Auditors. The second reason is the current status of the level of development of suggested mechanisms in Croatia. It should be taken into account that a vast majority of companies in Croatia that are identified as public interest entities do not have an audit board, despite the obligation and sanctions set up in the Auditing Act. Moreover, the comparison of the external supervision system in Croatia with the systems in more developed countries showed that there is significant room for future improvements. This is partially a direct consequence of the fact that the inspections of audit firms in Croatia started in 2010, which may not be enough time to gain experience and set up an effective system of external supervision at the national level.

## 5 Conclusion

Audit quality control mechanisms are implemented with the aim of improving audit quality, which consequently enhances the transparency and credibility of financial reporting. In order to achieve better results, these mechanisms are established at the level of different participants in the audit market: audit firms, their clients and regulators. The analysis of the

audit quality mechanisms in Croatia showed that there is still room for improvement, which can partly be attributed to the fact that the auditing profession in Croatia is relatively young in comparison with the developed western EU countries. In addition, a survey among auditors and audit users has been conducted to explore how various participants in the audit process value different audit quality control mechanisms. Audit users were divided into two major groups: internal audit users (employees of companies that are subject to audit) and external audit users (representatives of financial community and employees of companies that are not subject to audit). Due to the extensive experience in their current occupation, as well as in the accounting or auditing profession, the respondents are considered to be competent to make conclusions about the effect of suggested quality control mechanisms on audit quality.

According to the research results, the perception of the respondents shows that all mechanisms of audit quality control have a positive influence on audit quality. However, they assign significantly greater importance to internal audit quality control procedures at the level of audit firms in comparison with the effect of actively involved audit committees and external quality control systems. The tests have shown that the respondents are relatively uniform in their responses. Therefore, research results can serve as a signal to regulators about the effectiveness of implemented control measures from the standpoint of professionals who are directly included in the audit process or are just interested in the content of the auditor's report. Given that the respondents value the impact of internal control systems more than the impact of audit committees and external supervision, future actions of policy makers should be aimed at encouraging the audit firms to additionally improve their internal control systems, primarily the independence and expertise of internal professionals that are assigned with this responsibility.

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# Competitiveness, Globalization and the Organizations

Miguel González-Loureiro and Maria José Sousa

Competitiveness is a pervasive construct in Business Management research. The core of the definition is about the capability of the firm to compete successfully. Being as vague as it seems, we can say that we know what it is not but we unknown what it is. Or we can say that we know what it is ex-post when we see the firm's bottom line at the end of the year. Among the variety of factors affecting the firm's competitiveness, theories and scholars have usually put the focus following the swings of the pendulum. Rather than opposed, they should be considered as complementary perspectives that help scholars and practitioners understand how the firm can develop and sustain its competitive advantage. This stream aims at considering these additional levels of research and to open new research avenues in the field of strategy and competitiveness, with a particular focus on SMEs and the intangibles sources of competitive advantage.

## City branding - Analysis of awareness of Bihać as a tourist destination

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**Abstract:** The main topic of this paper is city branding – an analysis of awareness of Bihać as a tourist destination. When it comes to tourism, city branding is a concept that is becoming more and more developed, due to the process of globalization. In the Federation of Bosnia and Herzegovina (FB&H), tourism represents a great potential for development due to the natural resources which the FB&H has. The Federation of Bosnia and Herzegovina consists of ten federal units ie. counties, out of which each county has defined their specific strategic goals. For the purpose of this paper, the Una-Sana Canton with the city Bihać as its headquarter and as the main tourist destination in this county was observed. The purpose of this paper is to assess the current situation, i.e. to analyse the awareness of Bihać as a tourist destination as to show the advantages and disadvantages of this destination, the way how to raise the level of competitiveness, and the way how this tourist destination can create a recognizable brand. By comparing the results of the questionnaire between citizens of the city Bihać and citizens of the city of Zagreb, the differences as well as similarities about Bihać are presented.

**Keywords:** City Bihać, city Zagreb, brand, branding, tourist destination

### 1 Introduction

Thanks to the process of globalization, branding of cities has become a new important concept of everyday life. Similar to how companies brand their products with the aim of taking their market position, cities have begun branding themselves in order to get a better market position.

For cities that provide their services in the tourism sector, branding of the city and especially a particular destination, is very important. Tourism, as one of the growing and prosperous sectors, is in constant development. For these reasons, there is a growing competition, and only those who manage to create a strong brand are able to easily sell their service or product. When it comes to tourism in the Una-Sana Canton, with special reference to the city of Bihać, tourism is a priority sector and a great opportunity for development. Branding a tourist destination is a powerful tool that can create a comparative advantage. It can help create a better and clearer image of a particular tourist destination. The goal of branding a city can be seen from multiple points of view. If we look at branding from an economic point of view, a

very important question is how to brand, and at the same time to make it profitable. How to increase the profits? How to attract as many tourists as possible? How to attract as many investors as possible, and so on? If we look at branding from a marketing point of view, the important question that arises is how to create a satisfied customer. How to create long-term relationships with your current but also all potential buyers? How to create an image of the city, and make this image recognizable? If we look at some of these goals, we can conclude that for each city socio-economic justification of the goals is very important.

Looking at the big picture, well branded city is also useful for the whole country. It is important to consider that the branding of the city does not only have impact on the city alone, but also on the country as it helps the country in its further development (Mihevc, 2015).

According to the Tourism Development Strategy of the Federation of Bosnia and Herzegovina for the period 2008-2018, tourism represents one of the biggest potential in the Federation of B&H with the aim of creating a competitive destination. In line with this strategy in January 2014, the "Strategy of development of the municipality of Bihać for the period 2014-2023" was adopted. The strategy covers a time frame of 10 years. Strategic development plan of the municipality of Bihać includes certain analyses of several sectors such as local economy, labour market, social development, environment, infrastructure and public services as well as the municipal budget. Different strategic development objectives and focuses are an integral part of this strategy; when it comes to tourism, the analysis of tourism with opportunities for development (Municipality of Bihać, 2014) has been presented.

## 2 The purpose and objectives of research

This work aims to help further improvement of drafting a marketing strategy, which is yet to be defined by the city of Bihać. Also, the aim of this paper is to discuss the recognition of Bihać as an attractive tourist destination, to get to know the advantages and disadvantages of this destination, and to create a recognizable brand. Citizens of Bihać play a very important role in it – they were asked about their opinion on this topic. Also, a very important role in achieving the goal play the citizens of the city of Zagreb with their participation in the survey which revealed their opinion and vision of Bihać as a tourist destination and a brand. It is very important to see how Bihać is seen by people outside the borders of Bosnia and Herzegovina, and Zagreb has been chosen as a sample being the closest capital of a member state of the European Union.

By searching through various secondary sources, researches with similar objectives carried out in relation to the city of Bihać were not found. So far, not a single study with the objective of collecting opinions on the city of Bihać as a tourist destination and a brand has been carried out. In the absence of available information, this work also represents one of the first researches on the topic.

For data collection, a questionnaire will be used; also, research questions and hypotheses are defined accordingly.

**Research question 1 (RQ1):** Is there a difference in the level of awareness of Bihać as a brand among citizens of Bihać and the citizens of Zagreb?

**Research question 2 (RQ2):** Is there a difference in the brand perception among the citizens of Bihać and the citizens of Zagreb?

**Research question 3 (RQ3):** Is there a difference in the brand personality among the citizens of Bihać and the citizens of Zagreb?

**Hypothesis 1 (H1):** The higher the awareness of Bihać as a brand, the greater the intention of tourist visits.

**Hypothesis 2 (H2):** The more positive perception of Bihać as a brand, the greater the intention of tourist visits.

**Hypothesis 3 (H3):** The more positive personality of Bihać as a brand, the greater the intention of tourist visits.

After the completion of this research, thanks to the results of the questionnaire, a clearer picture of the vision of Bihać as a brand from different points of view will be obtained. This will contribute to the development of Bihać as a tourist destination and creation of a recognizable brand not only in Bosnia and Herzegovina, but also beyond.

### **3 Research methods**

For the purposes of this paper it was necessary to carry out primary research using the questionnaire that was conducted on a random sample. The questionnaire contained four questions, each with several categories, and the respondents answered on a scale from 1 to 5. The questionnaire was conducted in two groups: the first group consisted of citizens of Bihać and the other citizens outside of Bihać, that is citizens of Zagreb. The study was conducted on 50 subjects in each group.

After collecting the data, it was necessary to process and analyse the data. In order to test the hypotheses and to come to conclusions based on the data, statistical analysis with the software package SPSS (Statistical Package for the Social Sciences) was used. In this paper the statistical analyses of linear regression and T-test were used. The relationship between a specific dependent variable and several independent variables was assessed by linear regression.

For the secondary research, numerous professional and scientific literatures from the available sources were used.

### **4 Scientific and social justification of the research**

When it comes to branding of cities, most of the literature refers to the branding of large and famous cities such as New York, London, Paris and so on. There is a lack of research and literature on branding small towns in Europe. When it comes to branding of cities in Bosnia and Herzegovina, research literature and researches of these areas are limited as well. Therefore, this paper aims to help research and contribute to the branding of smaller towns in Bosnia and Herzegovina.

The aim of this paper is to look at Bihać as a unique tourist destination, get to know the advantages and disadvantages of this destination and to create a recognizable brand in Europe and beyond. Also, this paper also represents one of the first researches of Bihać as a brand and a tourist destination because so far this type of research has not been conducted. This research will help further elaboration and further development of future research and

solutions for raising awareness of Bihać as a tourist destination. The results obtained by primary research will provide the possibility of practical application of the results obtained.

## 5 Methodology

For the purposes of primary research by online tool *Qualtrics*, an anonymous questionnaire was created. The questionnaire was divided into two groups depending on the place of residence. The first group consisted of citizens of Bihać in the 18-35 age category. The second group consisted of the citizens of the city of Zagreb, also in the 18-35 age category. The questionnaire was filled in the *online* form, adjusted in such a manner to allow to be filled via the computer or a mobile phone, depending on the device chosen by the respondent to access the questionnaire.

**Table 1: Scales used in questionnaire**

Scale	Answers on the scale
<b>(Brand awareness)</b> (Oh, Haemoon, 2000)	<i>Brand name Bihać is:</i> Very unfamiliar ... Very familiar Not known at all ... Very well known Not visible at all ... Very visible Never heard of ... Heard of a lot Not famous at all ... Very famous
<b>(Brand class)</b> (Oh, Haemoon, 2000)	<i>What are the brand perceptions you have about XYZ?</i> Budget ... High priced Low end ... High end Very limited service ... Very extensive service Bottom class ... Top class Very limited amenities ... Very extensive amenities
<b>(Brand personality appeal)</b> (Freling, Crosno, Henard, 2011)	<i>This brand's personality is:</i> Satisfactory ... Unsatisfactory Unpleasant ... Pleasant Attractive ... Unattractive Positive ... Negative Bad ... Good Poor ... Excellent Undesirable ... Desirable
<b>(Purchase intention)</b> (Oh, Haemoon, 2000)	<i>Would you choose Bihać for the given travel situation?</i> Definitely no . . . Definitely yes Very unlikely . . . Very likely

The questionnaire contained four questions, with each of them having several categories. All questions were in the form of a closed question. Respondents marked their answers for each category on a scale from 1 to 5. The total number of respondents who participated was 100, with 50 participants in each category. The first question was related to the awareness of Bihać as a brand. The second question was related to the perception of Bihać as a brand. The third

question was related to the personality of the brand. The first three questions were related to Bihać as a brand and these three questions also represent the research questions on which basis the hypotheses were set. The fourth question referred to the intention to visit the city of Bihać.

The research aimed to show whether and how the first three questions affect the intention to visit the city. The researched also aimed to demonstrate the possible differences in thinking between the citizens of Bihać and citizens of Zagreb, thus three research questions formulated.

For three questions (awareness of Bihać, perception of Bihać as a brand, and purchase intention), the scale created by Oh (2000) was used. For the question for the brand personality, the chart created by TH Freling, JL CROSNE and DH Henar (2011) was used.

The time frame of the questionnaire covered the period of three weeks, during which the participants could answer these questions. After closing of the questionnaire, the results were transferred from the Excel document (in which the questionnaire was created) to SPSS for data processing.

It is important to distinguish between independent and dependent variables in this paper. In different analyses in SPSS, several variables were used to analyse and comprehend the data from different points of view.

The first two tests, determination of the mean value, and the T-test for independent samples, fall into the T-test category. Other analyses fall into the category of linear regression. The first test (Table 2) was used to determine the mean value for three independent variables: awareness of Bihać as a brand, perception of Bihać as a brand, and brand personality. This test establishes the mean value between the citizens of Bihać and citizens of Zagreb based on three different research questions. In the second test (Table 3), T-Test was used for independent samples to determine equivalence of the median (arithmetic mean). In the third test, regression (Table 4) was used; in the linear regression the independent variables are "awareness of Bihać as a brand, perception of Bihać as a brand, and brand personality". The dependent variable became "intention to visit the city of Bihać" to determine whether and in what degree the independent variables affect the dependent variable. The fourth test (Table 5) represents the correlation between dependent and independent variables. The T-test concludes with the model summary (Table 6) showing the correctness of the model for the given values. The sixth test: variance analysis- ANOVA (Table 7) was used. This analysis shows the influence of independent variables on one dependent variable. In the seventh test, the coefficients of the model (Table 8) show whether an independent variable, and which, is proportional to the dependent variable. This test was to show whether the relationship is valid: the more positive the perception of the brand, the greater the intention to visit.

SPSS also allows graphical representation of certain variables, so for the purpose of this work a graphical representation of histogram and P-P plot is applied. The histogram will graphically show the distribution of the default variable "intention to visit the city of Bihać" and the percentage corresponding to that response in relation to 100 respondents. When it comes to a P-P plot, the Normal P-P Plot will be graphically displayed. This graphic display will also determine if there are any deviations from normality. The normal P-P Plot will show whether the measured data set is approximately normally distributed. The SPSS analysis concluded with the T-test (Table 10) to determine whether there is a difference in the intention to visit

the city of Bihać between the citizens of Bihać and citizens of Zagreb. Based on the results of the research, appropriate conclusions, comments and suggestions were made.

## 6 Research results

Tables in this section of the paper are results of the analysis in the SPSS. For a better understanding of the analysis for some tables SPSS has set footnotes itself to serve as an additional explanation which variables are predictable and which are dependable variables.

### 6.1 T- Test

**Table 2: Group statistics- Mean calculation**

	residency	N	Mean	Std. Deviation	Std. Error Mean
mean brand familiarity	non-local	50	2,8440	1,18445	,16751
	local	50	4,0440	,95044	,13441
mean brand perception	non-local	50	2,4400	,88248	,12480
	local	50	3,0870	,73684	,10421
mean brand personality	non-local	50	3,0314	,83264	,11775
	local	50	3,7686	,71510	,10113

In the Table 2, the mean value was calculated for all three research questions: awareness of Bihać as a brand, perception of Bihać as a brand, and brand personality. As we can see in the table, citizens of the city Bihać show higher brand familiarity compared to the citizens of the city of Zagreb ( $M_B=4,0440$ ,  $M_Z=2,8440$ ). Citizens of the city of Bihać have more positive brand perception compared to the citizens of the city of Zagreb ( $M_B=3,0870$ ,  $M_Z=2,4400$ ). Also, citizens of the city of Bihać have more positive brand personality compared to the citizens of the city of Zagreb ( $M_B=3,7686$ ,  $M_Z=3,0314$ ).

For all three questions calculated mean value show higher awareness of Bihać as a brand, more positive perception of Bihać as a brand and more positive brand personality within citizens of the city of Bihać compared to the citizens of the city of Zagreb. Based on the parameters measured and these results, answers for the research questions were defined. For research questions 1 (RQ1), brand awareness was higher among the citizens of Bihać than among citizens of Zagreb. For research questions 2 (RQ2), brand perception was more positive among the citizens of Bihać than among citizens of Zagreb. For research questions 3 (RQ3), brand personality is more positive among the citizens of Bihać than among citizens of Zagreb.

When it comes to the level of significance, according to the usual statistical value, the measured variable is not significant if the value it is greater than 0.05. According to the data in Table 3, variable brand perception and brand personality do not have significance on the variable intention to visit the city of Bihać. These two variables do not have significance because level of significance for the variable brand perception is 0,096 which is higher compared to the 0,05. Level of significance for the variable brand personality is 0,079 which is higher compared to the 0,05. When we compare these two variables, variable brand perception is the one that at least influences the variable intention to visit the city of Bihać.

Variable brand perception has the highest level of significance ( $p=0,096$ ). Variable awareness of Bihać as a brand shows the difference because the level of significance is less than 0,05 ( $\text{Sig}=,026$ ). That means that this is the only variable that has significance on the variable measured. Because the level of significance ( $p=,026$ ) is lower than 0,05, variable awareness of Bihać as a brand significantly influences the measured variable intention to visit the city of Bihać.

Table 3: T- Test for independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
mean brand familiarity	Equal variances assumed	5,124	,026	-5,587	98	,000	-1,20000	,21477	-1,62620	-,77380
	Equal variances not assumed			-5,587	93,607	,000	-1,20000	,21477	-1,62645	-,77355
mean brand perception	Equal variances assumed	2,829	,096	-3,979	98	,000	-,64700	,16259	-,96965	-,32435
	Equal variances not assumed			-3,979	94,976	,000	-,64700	,16259	-,96978	-,32422
mean brand personality	Equal variances assumed	,079	,779	-4,749	98	,000	-,73714	,15522	-1,04517	-,42912
	Equal variances not assumed			-4,749	95,815	,000	-,73714	,15522	-1,04526	-,42903

With the T- test for the independent samples impact of the three variables (awareness of Bihać as a brand, brand perception and brand personality) on the variable intention to visit the city of Bihać is measured. Out of three measured variables, two variables did not have significance. Variables that had significance are brand perception and brand personality. Variable that had impact on the variable intention to visit the city of Bihać is awareness of Bihać as a brand because its level of significance is less than 0,05. According to the T- test for independent samples hypothesis 2 (H2) and hypothesis 3 (H3) are not confirmed. Only hypothesis 1 (H1) is confirmed and that is the higher the awareness of Bihać as a brand, the greater the intention of tourist visits.



6.2 Regression

**Table 4: Regression**

	Mean	Std. Deviation	N
mean visit intention	3,7300	1,30349	100
mean brand familiarity	3,4440	1,22683	100
mean brand perception	2,7635	,87172	100
mean brand personality	3,4000	,85642	100

**Table 5: Correlations**

		mean visit intention	mean brand familiarity	mean brand perception	mean brand personality
Pearson Correlation	mean visit intention	1,000	,688	,603	,729
	mean brand familiarity	,688	1,000	,578	,655
	mean brand perception	,603	,578	1,000	,595
	mean brand personality	,729	,655	,595	1,000
Sig. (1-tailed)	mean visit intention	.	,000	,000	,000
	mean brand familiarity	,000	.	,000	,000
	mean brand perception	,000	,000	.	,000
	mean brand personality	,000	,000	,000	.
N	mean visit intention	100	100	100	100
	mean brand familiarity	100	100	100	100
	mean brand perception	100	100	100	100
	mean brand personality	100	100	100	100

Pearson correlation measures the strength and direction of linear relationship between two variables. Coefficient of the relationship ranges from “-1” up to “+1”. “-1” indicates perfect negative correlation, “+1” indicates perfect positive correlation and “0” indicates that there is no correlation at all. Variable that correlates with itself has correlation coefficient 1 (Malhotra, Birks, & Wills, 2010). As we can see in Table 5 there is no negative correlation which means that variables are directly related. If one variable grows the other variable will also grow. All 100 respondents were taken into account and level of significance (p) for all variables is 000 which means that the correlation is significant. When the correlation value is closer to 1, the greater is the interconnection of the variables observed. For example, between two variables brand personality and visit intention there is strong correlation because coefficient is 0,729.

**Table 6: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,792 <sup>a</sup>	,627	,615	,80894	,627	53,684	3	96	,000

a. Predictors: (Constant), mean brand personality, mean brand perception, mean brand familiarity

b. Dependent Variable: mean visit intention

Table 6 show if the model is correct for the given values. Model summary shows variations of the dependent variable on the variable intention to visit the city of Bihać. In this table the focus is on the coefficient of multiple correlation (R) and on the coefficient of determination (R Square). The value of coefficient of multiple correlation (R) is 0,792 which represent very good predictions. The coefficient of determination (R Square) has a value of 0,627 which is quite high because recommended values of coefficient of determination should be closer to 1. This parameter shows how one variable is good at the prediction of some other variable required.

In this case, when the value of the coefficient of determination is multiplied with 100, it shows that 62,7% explains dependent variable intention to visit the city of Bihać. 62.7% of dependent variable is predicted with independent variables awareness of Bihać, perception of Bihać as a brand, and brand personality. Based on this data we can accept the hypothesis of this paper because all three measured variables in 62.7% influence variable intention to visit the city of Bihać.

**Table 7: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	105,389	3	35,130	53,684	,000 <sup>b</sup>
Residual	62,821	96	,654		
Total	168,210	99			

a. Dependent Variable: mean visit intention

b. Predictors: (Constant), mean brand personality, mean brand perception, mean brand familiarity

Analysis of variance (ANOVA), shows results in which independent variables are brand perception, brand personality and awareness of Bihać as a brand. Dependent variable is intention to visit the city of Bihać. With this analysis impact of independent variables on one dependent variable is measured.

Level of significance  $p \leq 0,001$  indicates that the difference is statistically important. Therefore independent variables predict with certainty dependent variable intention to visit the city of Bihać. Table 7 shows very high value of parameter F ( $F(3, 96) = 53,684, p < 0,05$ ). Degrees of freedom is  $n-1$ . Out of 100 respondents in this table only 96 is shown. Mathematically difference is 4, but due to  $n-1$  this difference is 3. Analysis of variance (ANOVA) shows that all three independent variables have impact on the variable intention to visit the city of Bihać because level of significance is less than 0,05. All three independent variables can be taken into account when predicting the dependent variable. It is very important to note that all three hypotheses are confirmed by this test. The higher the awareness of Bihać as a brand, the greater the intention of tourist visits. The more positive perception of Bihać as a brand, the greater the intention of tourist visits. The more positive personality of Bihać as a brand, the greater the intention of tourist visits.

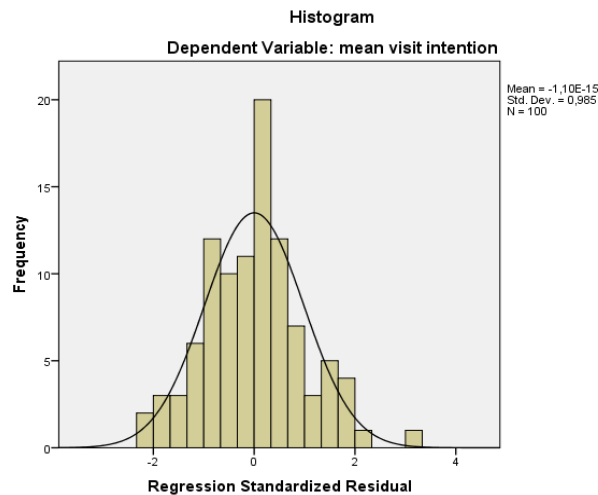
**Table 8: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	-,308	,343		-,897	,372	-,988	,373
mean brand familiarity	,332	,092	,313	3,604	,000	,149	,516
mean brand perception	,256	,122	,171	2,096	,039	,014	,498
mean brand personality	,643	,134	,422	4,790	,000	,377	,909

a. Dependent Variable: mean visit intention

Betas are positive which indicates the higher the awareness of Bihać as a brand; the more positive perception and personality of Bihać as a brand, the greater the intention of tourist visits. As shown in the Table 8 the higher the beta, the higher are t-values. From Table 8 we can also see the significance of independent variables. As stated before, if the level of significance (p) is less than 0,05 measured variable is statistically significant. Coefficient for awareness of Bihać as a brand (B=,332) has level of significance (p. < ,001) which is less than 0,05. Coefficient for perception of Bihać as a brand (B=,256) has level of significance (p= ,039) which is less than 0,05. Coefficient brand personality (B=,643) has level of significance (p < ,001) which is less than 0,05. Regression is proportional which indicates the better and the more positive independent variables are, the more greater is intention to visit the city of Bihać. And with this test all three hypotheses are confirmed.

### 6.3 Histogram



**Figure 1: Histogram**

The right side of the histogram shows the mean value, standard deviation and the number of sample in the questionnaire. Y-axis (vertical axis) represents frequency of distribution. X-axis (horizontal axis) represents the value of variable measured. For measured values the confidence interval was 95%. Histogram shows normal distribution. Answers of the respondents follow the distribution line with small deviation in the middle of histogram.

Looking at the histogram image, it can be concluded that the histogram is symmetrical. Minimum value on x- axis is -2,127 while maximum value is 3,197.

6.4 P-P Plot

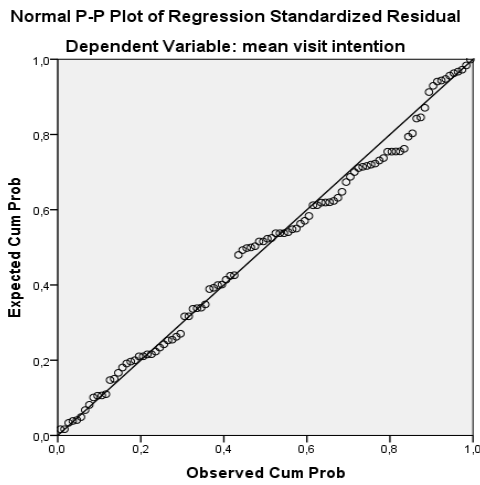


Figure 2: P-P Plot

Graphical representation of normal P-P plot shows that observed values have no deviations against the normal distribution. As we can see in Figure 2, given values follow the line.

6.5 T-test

Table 9: Group Statistics

	residency	N	Mean	Std. Deviation	Std. Error Mean
mean visit intention	non-local	50	3,0000	1,27775	,18070
	local	50	4,4600	,84419	,11939

Table 10: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
mean visit intention	Equal variances assumed	8,646	,004	-6,741	98	,000	-1,46000	,21658	-1,88979	-1,03021
	Equal variances not assumed			-6,741	84,931	,000	-1,46000	,21658	-1,89062	-1,02938

With Independent Samples Test mean value is measured for variable intention to visit the city of Bihać. Table 10 shows that there are difference in tourist visits between citizens of Bihać and citizens of Zagreb. As we can see in table, citizens of Bihać show higher visit intention compared to the citizens of Zagreb ( $M_B=4,4600$ ,  $M_Z=3,0000$ ,  $p = 0,004$ ). Comparing the mean values for the sample used it is obvious that the intention to visit the city of Bihać is higher among residents of Bihać in comparison to citizens of Zagreb. Because significance level ( $p=,004$ ) is less than 0, 05 there is statistically significant difference among the variance of these two groups.

## 7 Discussion, implications and further research

Research questions were set within this paper to examine whether there is a difference in perception and attitudes towards Bihać as a brand in terms of tourist destination among the respondents from of Bihać and those from the city of Zagreb for the three measured variables. After analysing the data in SPSS, for all three research questions and all three measured variables (brand awareness, brand perception, brand personality) positive responses were obtained. Brand awareness was higher among the domestic population than among foreigners. Brand perception is more positive among the domestic population than among foreigners. Brand personality is more positive among the domestic population than among foreign population.

Following examination of the various literature on the branding of cities and tourist destinations, following the review of the development strategies of the municipality of Bihać as well as the tourism development strategy of the Federation of Bosnia and Herzegovina, and following the analysis of the results of the questionnaire in the SPSS application, it is possible to specify the following stances about city branding and analysis of the awareness of Bihać as a tourist destination:

- Thanks to the natural resources, but also thanks to the cultural and historical heritage of the city of Bihać, there are good foundations for creating a successful but also recognizable brand, and a tourist destination.
- Marketing of the tourism offer on the international market is inadequate, as shown by the results of the questionnaire. Awareness of Bihać as a brand is higher. Perception of Bihać as a brand is more positive, as is the brand personality, among local citizens, in comparison to that among the inhabitants of the city of Bihać. To reduce these differences, the city of Bihać and other related stakeholders (tourist community, tourist agencies and similar) should create a better marketing plan and strategy that will create a more positive image of the city of Bihać on the international market and thus attract more and more tourists.
- The city of Bihać should have a clear vision and mission and clear objectives. Thanks to the process of globalization, there is increase in technological, social and cultural changes, and the city must “keep pace with time”, in order to achieve a better long-term success and competitiveness.
- The influence of measured variables on the variable of intention to visit the city of Bihać is significant. The results of certain analyses in SPSS application show that the variables of awareness of Bihać as a brand, the perception of Bihać as a brand, and the brand personality influence the intention to visit the city of Bihać. Bearing this in mind, it is important to create, as good as possible, awareness of the brand, perception of Bihać as

a brand, and brand personality when determining the development strategy and the marketing plan. Given the limited research, this paper is not a sufficient basis for creating a strategy and a marketing plan but is a useful tool that could serve a major research on a given topic.

- When marketing a tourist destination, it is necessary to control the set standards and goals. Therefore, it is not enough to just make a marketing strategy. It is also necessary to control the set standards and principles to see possible errors and defects.
- Due to political and economic factors in Bosnia and Herzegovina is observed a growing number of people emigrating abroad. Such emigration is particularly evident among the young. Since the city of Bihać and the whole Una-Sana Canton is rich in various natural resources and historical monuments, the city of Bihać itself should take advantage of Bihać as a university city and, in cooperation with young people and universities, to organise events that would attract young people to develop their business ideas. Various “start-up” competitions, preparing a business and marketing plan, cooperation and exchange with students from other countries will help the city of Bihać in the process of branding, but also in the creation of an image as a tourist destination.

Primary research used in this paper represents a basis for further research. It is certainly necessary to conduct further researches and analyses of awareness of Bihać as a tourist destination. Number of respondents involved in the research should be a lot higher as to obtain the best possible results. Also, further research should also include other cities, particularly those with which the city of Bihać already has long-standing cooperation and are so-called *sister cities*.

## 8 Conclusion

The concept of branding used to be related solely to the branding of products. Over time, the focus of branding is extended so that branding of tourist destinations has become a new concept. Although the branding of tourist destinations and cities became a new concept in an everyday life, it is rather complex. The most important process in creating a tourist destination is the very process of branding. The process of branding is particularly important step in the creation of new tourist destinations as well as in branding smaller tourist destinations.

Tourism in the Una-Sana Canton is a priority sector. The city of Bihać as the capital of the Canton represents great potential as a tourist destination, but also as a carrier of tourism development. Thanks to the natural wealth of the city of Bihać, combined with a rich cultural and historical heritage, a solid basis is laid for a successful, high-quality and distinctive branding. Furthermore, it is important to point out that the tourism product is subject to changes, that is adaptation to the market. Thanks to the process of globalization, tourism markets are ever changing and if we want to ensure the longevity of the brand, it is very important to observe future trends in this market. All stakeholders involved in the process of branding of the city and a tourist destination, are expected to have bids or offers that “keep pace with the time” in the tourist market.

One of the most important steps in the branding process is the identification of major market segments. It is very important to segment the market in order to better present the tourism

product or service, that is to make and adjust the best offer of a particular targeted segment. The SWOT analysis is also an indispensable step in the branding process. It is very important to state the real strengths, weaknesses, opportunities and threats of a particular tourist destination. The SWOT analysis will help in the analysis of the current situation to better develop the strategy for future planning purposes later. In combination with SWOT analysis, it would also be useful to conduct a competitive analysis. The competitive analysis will help a particular tourist destination to look at its destination in comparison with the competition and to observe what visitors want and look for in similar destinations (competitors).

Performing a qualitative analysis, that is a questionnaire, is also an important step in the process of developing a brand. The questionnaire should answer questions such as the reasons for visiting a particular destination, what makes this destination different from others, what are the main features of destinations that are appealing and essential to the visitor.

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## Working smart or working hard? Investigating the role of technology in healthcare innovation in Taiwan

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**Abstract:** Technology-based healthcare has been promoted as an effective tool to enable clinicians to work smarter, as working hard alone might be inadequate to maintain healthcare quality. This study investigates how and why e-health has been applied and to identify the attitudes to innovation of healthcare stakeholders in a Taiwanese context. Qualitative methodology was adopted to obtain insightful inputs and deeper probing. Taiwan was selected as a typical case study given its ageing population, advanced technology, and comprehensive healthcare system. In order to study complex, dynamic, and interactive situations, 32 stakeholders in the healthcare ecosystem were investigated in an open, flexible, and enlightening way through in-depth interviews and focus groups. First, respondents indicate that the use of technology can enable seamless patient care and bring clinical benefits of flexibility in time management. The technology learning curve can be overcome by staff development and blending between younger and older generation. Second, the results suggest that a leader's vision, authority, and management skills might influence the success of healthcare innovation. Finally, the results imply that both internal and external organisation governance are highly relevant to the implementation of technology-based innovation in healthcare. This study contributes to knowledge by providing different perspectives of how technology can bring benefits to healthcare innovation. This study debates the perception that technology prevents human interaction between clinicians and patients. The empirical research supports the claim that technology can be a tool for connecting all healthcare stakeholders. This study stresses how users should employ technology as an enabler of innovation rather than be confined by it. The technology user should work smarter when using technology so that more value can be added to its adaptation. Otherwise, technology will make users work harder by creating extra work.

**Keywords:** healthcare, innovation, e-health, technology, Taiwan, smart

### 1. Introduction

The elderly in the remote Taiwanese countryside could well have a legion of health issues that they are waiting for the government to take good care of, even as the government spends vast sums of money for the same purpose on inhabitants of more densely populated and easily



accessible areas of the country. Despite advances in technologies that are perceived as a solution to overcome the challenges arising from population ageing, concerns about information governance and Taiwan's conservative attitude toward innovation might hinder the prosperity of healthcare innovation.

Technology-based healthcare or e-health has been promoted as an effective tool to enable clinicians to work smarter, as working hard alone might be inadequate for maintaining the quality of healthcare. However, it remains debatable whether the impacts of technological application are beneficial or harmful. Technology cannot be an all-in-one solution, as it has both strengths and weaknesses. A key to optimizing technology could lie in preparing specific supplementary packages to take advantage of its benefits and minimize its drawbacks.

Nevertheless, issues around the associated intrusion, particularly in users with cognitive impairment, need to be understood when collecting data through lifestyle monitoring systems. Despite Taiwan's focus on improving safety in the home and enabling the elderly to live independently, the risk of producing the opposite outcome – actual loss of autonomy – cannot be ignored (Stowe and Harding, 2010). The present study aims to investigate how and why e-health has been applied in Taiwan and what attitudes healthcare stakeholders possess with regard to innovation in the Taiwanese context. The lessons learned in Taiwan could hold lessons for other countries encountering similar issues.

## **2. Research Design/Methodology**

Qualitative methodology was adopted to obtain insightful inputs and deeper probing, thereby ensuring a better understanding of the exploration of the questions of 'how' and 'why' e-health has been applied in Taiwan.

Qualitative data were gathered as evidence in this empirical study, which intends to explore, uncover, and attempt to understand phenomena that have not yet been investigated deeply or that we might not yet be generally aware of. Taiwan was selected as a typical case study given its ageing population, advanced technology, and comprehensive healthcare system.

Data collection was conducted using semi-structured intensive interviews and analysis of documents of healthcare professionals, industry players, academic researchers, and government agents selected through voluntary participation and a purposive sampling method across the various health system levels. In-depth interviews provide an open, flexible, and an enlightening way to study complex, dynamic, interactive situations, whether through informal conversation or more structured and directed talk. In light of controversy about the validity of research in the healthcare sector, in-depth interviews are important here and moreover, form a key part of many qualitative research methodologies (Carson et al, 2001).

In this study, 38 stakeholders in the healthcare ecosystem were investigated in an open, flexible, and enlightening way to study complex, dynamic, and interactive situations through in-depth interviews and focus groups. The interviews were recorded and transcribed. The collection, writing, and analysis of data progressed continuously in line with the interpretive research tradition (Walsham, 2006).

In contrast to interviews, which are normal and direct conversations between an interviewer and an interviewee (Lofland and Loffland 1984; 1995), intensive interviews allow the interviewer to explore and examine a certain topic or experience in depth, and therefore, are an effective method for interpretive inquiry. The thoroughness of an interview encourages clarification and insight regarding the experience of each interviewee. The aim of the interviewer is to comprehend the topic while the interviewee owns the pertinent experiences explored (Fontana and Frey 1994; Seidman 1997). Hence, the interviewee is asked to depict and reflect on his or her experiences in a manner that does not usually occur every day.

## **2.1 Measures**

A semi-structured interview questionnaire of up to 90 minutes was employed to collect the data. The questions included categories of innovation and business models in the healthcare sector, as discussed in the literature review. In addition, the researchers looked at the various personnel and organizational factors affecting the usage of computers and general medical informatics. The semi-structured interview guide comprising several comprehensive exploratory aspects is summarized as follows:

- background information;
- technology acceptance, and adaptability;
- level of competency;
- gender; and
- organizational category.

The data transcription followed the required reliability and validity procedures for qualitative studies.

## **2.2 Data analysis**

Data analysis was concurrently collected and analyzed until theoretical saturation was reached. In this study, the thematic approach of qualitative analysis was performed manually when the same themes were found to recur. The thematic analysis was organized via deep familiarization with the data collected for further development of the major themes. These themes were further analyzed to identify sub-themes, and then structured to provide a comprehensive account.

## **2.3 Thematic content analysis**

The study employed thematic content analysis (Bardin 2007) to analyze the data during the interviews. Bryman (2004) states that qualitative content analysis is 'probably the most prevalent approach to the qualitative analysis of documents' and that it 'comprises a searching-out of underlying themes in the materials being analyzed' (p.392). According to Babbie (2001, p. 309) content analysis is 'essentially a coding operation', with coding referring to 'the process of transforming raw data into a standardized form'. According to Rayan and Bernard (2000, p.785), traditional content analysis 'comprises techniques for reducing texts to a unit-by-variable matrix and analyzing that matrix quantitatively to test hypotheses'; the researcher can produce a matrix by applying a set of codes to a set of qualitative data, assuming that the codes of interest were discovered and described beforehand.

Obviously, classical content analysis is essentially a quantitative method with the core and central tool being its system of categories. Consequently, the simplest type of evaluation is to count the numbers of occurrences per category, assuming there is a relationship between frequency of content and meaning. Moreover, for different indices which correlate two separate measurements and contingencies, more complex procedures can be used for analysis (Titscher et al., 2000).

### **3. Theoretical Base**

This study expands the current knowledge of how technology is applied in healthcare innovation. Using the theoretical basis of e-health (Eysenbach, 2001; Eysenbach and Köhler, 2002) and innovation, this study further explores how to help people work smarter rather than harder given the disruptive nature of technology (Christensen, Grossman and Hwang, 2009; Nassiri, Natarajan, Margolis and Marks, 2015; Lauer and D'Agostino, 2013). Taiwan is selected as a case study, as it has significant performance and characteristics in e-health (Lee, et al., 2011; Liu, 2011; Green, Savin and Lu, 2013). The aim is to explore the relationship between technology and 'smart working' in healthcare in order to identify meaningful research gaps for this study.

#### **3.1 Definition of smart working**

'Working smart' is defined in this research as high working efficiency and effectiveness. On the contrary, 'working hard' is a distinctly traditional labour-intensive way of working that produces only limited outputs. Technology might be smart in comparison with manual efforts, and it is claimed that these practices have replaced what has been regarded as 'hard work'. The question is whether technology can help people work smarter. What are the perspectives of different stakeholders?

An ageing society implies a gradual decrease in the productive labour force of a nation and an increase in the dependent population. Consequently, the issue of population ageing makes people work harder than ever. It is widely believed that diminishing caregiver support resources for increasing elderly populations, as witnessed in most developed countries, render many current care provision models for the elderly unsustainable (Liu, 2011; Green, Savin and Lu, 2013, Lee, et al., 2011).

#### **3.2 Development of technology application in healthcare**

The application of internet and related technologies has been introduced to health services since decades. E-health is a well-known term introduced by Gunther Eysenbach for describing an emerging field in the intersection of medical informatics, public health, and business, referring to health services brought by the internet or related technologies in 2000 (Eysenbach, 2001, Eysenbach and Köhler, 2002). Since then, the topic relating to the promise and performance of e-health is broadly discussed for the effectiveness of healthcare (Neuhauser and Kreps, 2003; Ahern et al, 2006; Kreps and Neuhauser, 2010; Black et al., 2011; Smith and Koppel, 2014; O'Malley et al., 2015).

Neuhauser and Kreps (2003), investigate how e-health can improve behavioural outcomes from the perspective of e-health communication. The results show the relevance of outcome improvement but the effectiveness of e-health in the social context remains to be explored owing to the diversity of human behaviour. Pagliari (2007), points out there is a gap between user involvement and significant impacts from its adoption by investigating the design and evaluation of e-health, and suggests interdisciplinary collaboration between all potential stakeholders to produce more promising outcomes. According to Kreps and Neuhauser (2010), e-health processes hold significant potential for the accessibility of health information, for both consumers and providers, and consequently, could enhance care quality by reducing errors, increasing collaboration, and promoting health education.

In addition, e-health can be applied in communication for enhancing the features of interactivity, multimodality, mass customization, and the opportunity for users to be producers. Even though challenges remain, e-health is worthy of research in terms of its best communication use for accessibility improvement for vulnerable populations and long-term effects on public health (Neuhauser and Kreps, 2010). However, Black et al., (2011) argue that e-health has more benefits in theory than in practice and its risk management needs to be considered to maximise the advantages of adopting it.

Therefore, more empirical applications have been adopted with the development of e-health, which covers the area of health information technology, electronic health record systems, and health information exchange for producing comprehensive outcomes and patient engagement (Yasnoff, Sweeney and Shortliffe, 2013; Lundberg N et al., 2013; Koch and Vimarlund, 2012; Smith and Koppel, 2014; O'Malley et al., 2015). With the growth of population ageing, there has been more research focus on how technology can be employed for the remote control of chronic conditions, such as telemedicine, telehealth, and telecare. According to a systematic review of the benefits of home telecare by Barlow et al., (2007) although there is insufficient evidence about the effects of home safety and security alert systems, those interventions might still have effects.

The results of Pare et al.'s (2007) systematic review of home telemonitoring, after surveying 65 programs across North-American, European, and Asian countries show the feasibility of telemonitoring. However, the results for Taiwanese telemonitoring programs from 2007 to 2009 show that the Taiwanese versions are competitive in terms of patient acceptance and satisfaction, a decrease in hospital admissions, and a decrease in emergency room visits (Lin, 2010). For a range of reasons, such as 'preventing ill health', 'maximising the potential of technology', and 'supporting our workforce', since 2008, Taiwan has been engaged in a major telehealth pilot project (Hsu et al., 2009; Chang, Huang and Yang, 2010). The application of telecare is viewed widely as only the remote monitoring of health; however, it contributes considerable beneficial outcomes for management and innovation too (Coughlin and Pope, 2008).

Taiwan is selected as a typical case for studying e-health implementation due to its advance both in medicine and technology. Apart from those, the population ageing phenomena and shortage of health workforces also provide a good reason. Moreover, geographic gaps between the rural and the urban indicate the need of research. Therefore, Taiwanese

government sponsored several pilot schemes to manage the related issues from population ageing to help the stakeholders in healthcare ‘work smarter’ (Beard et al., 2012).

Within 1 year of implementation, three different models underwent noticeable performance improvements. First, in the home care model, there was a 61% reduction in the hospital readmission rate and a decrease of just more than 1% in the hospital visit rate. Second, in the community-care model, there was a decline of more than 76% in the medication non-adherence rate. Third, in the residential-care model, reduced rates of hospital readmission were more than 25%, hospital-acquired infection decreased by more than 38%, and the drug duplication rate declined to 53% (Hsu et al., 2009). Regarding the overall performance of U-care, there was a 16% decrease in medical costs and an 81% increase in patient satisfaction.

Although the outcomes of telecare pilot schemes in Taiwan show positive results, the current literature in most western countries suggests that the application of e-health does not always translate into ‘working smart’ (Greenhalgh, Procter et al., 2012). In addition, the literature provides evidence for professional resistance to the spread of innovation in healthcare (Gagnon, and Scott, 2005; Perle, Langsam and Nierenberg, 2011; Dillon and Loermans, 2003). Therefore, owing to the uncertainty of innovation, some stakeholders would rather stay in the safe ground of ‘hard work’. Healthcare stakeholders refer to individuals or groups directly or indirectly affected by the e-health system. Stakeholders either suffer from the problem that the e-health system addresses, or they are affected by the e-health solution itself. The stakeholders include users, healthcare professionals, patients, their family members, social community workers, and researchers.

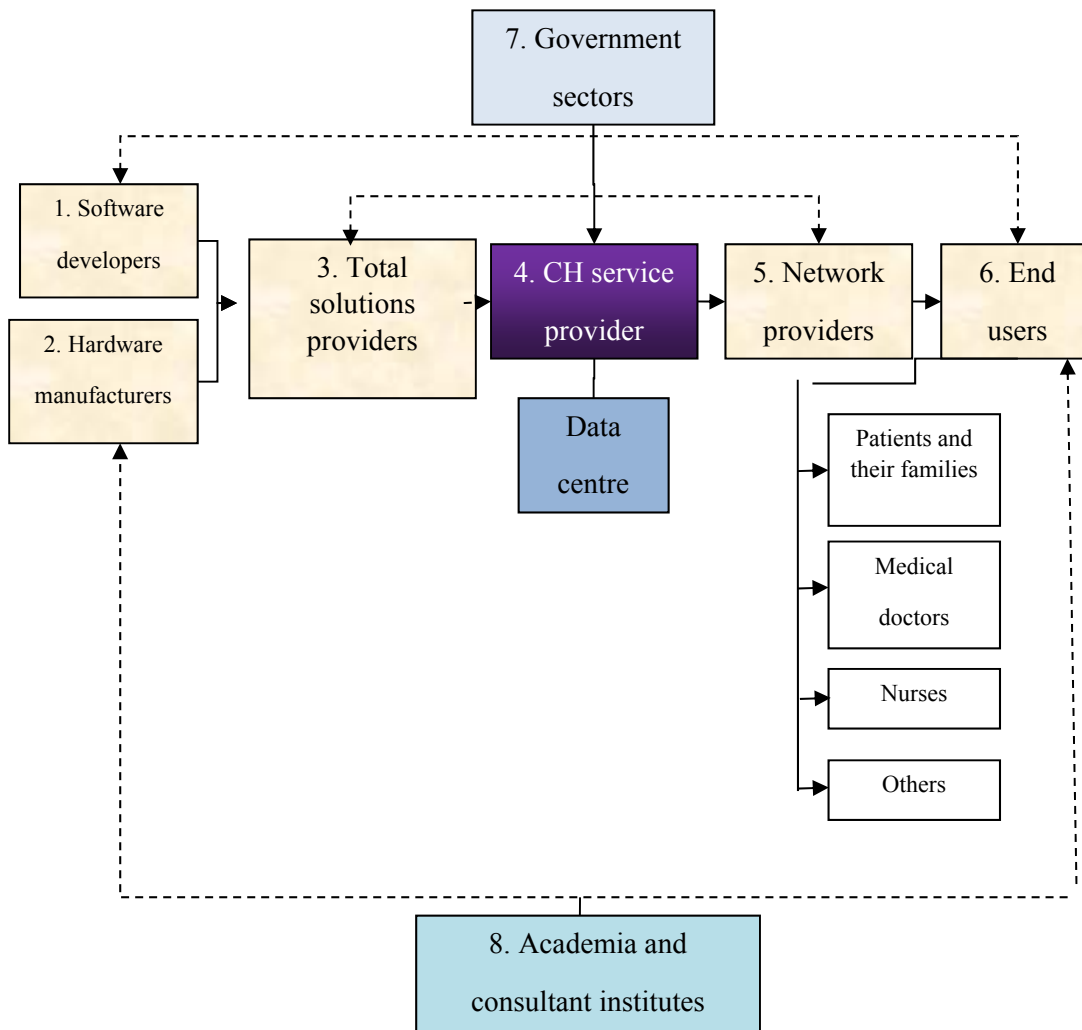
What determines differences in research outcomes and how can the Taiwanese experience inspire other countries? These are the interesting research questions explored in this study. According to the literature review, barriers to adoption are central to the lack of interoperability standards and care provider resistance. These barriers are based on ethical and security issues, data protection, security, privacy, and confidentiality (Weitzman, Cole, Kaci, and Mandl, 2011; Wynia, and Dunn, 2010; Cushman et al., 2010; Koch and Vimarlund, 2012; Peek et al., 2014). The issues and barriers that affect the performance and acceptance of healthcare innovation are reviewed to identify the potential solutions to challenges stated. In addition, this study reviews the literature of disruptive technology to explore the status of technology adoption in healthcare in Taiwan (Christensen, Grossman and Hwang, 2009).

## **4. Results and Key Findings**

### **4.1 Results**

Figure 1 illustrates the relationships and collaboration between CH players and stakeholders in the business ecosystem according to the outcomes of data analysis. Interviewees were selected and grouped into eight categories based on this business ecosystem. The interviews focused on five main industries: software, hardware and electronics, internet and telecommunications, healthcare, and total solutions. Due to the limitation of current regulations, CH can be practiced only in hospitals or care institutions in Taiwan. Although it is difficult to define such institutions as academia or industry, they play important roles in this

field. By collecting different perspectives, this research aimed to inspire more creative approaches to exploit the innovative advantages accruing from healthcare innovations.



**Figure 1.** Relationship diagram of CH players and stakeholders

The respondents comprised 38 interviewees. Among them, 75% were from industry and healthcare professions, while 25% were from academia and government. The industry players were mainly from the ICT and electronic and computing engineering industries, with only one from the insurance industry, one from the gerontology industry, and one from a commercial design background. Of the respondents, 15 or 42% were involved with healthcare professions and 64% were males. There was a wide range of distribution in respondents' educational attainment levels, which were all higher education, from Bachelor's degrees to PhDs. Most respondents (64%) were at higher levels of management and the remainder (36%) were executives in their own domain.

The interviewees were labelled according to these eight categories, as shown in Figure 1. One interviewee could represent more than one category, as the company might be involved in various areas in the CH ecosystem. Therefore, there are 34 sub-categories labelled from No. 101 to No. 805, as shown in Table 1.

**Table 1.** Interviewees' categories (Source: Summarised by the author)

Categories		Label No.	Name
1	Software developers	101	Far EasTone Telecommunications
		102	Guidercare
2	Hardware manufacturers	201	Netown Corporation
		202	Far EasTone Telecommunications
		203	Huede
		204	Guidercare
		205	Acomotech
3	Total solutions providers	301	Netown Corporation
		302	Far EasTone Telecommunications
		303	Huede
		304	Guidercare
		305	Acomotech
4	CH care service providers	401	Luo Dong Care institute
		402	En Chu Kong Hospital
		403	Taoyuan Fu Hsing Township Health station
		404	Taipei Medical University TH and Telecare centre
		405	Mennonite Christian Hospital
		406	Taiwan University Hospital Telehealth Centre
		407	Taiwan University Hospital
5	Network providers	501	Far EasTone Telecommunications
6	End users	601	National Taiwan University Hospital
		602	Mennonite Christian Hospital
		603	Taipei Medical University TH and Telecare centre
		604	En Chu Kong Hospital
		605	Luo Dong Care institute
		606	An-Tai hospital
7	Government sectors	701	Health and Welfare dept.
		702	Sang Chung Health Centre
		703	Luo Dong Care institute
		704	Taoyuan Fu Hsing Township Health station
8	Academia	801	National Taiwan University engineering department
		802	Taipei University of Technology
		803	Taipei University
		804	UL Life and Health
		805	National Taiwan University medicine department

The interview transcriptions were coded to generate summaries for translation into key themes, as shown in Table 2. Summaries were further categorized into patient care, clinical benefits, and staff development. In addition, leaders' visions, leaders' personalities, leaders' authority, and management capability were extracted as the themes of leadership and management. Finally, the hospital/internal institution's support system, and the government/external institution's support/ecosystem system were classified into organizational issues. These themes are further developed and discussed in Section 5.

**Table 2.** Thematic output of the summarized data on E-health/medical informatics

Summary from coding	Category	Key themes
<ul style="list-style-type: none"> <li>• Seamless service</li> <li>• Infinite service</li> <li>• Connecting people</li> <li>• Prevention care</li> <li>• Personal information privacy</li> <li>• Education of public health</li> <li>• Both psychological and physical care</li> <li>• Quality</li> <li>• Efficacy</li> <li>• Support personnel shortage</li> <li>• Systematic and integrated patient records</li> <li>• Cost effective (improved medicine consumption, reduction of medical costs, etc.)</li> <li>• Computer competency</li> </ul>	<p>Patient care option</p> <p>Clinical benefits</p> <p>Staff development option</p>	Technology issues
<ul style="list-style-type: none"> <li>• Shortsighted or insightful</li> <li>• Intellectual assets</li> <li>• Work experience heritage</li> <li>• Staff turnover</li> <li>• Creative capability</li> <li>• Innovation acceptance</li> <li>• Authority</li> <li>• Capability of execution</li> <li>• Risk management</li> <li>• Implementation management</li> <li>• Total solutions/package solution</li> </ul>	<p>Leader's vision</p> <p>Leader's personality</p> <p>Leader's power/authority</p> <p>Leader's management</p>	Leadership and management
<ul style="list-style-type: none"> <li>• Financial</li> <li>• Non-financial</li> </ul>	<p>Government hospital/ecosystem</p> <p>National health insurance</p>	Organizational issues

## 4.2 Key findings

The outcomes can be classified into technology application, leadership management, and organisation governance, as follows. First, technology application covers the discussion of patient care, clinical benefits, and staff development. Respondents indicated that the use of technology could enable seamless patient care and bring clinical benefits of flexibility in time management. The technology learning curve could be overcome by staff development and blending between younger and older generations. Second, leadership management includes the leader's vision, personality, authority, and management capability. The results of this study suggest that the leader's vision might influence the success of healthcare innovation. The leader's authority and management skills might affect the development of innovation in healthcare. Finally, organisational governance consists of the hospital/internal institution's support system and the government/external institution's support/ecosystem. The investigation implies that both internal and external organisation governance are highly



relevant to the implementation of technology-based innovation in healthcare. This is because many implantations in healthcare might be difficult to promote without government sponsors for both funding and infrastructure.

### 4.3 Technology issues

Regarding patient care, respondents stated that seamless and infinite services to patients are an obvious benefit of remote healthcare, bridging the gap between urban and rural access to the National Health Service.

*'Why does Taiwan want to promote remote healthcare? Because we have a low birth rate and the youth cannot take care of all the elderly'* (101. Senior Engineer).

*'It is essential in remote areas. It provides residents with access to healthcare service'* (606. Director).

Moreover, much emphasis was placed on internet coverage and wireless transmission, as these are considered essential to the provision of an infinite and seamless healthcare service. Many benefits of technology applications exist; for example, in preventive medicine, reductions are observed in emergency room visit rates or better still, if the remote technological application can provide a total solution to the patient. This could reduce conflict between clinicians and patients.

*'...we would like to offer a 24-hour professional healthcare service to those who need it at any time'* (406. Director).

Through analysis of the received data, the purpose of prevention can be achieved along with a reduction in otherwise necessary emergency room visits and eliminating many of the medical costs in such cases.

*'...the concept of preventive medicine through regular health recording is one of the crucial characteristics of remote healthcare'* (101. Senior Engineer).

This system enables not only monitoring of biometric data but also collection of psychological data, which professionals can use to treat and maintain mental as well as physical health. Moreover, public health education can be promoted by technology inputs, as follows.

Regarding concerns about personal information security, respondents provided diverse viewpoints. This is an important element to be considered before designing healthcare systems.

*'... to ensure information security. Only the one with authorized password and IC health insurance card can log in to your health information...'* (101. Senior Engineer).

*'I believe some day, to access health information will be like online banking and online shopping'* (406. Head nurse).

It increases the efficiency and quantity of representative data and finally, contributes to reducing the financial burden. These e-data can be integrated easily with existing hospital information systems.

It not only provides efficiency but also greater quality healthcare. Some actors make the following claims about its implementation:

*'We consider quality is more important than efficiency' when asked if remote technology can improve efficacy!* (604. Senior Nurse).

*'The blood sugar levels of those who have joined the telecare project become controlled'* (402. Senior nurse).

Regarding clinical benefits, more systematic and integrated patient records can be developed to offer better health services and to reduce diagnosis errors. Then, quality can be ensured and cost-effective benefits can be achieved. The respondents concur that there are financial benefits but also agree that the quality of healthcare can be improved.

*'The data that you measure in the hospital are not always representative of your general health conditions...rather we can track the possible causes through regular biometric data, instead of ignoring them...and reduce financial burden and manage health as results'* (101. Senior Engineer).

*'The remote areas in Taiwan provide the best model for research and development of new [telehealth] products to enter the global market. You will spend less but achieve abest result. It's a cost effective way!'* (403. Director).

When respondents were asked about the motivation behind innovation, the answers suggested that staff development activity could help some staff to absorb global trends, which might then encourage staff to accept new concepts, and might be helpful for their adaptability to new technology.

*'The motivation of innovation: [telehealthcare is] a global trend!'* (604. Senior nurse).

*'I will not take learning new technology is an issue, but an opportunity for staff blending'* (405. Head nurse).

#### **4.4 Leadership and management**

According to the respondents, a leader's vision, personality, authority, and management style are highly relevant to the success of a telehealthcare project. If a leader were shortsighted and expected to obtain returns on investment (ROI) in the short term, this would be an obstacle to the implementation of innovation. If a leader were to have insightful vision, she/he could well have a different attitude to applying innovative ways. Consequently, her/his attitude would affect staff motivation and the company's development.

*'We used to have a foreign general manager, he did not care about innovation but short-term profits... now, our competitors have taken these opportunities and have already scored some achievements...'*(101. Senior Engineer).

If employees' talents are not appreciated by managers, the employees might take their good ideas to rival companies. Poor management in this regard could cause high staff turnover and the loss of companies' intelligent and intangible assets. Many cases have proven that leadership plays an important role in new projects and business development.

*'We used to have many staff leaving our company ... because they were not appreciated by that manager, so they brought good ideas to counterparties who appreciated the ideas.'* (101. Senior Engineer).

On the other hand, an outstanding leader would be a good listener with ability to identify issues and do her/his best to solve them. This shows not only the capability of observation, but also the competency of an executive. These capabilities are essential for boosting an emerging industry.

*'Now, because having a good leader, we can now use advanced equipment and internet, which were essential for developing telehealth ...'* (403. Director).

#### **4.5 Organizational issues**

Although an outstanding leader is important, successful implementation of telehealthcare schemes relies not only on an individual. Organizations also play vital roles. Therefore, in this study, hospital/internal institution's support system and government/external institution's support system were identified as important subthemes. The respondents agreed that these two subthemes were highly relevant for the funding of ICT projects for health professionals and companies. One of the most significant matters here is financial sponsorship from government. Because running these schemes requires time for research and development, without government funding, both clinicians and companies would find it difficult to implement them, as the following quotations illustrate. Moreover, significant infrastructure needs to be developed before operating these schemes. Therefore, the role of government is extremely important, as the following quotations show.

*'It takes time to understand customers' needs, and to design a user-friendly product ... Therefore, we really appreciate the funding from the government project.'* (101. Senior Engineer).

*'...government needs to take a lead for the first step by offering funding; otherwise we cannot go anywhere ...'* (101. Senior Engineer).

Nevertheless, government-funded schemes have their drawbacks, such as internal government issues. Such schemes would like to demonstrate their high performance, and thus, they request everything to be done as soon as possible without considering all that might be involved. Nonetheless, any new projects need to be considered comprehensively and always take time to operate and modify. The government usually expects that a remarkable performance can be demonstrated before a firm's annual report is released, or before the next election, based on votes and ongoing support. This is one of the most common issues across the public sector.

*'...The government is grandiose ... They want it as soon as possible'* (16. Civil servant).

*'The public sector has this kind of issue, as all the projects need to be reclaimed with an annual calendar period ... but some results cannot be shown within 1 to 2 years...'* (403. Director).

## 5. Discussion

This research discussed core issues influencing healthcare professionals in adapting technology to their objectives. These issues can be observed in technology, leadership and management, and organizational issues. Overall, the thematic analysis indicated consistent themes that offered an in-depth understanding of these factors.

### 5.1 Technology issues

Health and medical information has a strong connection to the current challenges of health-associated information overload (Nicolini et al.2007; Hall and Walton, 2004). Mechanisms of developing innovative IT-enabled services are particularly important (Yang & Hsiao, 2009). This research proposes that the use of technologies to improve patient-centred data management is increasingly becoming a focused research issue (Nicolini, 2007 et al).

In addition, a significant theme noted was the finding that respondents described technology in healthcare as a crucial tool for connecting people instead of replacing them. Sadly, the ‘development of society’ has increased the isolation between generations. The elderly tend to be left behind because their children are too busy to take care of them. Through remote health systems, clinicians can easily approach patients in remote areas. Their health data are monitored. Once an abnormal incident occurs, an email and/or message is sent to the patient’s emergency contacts, allowing new opportunities to care for the older generation, whereas in the past, such events might have been overlooked. Technology has proved to be an effective way to make these vital connections that otherwise might never have been made at all, and thus, it would be disproportionate and plain wrong to automatically perceive this type of technology as somehow a monstrous mechanical robotic isolator and consumer of human souls, depriving patients of human contact.

*‘Technology plays a role in delivering humanity and care to people; a remote environment causes distance among people, but technology connects people together’ (602. MIS Director).*

The accuracy of biometric data was an issue, and brought to the fore another issue from the viewpoint of clinicians. Despite doubts about the accuracy of telehealth/telecare, respondents reported that it could usually collect more accurate data than that collected in hospitals. As the data were measured when patients were at home, where there is a more comfortable environment, patients did not have ‘white coat conditions’. Then, the results would be more accurate than those from hospitals would be.

*‘There is a term called “white coat hypertension,” which means you will feel nervous when you see the health provider’ (101. Senior Engineer).*

Technology is considered a solution to enhance the quality of people’s lives. It supports shortages in the labour force by minimizing the job burden through efficiency. In addition, technology allows nurses to use their professional skills and time to perform a nursing job instead of filling in forms. Furthermore, technology helps people to live more healthily by the concept of preventive medicine, controlling their own health conditions and reaching the goal of autonomous self-wellness. Although implementation of technology involves security issues with personal information, it should not become stuck in these issues. In addition, it is

important that the role of technology is not to replace people, but rather to reduce the burden of their work and make it easier. Technology is the aspiration to create a win-win situation that drives these projects forward: patients will obtain better health outcomes, and physicians will have more achievement and satisfaction.

Similar to the issue of innovation acceptance, if there were more information in advance about possible risks, it would allow more time for participants to adapt the new changes. Moreover, the establishment of a backup system is critical for sustaining a new system.

*'Firstly, you should inform people about the potential running risk during the operation of the pilot scheme. Secondly, you need to have a backup system'* (403. Director).

Most respondents endorsed the idea of the necessity of telehealthcare systems, yet the question of how to manage them seems to be an issue in need of exploration.

*'Telehealth is required, but it really depends on how you use it!'* (403. Director).

Despite the challenges of resistance to technology acceptance among existing healthcare providers, the blending of younger healthcare providers and older generations could bridge that gap. The cost of adapting technology might be an issue in the initial stage, but in the long term, upgrading and renewal costs become more cost effective. It is undoubtable that all new systems have run-in periods and teething problems; this is a technological issue as well as a leadership and management issue. Sometimes, honesty is the best policy. By objectively showing benefits and shortcomings to the public, greater innovation acceptance is possible. It is essential to identify and understand real issues in practical ways before seeking proper solutions.

## **5.2 Leadership management**

*'If any business needs a dose of creativity, it's health care. A systematic assessment of the industry's innovation ills suggests some remedies and offers a framework for thinking about the obstacles to new ventures in any business* (Herzlinger, 2006,p2).

No new policy can be implemented successfully unless it has the full support of the top authority. The leader's personality seems to be essential for organizational success in Taiwan. This provides a serious lesson. Grandiose behaviour might cause loss of valuable personnel resources. Creative thinking and innovative capability affect an organization's future. Leaders should not be short-sighted, and should consider Rate Of Investment beyond the short term. In particular, population ageing is a lasting trend and therefore, must be viewed from a long-term perspective. If possible, investments in the present will be cost effective in the future. Another challenge is how to manage performance pressure and offer proper criteria for employees to follow. As mentioned beforehand, there the maximization of advantages while minimizing disadvantages is a challenge to leaders' wisdom and skills.

In many cases, people have low acceptance of innovation owing to difficulties with run-in period adaptability. A good leader should already have realized this and should manage the situation properly. Developing comprehensive communication with staff is key to success.

*'Unavoidably, any new system will have its run-in period ...its important to advise it in advance as honesty is the best policy...'* (403. Director).

There is nothing more important than the support of people at top levels. In many cases, evidence indicates that a new system can be achieved only with the support of authorities. For telehealthcare systems, support from physicians is significant, as they have authority over and trust from patients. What physicians recommend is more convincing to patients than recommendations from other sources. However, the role of other stakeholders in healthcare-associated organizations cannot be ignored. In brief, this role can never be performed by one person; instead, the more people who support the role, the more possible it seems to become.

*'Managers encourage innovation~'* (604. Senior nurse).

*'... Physicians are more convincing for promoting Telehealthcare system as they have authority to patients'* (406. Director).

### **5.3 Organizational issues**

*'Indeed, without continuing technological and organizational change, growth will be impossible...Therefore, innovation is key to sustainable growth and economic development on a global scale'* (Fagerberg, 2006)

With regard to financial sustainability in a healthcare system, taking action to collaborate with unlimited needs but limited financial capability has become the norm for governments. Political calculations are often criticised as unrealistic. However, healthcare provision touches the lives of all, and if any cost-cutting plans are executed by government or employers, it will affect people significantly (Bonoli, 2001; Rhodes, 2001).

The government in Taiwan rightly tends to focus on needs in remote areas. However, some residents in urban areas also need the telehealthcare system. Many hospitals need to look for partners from industry if they cannot obtain sufficient support from government. In practice, this has encouraged hospitals to develop feasible business models.

*'In fact, we are expecting to align with different industries that are interested in the healthcare sector ... and to develop a win-win situation or models that...share responsibilities and profit...'* (406. Director).

Leadership is beneficial to organizational success. However, it is essential to consider how to integrate resources and its ecosystem. Funding from government is important for running pilot schemes. Many companies and hospitals have benefited from government sponsorship. Some organizations have used their knowledge, skills, and experience in exchange for assets they did not have, such as devices and networks. Moreover, government usually has the authority to coordinate between different departments and different organizations. Nevertheless, a business model should be developed that considers what occurs after government sponsorship.

## **6. Conclusion and Implications**

Low levels of fertility and mortality have led to rapid population ageing in Taiwan. Consequently, heavy pressure has grown on government finance and healthcare providers, which consider that 'hard work' is no longer an option to address the abovementioned issues. Instead, technology-driven systems have been proposed and promoted as potential solutions to help people 'work smart' instead of 'working hard'. Despite the substantial strength of these systems, such as efficacy, cost-effectiveness, and seamless service, these systems have their limits. Critics are concerned about patient satisfaction and feasibility. The Taiwanese experience has proven that a telehealthcare system is feasible and enjoys high patient satisfaction. However, challenges remain as to how to implement and manage such systems effectively. In this study, after data analysis, thematic findings were classified as technological, leadership and management, and organizational issues.

With regard to technological issues, common strengths are seamless, infinite service, efficacy, cost-effectiveness, sharing the burden across healthcare providers, and systematically managing data to achieve the goal of preventive medicine. User-friendly interfaces evolve from continuous discussion and cooperation. Nevertheless, issues arise from leadership and management and the organizations themselves rather than technology per se. What matters is how to pack organizations' resources and manage their ecosystems to create competitive systems. Government funding is vital to encourage and initiate pilot schemes; however, it is more important to take this opportunity to develop comprehensive business models for business sustainability. The authors hope that this study goes some way to show how business research and management can assist healthcare entrepreneurs and how smart work can be applied in the coming era of change and challenge.

### **6.1 Value and contributions**

This study contributed to knowledge by providing Taiwanese perspectives of how the role of technology can bring benefits to healthcare innovation. This study debated the perception that technology prevents human interaction between clinicians and patients in healthcare. Nonetheless, the empirical research supported the claim that technology can be a tool for connecting all stakeholders in the healthcare ecosystem. This study stressed how users should employ technology as an enabler of innovation rather than being confined by it while pursuing its novelty. The technology user should work smarter when using technology so that more value can be added to its adaption. Otherwise, technology will make users work harder by creating extra work.

### **6.2 Limitations and implications**

Although this research successfully sampled the viewpoints of government, clinicians, and companies, it clearly lacked a satisfaction survey by primary patients. The satisfaction data of only secondary patients were discussed, owing to ethical issues which could raise concerns about the validity of the results.

The practical implications can be summarized according to three themes: technology application, leadership management, and organizational governance. First, the technology

user should take control of technology by making it serve them rather than becoming stuck by its limitations. Second, leaders should manage innovation with creativity for resource integration and acquisition. Innovation planning should consider long-term benefits rather than short-term advantages. Third, although government funding and organisational support are relevant to innovation in healthcare, appropriate business models should be developed for long-term success after government support ceases.

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## Stimulating the entrepreneurship spirit towards modernizing and developing fruit growing in Romania's southern area

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**Abstract:** This article is based on the overall analysis of the existing situation up until the actual efficiency level that the fruit farming sector has in Romania's Southern development region, but also its possibilities to grow and revamp. Romania's Southern development area was created in 1998, with a total surface of 34.453 km<sup>2</sup> and it consist of six districts: Arges, Prahova, Dambovita, Teleorman, Giurgiu, Ialomita and Calarasi. The research focuses on exploring the national data regarding the trend and the production of fruit trees in the public and private sectors. We had also compared fruit crop between Romania, Hungary and Poland in a value index, which can show us the best return at country level. We shall also seek for ways of stimulating entrepreneurship, as it has been discovered a decrease in the number of entrepreneurs that own subsistence farms especially among people aged between 25 and 40. Their number decreased but unfortunately not due to some association between farmers but mainly because of deaths or giving-up to the work itself, because of aging. This paper aims to prove that rural areas can be revived by producing a real infusion of youth and by adding value to the agriculture businesses.

**Keywords:** fruit farming, entrepreneurship, Romania, agriculture modernization

### 1. Introduction

The number of entrepreneurs who own subsistence farms decreased, and unfortunately not due to some association between farmers, mainly because of deaths or giving up the work itself, or because of aging. Registered rural residents today are about 10 billion nationwide (CAP Indicators, 2017), out of which the South Muntenia region rests just 2 million of them. The number of people within these areas who live in urban areas is lower by 30% than rural people (NSI, 2017).

Agriculture ranks first in a ranking of activity in the South Muntenia region, with a rate of about 18%, followed by areas such as industry, construction, trade, forestry holdings, fishing, hunting and pisciculture. In this research we will study the number of fruit trees in the South Muntenia region and the average fruit production (plums, apples and cherries) in the period 2013-2015. There will be an analysis of the region as a whole and of each county as a whole. Subsequently, we will make a comparison between Romania, Poland and Hungary (the latter two having a very high level of development over the last 10 years). The analysed indicator

will be fruit production, related to the country's surface and invariable factors such as country or climate relief.

From a producer standpoint, globalization's impact on the agrarian world is often a negative one and it generates a high interest on globalization ethics and morality as well as numerous attempts to diminish the negative impact through which globalization pushback at least in its current shape (Globalization and the Agrarian World, Philip McMichael, published in George Ritzer, ed, *The Blackwell Companion to Globalization* (2007), UK).

In Romania, the majority of farms are subsistence and semi-subsistence thus only being able to ensure populations' standard on the brink of poverty. The lack of production means and high quality inputs leads to poor production which makes it almost impossible for small farmers to sell with attractive prices. Romanian products have a much higher price than the ones on the foreign market due to the weaker production for the Romanian farmers, while the expenses are at the same level.

Technological reduction alongside cost reduction is the product of applied research, which increasingly depends on advancing basic research.

Low-income countries, which do not develop rapidly nor improve their agricultural research capacity, will not gain from cost cuts, and while others will reduce costs and prices will decrease, non-innovator's incomes will decrease.

There are still huge gaps between Romania's development areas. Regional competitiveness poles and areas of poverty have appeared, this phenomenon being even more pronounced in the hilly and mountain areas.

## **2. Literature review**

The South Region Muntenia has a total area of 34.453 km<sup>2</sup>, approximately 15% of Romanian territory. This area includes 7 counties: Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova and Teleorman, 15 municipalities, 28 cities, 481 villages and 1.552 villages. The South Region Muntenia is located in the Southeast of Europe, and its topography indicates three forms of relief: plains, hills and mountains. They follow each other from north to south, each with a height of 2.500 m difference. The plain represents about 70%, this region being renowned for its lowland areas and crops of wheat, corn and sunflower. But the remaining proportion indicates that there is hilly and / or mountainous terrain that favors fruit, especially in Arges, Dambovita and Prahova (NSI, 2017).

A very important role that agriculture brings efficiency, is the Danube River, the main source hydrologic region, crossing 1,075 km of Romania. The main branches in Romania are Olt (615 km), Arges (350 km), Ialomita (417 km), Dambovita (286 km) and Prahova (193 km). The region's hydrological network is complemented by series of natural lakes: Amara, Mostitea, Suha Vidraru Vacaresti and Pecineagu. The climate of this area being continental-tempered, offers excellent perspectives of fruit growing, so the fruits of labor can reach Romanian farmers in other European countries.

The need to encourage entrepreneurship has emerged as a result of the acknowledgement that it generates profitable businesses and is highly adaptable to the needs of the economy.

Entrepreneurship is a major factor for economic growth, innovation, competitiveness, employment and social integration, long supported at European level.

Nowadays, promoting and developing entrepreneurship is one of the main directions of the Europe 2020 strategy, which aims to create more jobs and ensure better living conditions for the EU population.

At the same time, promoting and strengthening entrepreneurship is one of the most important methods of addressing the economic problems of rural communities and a solution to the recent slowdown in economic growth in many EU Member States.

Creating a legislative framework favorable to young entrepreneurs was aimed at stimulating the business environment by setting up and developing micro-enterprises through: increasing the number of active operators on the market, relaxing loan conditions, lessening the difficulties and reducing the risks of starting a business by young entrepreneurs. (Entrepreneurship for young people in rural areas, Ministry of Agriculture and Rural Development).

### **3. Methodology**

The objectives of this research paper were to take into account the modernization and development strategies of each and every county, depending on the contribution that each had to the fruit-growing sector and also, to seek for ways of stimulating entrepreneurship, as it has been discovered a decrease in the number of entrepreneurs that own subsistence farms especially among people aged between 25 and 40. In order to conduct this research, the data regarding the trend and the production of fruit trees in the public and private sectors was collected from National Institute of Statistics and Eurostat.

Finally, we did a comparison at the national level between Romania, Poland and Hungary regarding fruit production sector.

### **4. Regions development and its relation with agriculture within a knowledge economy**

Romania is divided into eight European-level development regions (NUTS2), all without administrative autonomy. Each of these regions aggregate between 4 and 5 counties, usually quite heterogeneous in terms of level of development, so any average or regional aggregate comment can hide significant disparities (NSI, 2017).

The regional differences are very obvious, so a division can be made: the development pole - Bucharest, which stands out significantly from the rest of the country, the advanced area - the Central, West and Northwest regions and the low developed areas - South, Southwest, South East and North East. These regional disparities are due to the fact that in the developed areas the share of the urban population is much higher, but also because the main activities are non-agricultural.

The factors influencing the future of the rural economy are represented by: Common Agricultural Policy (CAP), regulations and governance structures, transport issues, climate change, rural economy diversity, urbanization and consumer demand.

An argument in favor of agriculture as a result of globalization results from its active energy balance, which gives it a unique position vis-à-vis the other economy branches that have the statute of net energy consumer or nature, which has the ability to provide energy that, over time, can be diminished or depleted as per its usage. This argument must impose agriculture in the center of scientific and economic concerns (Popescu, 2014, p. 208).

The analysis of the knowledge-based economy emergence in Romania, according to the taxonomy used at international level, leads to the delimitation of four major areas of interest: knowledge production (research-development); knowledge dissemination (correlated with the development and spread of information and communication technologies); the human factor (as a producer and consumer of knowledge); the context of the emerging knowledge-based economy (Romanian Academy, Study - Knowledge Based Economy in Romania, 2010)

As in other fields, in the rural economy, the lack of information is acute and very few regional data exist, most of them not being up to date.

This lack of demand and interest regarding the information market, along with the cumbersome functioning of information dissemination channels, models and knowledge, one of the most important behavioral hindrances identified in the way of implementing the Knowledge Based Economy.

This lack of demand and interest in the market information and monitoring is, along with the cumbersome functioning of information dissemination channels, models and knowledge, one of the most important behavioral hindrances identified in the way of implementing the Knowledge Based Economy.

Given the complexity of the issues related to the origins of regional disparities, the Romanian Academy (2013) recommends the development of Knowledge Based Emergency Assessment Studies for each development region, so that these reviews can be the basis for the development of Regional Position Documents And the implementation of Regional Strategies.

In the years following this study, the fruit-growing Sub-Program was created and integrated at national rather than regional level. This programme appeared as a result of the fact that in the past 23 years, the fruit sector has been in constant decline, with negative consequences on the economic development of the rural environment and quality life of communities in traditional fruit-growing areas. A first objective of the sub-program is to restructure and improve the fruit-growing sector's competitiveness. In this regard, measures have been developed to support investments in physical assets and fruit holdings, respectively, support the increase of the areas occupied by fruit plantations and nurseries, and the modernization of the technological park. At the same time, through the establishment of the Operational Groups, innovation and cooperation of the actors in the sector are promoted with the purpose of short chains selling products. The contribution of the Research & Development sector through innovative solutions connected to the sector's realities and the application of top technologies lead to increasing the adaptability of farms to climate change and market requirements and the promotion of environment-friendly production techniques.

It is necessary to draw a signal with regards to the existence of regional disparities within the implementation of the Knowledge Based Economy and to understand the nature of the mechanisms underlying this phenomenon in order to effectively combat it.

## 5. Comparison between Romania, Poland and Hungary

Romania, Poland and Hungary are three countries, which belong to the Central-Eastern area of Europe, which joined the European Union in the 21st century. Poland and Hungary joined the European Union in 2004, while Romania joined the European Union in 2007. All those three countries have a relief genesis that resembles certain geomorphological and climatic characteristics. Soil, plains and plateaus are the main variables that resemble these countries, which through agriculture, they can, and should represent an important potential for GDP growth.

Rural areas in these three countries are facing major challenges that have emerged with the flow of events that could not be controlled such as: demographic change, youth migration to urban areas, or globalization. At European Union level, there is a chain of rural policies aimed at recognizing, using strengths, capitalizing on opportunities, providing the premises for decent living conditions, discovering new potential for economic development in those areas. During the planning phase of these policies, environmental concerns are the main purpose of using areas in rural areas that contribute to the promotion of agrobiodiversity and environmental measures in agriculture.

Poland has been able to develop this sector more over then the past of 10 years, fully accessing the amounts earmarked by the European Commission for rural development programs. At the same time, it has become a major exporter of fruits for countries like: Spain, France, Italy or Germany. Hungary has developed this branch of agriculture, but the agricultural area does not allow it to export but only for use on its own consumption. Romania has a very high potential, but untapped due to the lack of association between the small producers, the absence of qualified employees or the barriers imposed by certain aspects of bureaucracy. However, there are a significant number of producers that represent the basis of fruit production nationwide, and in the following table, we can see the average fruit production of Poland, Romania and Hungary at 1000 hectares.

**Table 1:** Average fruit production in Poland, Romania and Hungary at 1000ha.

Country	Year 2013	Year 2014	Year 2015
Poland	279.10	274.30	337.50
Romania	147.78	141.29	138.96
Hungary	82.1	81.60	80.76

Source: Processed from the European Commission

data

In table presented above, we note that Poland's fruit production declined in 2014 with about 25% growth next year. Both in Romania and Hungary, fruit production gradually declined in 2014 and 2015 respectively.

In Romania, in 2014, the yield decreased by about 4.5%, while in 2015, the variable used decreased to 2.5% over the previous year. As far as the neighboring state of Hungary is concerned, the yield in 2014 decreased by 0.6% while in 2015 the variable used suffered a 0.11% decrease compared to the previous year. If we report the territorial area of each country to the average of the three analyzed years, we can determine a value index, which can show us the best return at country level. Thus in Poland, the average of the three years is

296,966 / 100 hectares, in Romania it is 142,676, and in Hungary it is 81,486. Considering the surface of Poland, 312,683km<sup>2</sup>, Romania of 238,391km<sup>2</sup> and Hungary of 93,030 km<sup>2</sup>, the value index will be 1.05 in Poland, 1.67 in Romania and 1.14 in Hungary. In conclusion, Poland had the best country-wide yield on average fruit production over the period 2013-2015. Poland is the largest producer of apples in the European Union and the fourth in the world. A significant factor stimulating the development of domestic apple production is the production of apple juice as, after China, Poland is its second largest exporter worldwide (Europa.eu - Agricultural production – orchards, 2017).

## 6. Case study presentation

Agriculture ranks first in a ranking of activity in the South Muntenia region, with a rate of about 18%, followed by areas such as industry, construction, trade, forestry holdings, fishing, hunting and pisciculture. Agriculture represents 41% of the regional economy, where we find 2.4487 million ha of land outside (71.1% of the region), of which 80% is arable land, pastures 15.4% and 4.3% vineyards and gardens. Fruit growing is one of the three major agricultural activities that are practiced in this region.

This is one of the most important branches of the Romanian agriculture and its defining element of a very large percentage of subsistence farms. They are aimed mainly for self-consumption production, trading market products obtained or sometimes just their processing as various traditional alcoholic beverages. The total area of fruit plantations in Romania is about 1.7% of the arable land being concentrated in the general Arges (20 370 ha, estimated 12.96%), Prahova (9664 ha estimated 6.15%) and Dambovită (9.293ha estimated 5.91%).

The structure is symmetrical plantations nationwide, if we perform a report between the South Region and Romania, fruit plantations so that the structure remains constancy. The structure of tree plantations to the type of species is as follows: Plum (71 480 ha - 45.42%), apple (60 731 ha - 37.81%), cherry and sour cherry (7.760 ha - 4.93%), pear (4.820 ha - 3.06 %), apricot (2.880ha - 1.83%), peach (2.690ha - 1.71%), nuts (2.231 ha - 1.42%), shrubs (1,430 ha - 0.91%) and strawberry (2,080 ha - 1.32%).

The distribution by age group shows that the total area of orchards, 74% (117.090 ha), are filled with plantations that are older than 25 years, 19% (29.650 ha) are plantations aged between 10-25 years, and 7% (11.810 ha) are new plantations, aged between 1-10 years. In this analysis, it took into account the major categories of fruit trees in Romania, namely: plum, apple, cherry and sour cherry. In the following table, the number of fruit trees can be seen, by ownership, macroregions, development regions and counties.

In the table 2 is represented the total number of fruit trees in the South Muntenia region during the period 2013-2015. There can be noticed that in 2014 the number of fruit trees was multiplied by approximately 2,6 times from the previous year. However, for various objective reasons, in 2015 their number decreased to 14.026.009 pieces. There is a constancy between the number of fruit trees reported to regional level and those which are under private administration.



**Table 2:** The number of fruit trees in the South Muntenia region

Categories of fruit trees	By ownership	Years		
		Year 2013	Year 2014	Year 2015
		UM: Number		
		Number	Number	Number
Total	Total	15.003.688	3.819.0170	1.4026.009
-	Private Sector	14.804.280	3.7968.138	1.3805.300
-	of which: individual farm	14.150.854	3.7384.065	12.952.739
Plums-trees	Total	8.457.519	3.1801.178	7.506.179
-	Private Sector	8.408.162	3.1751.915	7.455.772
-	of which: individual farm	8.290.011	3.158.0641	7.262.276
Apples-trees	Total	3.828.183	3.697.568	3.738.446
-	Private Sector	3.688.576	3.535.147	3.578.364
-	of which: individual farm	3.342.711	3.314.075	3.269.567
Cherries and cherry-trees	Total	801.135	740.585	732.437
-	Private Sector	796.935	735.435	727.272
-	of which: individual farm	697.925	692.370	692.038

Source: National Institute of Statistics

Regarding the plum tree, the most widespread fruit tree in Romania, there has been an increase of about 4 times in 2014 compared with the previous year. This growth trend didn't have a constancy and unfortunately in 2015 the number of plum trees fell to 7.506.179 pieces.

The apple trees show a constancy during this period of 3 years, hence the number of this species has suffered a small decrease in 2014, but the following year seems to return to an upward trend.

The number of cherry trees has decreased during the period 2013-2015, reaching to 732.437 pieces. This decrease is presented in both, private sector and in individual agricultural holdings.

The following table shows the average fruit production in the South-Muntenia region, structured in each county in the public sector as well as in the individual farms.

Table 3 shows the average fruit production during the period 2013-2015. There can be noticed that in 2014 there was a downward trend, 3 times lower compared with the reference year. In 2015 the average fruit production achieved a growth both in the private sector and individual holdings.

**Table 3:** Average production of fruits in the region Muntenia Sud

By ownership	Macroregions, development regions and counties	Years		
		Year 2013	Year 2014	Year 2015
		UM: Kg/ trees		
		Kilograms	Kilograms	Kilograms
Total	Region Muntenia Sud	21	7	19
-	Arges	21	4	20
-	Calarasi	15	17	13
-	Dambovita	29	24	26
-	Giurgiu	12	18	18
-	Ialomita	14	11	9
-	Prahova	16	14	13
-	Teleorman	14	14	9
Private Sector	Region Muntenia Sud	21	7	19
-	Arges	21	4	20
-	Calarasi	15	17	13
-	Dambovita	29	24	26
-	Giurgiu	12	18	18
-	Ialomita	14	11	9
-	Prahova	16	14	13
-	Teleorman	14	14	9
of which: individual farm	Region Muntenia Sud	22	7	20
-	Arges	21	4	20
-	Calarasi	19	21	19
-	Dambovita	29	24	26
-	Giurgiu	14	18	17
-	Ialomita	12	13	12
-	Prahova	16	15	14
-	Teleorman	14	16	15

Source: National Institute of Statistics

The counties remarkable for the large number of harvested kilograms are Arges, Dambovita, Prahova and Calarasi. According to the above analysis, these counties have the highest level of grown fruit trees.

Giurgiu, Ialomita and Teleorman have a low average production of fruits caused by unfavourable relief or inappropriate climate. These counties are known for the productions of wheat, corn and sunflower which are more favourable to grow in the plain region where they belong.

Referring strictly to the South Muntenia region, there can be seen a symmetry in the types of property reported to the variables used in table number 3. There can be noticed a constant in Arges, Calarasi, Dambovită and Prahova counties, reported to the private sector and individual holdings.

Regarding Ialomita county, within the first type of property there is downward trend, followed by a steady average production of fruits. Regarding Teleorman county, the private sector shows a decrease of harvested kilograms, hence the individual holdings achieve an upward trend. In Giurgiu county there is a downward trend in both forms of ownership due to some objective reasons, but also lack of interest in this sector of agriculture.

The structure is symmetrical plantations nationwide, if we perform a report between the South Region and Romania, fruit plantations so that the structure remains constancy. The structure of tree plantations to the type of species is as follows: Plum (71 480 ha - 45,42%), apple (60 731 ha - 37.81%), cherry and sour cherry (7.760 ha - 4.93%), pear (4.820 ha - 3.06 %), apricot (2.880ha - 1.83%), peach (2.690ha - 1.71%), nuts (2.231 ha - 1.42%), shrubs (1,430 ha - 0.91%) and strawberry (2,080 ha - 1.32%).

On Sud Muntenia region the main fruit crop are represented by: plums, apples and cherries as the climate and the landscape are both in the benefit of this type of fruit production.

In regards to plums productions, the counties remarkable for the large number of harvested kilograms are Arges, Dambovită, Prahova and Calarasi, these counties have the highest level of grown fruit trees. Giurgiu, Ialomita and Teleorman have a low average plum production and fruits in general caused by unfavourable relief or inappropriate climate. These counties are known for the productions of wheat, corn and sunflower which are more favourable to grow in the plain region where they belong.

There can be noticed a constant in Arges, Calarasi, Dambovită, Giurgiu, Ialomita and Prahova reported to the private sector and individual holdings. Teleorman County, in the private sector shows a decrease in harvested kilograms, hence the individual holdings achieve an upward trend.

On apple production, the counties remarkable for to the large number of harvested kilograms are Arges and Dambovită, followed at nearly twice the distance by Teleorman and Calarasi. Dambovită County is renowned worldwide for Voinesti apple production, especially for the variety called "rabbit's snout (bot de iepure)". Giurgiu County has a very high growth rate in the last two years, therefore the average production of apples increased from 11 to 25 kg.

Referring strictly to the South Muntenia region, there can be seen a symmetry in the types of property reported to the variables analysed. There can be noticed a constant in Arges, Calarasi, Dambovită, Giurgiu and Teleorman counties, reported to the private sector and individual holdings.

Regarding Ialomita County, within the first type of property there is downward trend in 2014, followed by an increase in 2015, while individual holdings follow an upward trend. In Prahova

County, same trend direction is noticed, except the year 2015 in the private sector where there is a constant compared with the previous year.

On cherry crop, the counties remarkable for to the large number of harvested kilograms are Arges, Dambovita, Ialomita and Teleorman. Also, these counties have the highest level of grown cherry trees.

Referring strictly to the South Muntenia region, there can be seen a symmetry in the types of property reported to the variables analyzed. There can be noticed a constant in Arges, Dambovita and Teleorman counties, reported to the private sector and individual holdings.

Regarding Ialomita County, within the first type of property there is upward trend in 2014, followed by a decrease in 2015, while individual holdings follow a steady trend in the number of harvested kilograms. The same trend direction is noticed in Prahova county, except the year 2015 in the individual holdings where there is a downward trend compared with the previous year.

In Giurgiu County there is a growing within the first type of property, followed by a steady trend during entire period compared with the individual holdings.

In Calarasi county there is only a short period of steady trend, precisely 2013-2014 within the second type of ownership, the remaining being in a downward trend.

Regarding of stimulating the entrepreneurial spirit for the modernization and development of the fruit sector in the southern area of Romania, it is proposed that sustainable methods, increasing the competitiveness and economic development based on knowledge, bringing the European standards of infrastructure and means of transport by reducing the impact on protection and improvement of the quality of the environment, improvement and utilization of human capital efficiency, development of the rural economy and increase of productivity in the agricultural sector, but and reduction of disparities between counties.

These has as a final destination the realization of each producer a business plan of medium and long term fruit grower, so that there can be a continuity of the work done in the past years.

Young entrepreneurs, most of them aged 25-40, are the main target niche that has to give more interest and so can grow the yield for each orchard annually. It is proposed that good practices be exchanged so that the profit grows gradually, and the main method proposed is the association between producers. This is a very great potential, as it subsequently allows it to negotiate its product price with major retailers.

In conclusion, fruit growing remains a basic branch of agriculture that needs to be capitalized on medium and long term. The analyzed development area shows us a great potential, which can transform Romania from the importing country to the exporting country.

## **7. Conclusions**

Agriculture represents 41% of the regional economy, where we find 2.4487 million ha of land outside (71.1% of the region), of which 80% is arable land, pastures 15.4% and 4.3% vineyards and gardens. Fruit growing is one of the three major agricultural activities that are practiced in this region.

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In regards to plums productions, the counties remarkable for the large number of harvested kilograms are Arges, Dambovita, Prahova and Calarasi, these counties having the highest level of grown fruit trees. Giurgiu, Ialomita and Teleorman have a low average plum production and fruits in general caused by unfavourable relief or inappropriate climate. These counties are known for the productions of wheat, corn and sunflower which are more favourable to grow in the plain region where they belong.

The distribution by age group shows that the total area of orchards, 74% (117.090 ha), are filled with plantations that are older than 25 years, 19% (29.650 ha) are plantations aged between 10-25 years, and 7% (11.810 ha) are new plantations, aged between 1-10 years. If caught a measure of system performance orchards in South Region, it reveals that in 2015, the yield is higher than in previous years. It also finds that 2014 was one in which entrepreneurs in rural areas have achieved many plantings. It is noticed that there is a constant yield, if we refer to the two forms of ownership analysis, private sector and individual holdings.

Ways of stimulating entrepreneurs in this area are based on a continuous association between it and state institutions. The state has a duty to create advantages for each region separately, depending on their needs, but also the size of farms. These advantages can come from the European Commission, under the structural funds or through certain internal reforms. It requires a continuous strategy so that in the next 10 years the number of subsistence farms

to reduce, by associating them or increasing their size, this can be done by creating national programme that can transfer the knowledge to farmers. Category that should be followed is represented by people aged 25-40 years, because our main goal is sustainable development of this sector. In other words, the main strategy for the above, it is considered exploitation regional particularities and strengths and the potential for development considering the particularities of each county.

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## How to Increase the Competitiveness of SMEs?

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**Abstract:** SME is a place where the innovation easily appears, knowledge accumulates, and intellectual capital develops and is used. SMEs and entrepreneurs are an engine of economy because they create new workplaces and implement technology and innovations. When the economic growth becomes greater, SMEs increasingly adopt a key role in industrial development and restructuring. They can satisfy the increasing local demand for services, which allows increasing specialisation, and furthermore support larger enterprises with services and inputs (Fjose et al., 2010). At the same, SMEs have the limited access to the recourses (labour, capital, technology) and operate in very competitive environment. SMEs have to find a “third” way to be successful. This paper continues our research of role and impact of SMEs in a modern economy and is aimed to study the competitiveness of SMEs through the process of cooperation as an alternative – “third” - way of development.

**Keywords:** SMEs, cooperation, economic welfare, competitiveness

### 1. Introduction

According to the World Economic Forum, the major driven force of economic sustainability is competitiveness. They define *competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country*. <...> a more competitive economy is one that is likely to grow faster over time (The Global Competitiveness Report, 2013).

To measure the national competitiveness the World Economic Forum has based its analysis on the Global Competitiveness Index (GCI) that includes a weighted average of many different components. These components are grouped into 12 pillars of competitiveness:

- Institutions
- Infrastructure
- Macroeconomic environment
- Health and primary education
- Higher education and training
- Goods market efficiency

- Labor market efficiency
- Financial market development
- Technological readiness
- Market size
- Business sophistication
- Innovation

The World Economic Forum reports the results of the 12 pillars of competitiveness separately but they are not independent: they reinforce each other, and a weakness in one often leads to a negative effect in others.

This Global Competitive Index allows ranking countries according to the stage of their development. The World Economic Forum classifies all countries in stages of development using two criteria: the level of GDP per capita at market exchange rates and the share of exports of mineral goods in total exports (goods and services). A number of European countries (Switzerland, Finland, Germany, Sweden, the Netherlands, and the United Kingdom), and three Asian countries (Singapore, Hong Kong SAR and Japan) figure in the top 10 most competitive countries. BRICKS spread through other stages.

We may conclude that some countries have specific features that lead to competitiveness – innovative culture and business sophistication. This conclusion is based on the idea of gradual development – the economic success demands specific culture and institutional environment (basic requirements), the ability to use them (efficiency enhancers) and to create something new (innovation and sophistication factors). Thus, we may assume SMEs are the base of this due to its nature and characteristics.

The purpose of our paper is to analyse the competition of SMEs as a way to increase competitiveness.

In order to achieve the aim the following objectives were formulated:

- to define the concept of SMEs and its classification;
- to identify the SMEs' impact to economy;
- to analyze the role of competition for SMEs.

The research theory and methodology is based on the scientific papers and World Bank's, EU and Organization of United Nations reports devoted to the question of SME and competition. The paper was prepared by applying the methods of literature analysis and synthesis and the systematic secondary statistical data analysis of SMEs.

## **2. The SME Concept**

### **2.1 The SME definition and Classification**

There is no standard definition of what is an SME. Different countries, non-governmental organizations and scholars define in a different way. Although the criteria include the following aspects:

- number of full time employees;



- annual sales turnover;
- amount of total assets in the firm.

The great complications in the classification of the enterprises carried out by two criteria – the turnover and the total amount of the balance because they are not defined identically in all the countries. Thus, the analysis and comparison of SMEs among different countries could make difficulties.

At the same time, we may pick out the specific features of SMEs:

- dynamism,
- resourcefulness,
- risks tasking,
- more productive,
- innovative,
- educative.

The small number of components, the low dimensions of the tangible assets, the smaller complexity of the activities and simple structures make it easier to situate in the foreground the preoccupations, decisions and actions of the knowledge resource. The entrepreneurial spirit, the intense interpersonal relations and the pronounced group cohesion, the versatility, flexibility and organizational dynamism are defining elements for the economy and the company based on knowledge which are found traditionally in the small, dynamic companies (Savlovski & Robu, 2011).

Due to the measurement and closeness to the market SMEs adapt easily to the demands of the consumers. The success of SMEs is determined by the ability to make the decisions very fast due to deep understanding of the demands of clients, interest of suppliers and behavior of competitors. The SMEs are always ready to learn and educate. They are intensely integrated into external environment and they notice new tendencies around them. Sedziuviene and Vveinhardt (2010) point out the capacity to predict possibilities for market development and to assimilate new ideas are the basis of innovations.

Of course, some of SMEs fail - the reasons of failure may be different and this is not an aim of our paper.

## **2.2 The impact of SMEs**

The different governmental and non-governmental organizations collect data and provide statistics about economic welfare and employment. The statistics of almost all countries show that the SMEs are absolutely predominant in the economy. According to the Organization for Economic Cooperation and Development (OECD), more than 95% of all enterprises are SMEs and they provide of 60-70% of employment. According of the European Commission, the role of SMEs in European Economy is meaningful - they represent 99% of all businesses in the EU. In the past five years, they have created around 85% of new jobs and provided two-thirds of the total private sector employment in the EU.

Additionally, in countries like Japan or China 60% of GDP comes from SMEs, in the USA that percentage goes up to 65%, and in the EU SMEs generate 52% of GDP (Robu, 2013). Japan has the highest proportion of SMEs among the industrialized countries, accounting for more than 99% of total enterprises. India, according to its Ministry of Micro, Small and Medium Enterprises, had 13 million SMEs in 2008, equivalent to 80% of all the country's businesses. In South Africa, it is estimated that 91% of the formal business entities are SMEs (Edinburgh Group, 2013). Moreover, scholars emphasize that a major gap in African industrial development in the past years has been the absence of strong SME sub-sector. With over 165 million people, vast productive farmland, rich variety of mineral deposits and other mineral resources, African countries should have been a haven for SMEs (Taiwo, Ayodeji, & Yusuf, 2015). For instance, former Soviet countries tend to have disproportionately small SME sectors, even when controlling for per capita income (Ayyagari et al., 2003) because of history and legal traditions.

SMEs also create more jobs than large enterprises. Between 2002 and 2010, on average, 85% of total employment growth was attributable to SMEs (de Kok et al., 2011). Creation job in SMEs is cheaper than in a big enterprise. Job creation is very important for countries are suffered by high rate of unemployment and for developing and emerging countries.

The role of SMEs becomes more and more important in a current digital era when technologies develop fast, information and knowledge move rapidly, and the necessity of new services and goods appears each day. The expansion of SMEs in the digital sphere may occur faster and does not required additional capital injections. As a result, the SMEs have helped to make a jump from resource-based economy to knowledge-based economy where comparative advantage is compatible with both high wages and high levels of employment. The ability of SMEs to create, access and commercialise knowledge on global markets will be the fundamental source of their new competitiveness in global markets (Enhancing the competitiveness of SMEs through innovation, 2000).

Together, analysing the data provided by the International Comparison Program (ICP) (implemented by The World Bank) we may conclude that the significant share in global GDP does not lead to the personal welfare. This is dramatic situation for countries such as India, Indonesia, China, Brazil, and Russia. These countries have all traditional resources: a big territory, work force, and direct foreign investment. However, the prosperity of their citizens has no the high quality. To change this tendency and improve level GDP per capita it's necessary to stimulate the SMEs' expansion in developing countries. As we see above, the share of SMEs in developed countries' GDP is more than 60%. Thus, these countries should continue the recent policy of SMEs' expansion – form a friendly environment and provide support.

It's very remarkable point that SMEs contribute more than 60% to the global GDP. Besides this, the higher income in the country is - the bigger share of sector of SMEs is. It could be explained by the clear rules of making business, the benefits provided by government, and an access for finance. As a result, the unemployment rate declines and taxes are paid.

The SMEs and actions for their expansion are especially important for emerging countries because they help to diversify the economy, create new workplaces and reinforce technological development. Finally, the knowledge-based countries have the greater success not the resource-based (Khazieva, Tome, & Kovalev, 2017).

### 3. Understanding the competitiveness of SMEs

To understand the competitiveness of SMEs, primarily we should study them at the microeconomic perspective. We may see that their competitiveness develops according to the different views and/or their combination. The ability to create new combination of original views gives a competitive advantage. We may emphasize the following views:

- 1) Resource-Based View (RBV)
- 2) Knowledge-Based View (KBV)
- 3) Dynamic Capability View
- 4) Activity-Based View
- 5) Open Innovation View

According to the Resource-Based View (Penrose, 1959), wealth could be created through firm growth determined by its resources. Nevertheless, not all resources have the potential to create and sustain competitive advantages. In the other words, the company's ability to generate and support competitive advantage depends on its unique set of resources and capabilities i.e. those that are difficult to imitate by the competitors. Thus, firm performance depends on the rareness and uniqueness of its resources. Firms' resources include the assets, knowledge, information, capabilities, processes and so on.

Spender (1996) pointed out that a firm's knowledge and its capability to create exclusive knowledge are the heart of the theory of the firm and its wealth. Grant (1996) suggested that knowledge is the significant asset that a firm possesses and the critical source of sustainable competitive advantage.

The dynamic capability view (Teece *et al.*, 1997) argues an important extension of the resource-based view of the firm. While the RBV is essentially a static theory since it does not explain the evolution over time of the resources and capabilities that form the basis of competitive advantage, dynamic capabilities are conceptualized as consisting of bundles of routines (Cabrita & Viedma 2017). Amit and Shoemaker (1993) suggested that resources do not contribute to sustained competitive advantages for a firm, but its capabilities do. The dynamic capabilities view can help to explore the impact of new sustainability requirements on the dynamic capabilities that a firm should develop and sustain to remain competitive in turbulent environments, in particular which new capabilities are required to integrate environmental, social and economic objectives (Castiaux, 2012).

According to Porter (1999), we can create competitive advantage as we are active and make choice what we do and not do (Activity-Based View). Companies are challenged to develop new activities for integrating the idea of the scarcity of natural resources and the co-responsibility between businesses and society for the development of products, services and practices to sustain competitive advantages (Cabrita & Viedma, 2017).

Open innovation proposes a collaborative approach to innovation for firms to effectively leverage distributed knowledge (Chesbrough, 2006). Therefore, the center of analysis moves from the individual firm to the network of firms. In addition, a network organization enables better opportunities to collaborate and share resources to commercialize ideas (Cabrita & Viedma, 2017).

These views may combine in different ways. One of this combination leads to coopetition.

The study of competitiveness and coopetition at the macroeconomic level will be the next step of our research.

#### **4. Coopetition**

Coopetition is a rather new trend in the organization's strategy. Its first definition appeared in the 90s when some companies were competing while were able to work at certain stages of development of the industry. Later, the development of modern economy and changes in the main factors of production (knowledge economy), have to rethink how knowledge can be used, transmitted, developed and kept within the framework of cooperation between competitors. Nevertheless, most researchers have focused on cooperation between the big players rather than on coopetition of small and medium enterprises.

Coopetition describes the situation in which two or more entities active in the market, both cooperate and compete (Bengtsson & Kock, 1999, 2000). Usually, the scientific literature about moving alliances defines collaboration as the complete opposite of competition but leaves a gap in the framework of the various agreements relating to cooperation between organizations (Das & Teng, 2000). The coopetition is a more complicated due to the existing relationship between economic agents. Therefore, coopetition is a situation when we have to deal with competing and cooperation between the sides. It can also be understood as "a system of players in the interactions based on partial compatibility of interests and objectives" (Yami, Castaldo, Dagnino, Le Roy, & Czakon, 2010).

The high level of global competition and the extreme rate of development of communication technologies lead to the coopetition resulting from the increase in global competition and the high rate of development of communication technologies (Rządca, 2017). If technological progress can be made faster with the cooperation between current competitors, rather than through individual commitment of time, expertise, and financial resources, organizations are much more willing to cooperate, which assumes an informal exchange of technological knowledge with competitors (Von Hippel, 1986). Cooperation with direct competitors is important not only to take over the technological knowledge and skills from a partner but also in the development of the resources owned by the organization (Quintana-García Benavides-Velasco, 2004).

Research cooperation environment for SMEs indicate three main reasons for cooperation: a short product life cycle, the convergence of technology and increased costs of research and development.

From the perspective of the SME sector, the main reason for cooperation is an attempt to overcome resource constraints.

The study of the key success factor coopetition by Chin, Chan, and Ping-Kit (2008) is best known. They have identified seven major factors:

1. Leadership
2. Long-term commitment
3. Organizational learning

4. Development of trust
5. Sharing knowledge and risk
6. The computer system
7. The system of conflict management

The most important of them were included in the development of trust between partners and involvement in cooperation of leaders of the organization.

## 5. Conclusion

Our paper is a continuation of study dedicated to the issues of SMEs and their role in the modern society. First of all, we identified the specific features of SMEs and the place and impact of SMEs. As shown above, SMEs are the driven force of economy because they create new work places, develop and implement new technology and are opened to customers' demands. SMEs are an important segment of economy that makes the meaningful impact to the national GDP. At the same time, SMEs operates in very turbulent and changeable environment and have to find ways to be competitive. In this case, cooperation is seemed to be an appropriate way to increase the competitiveness. Cooperation is a situation when some companies were competing while were able to work at certain stages of development of the industry. Cooperation requires some success factors such as leadership, long-term commitment, sharing knowledge and risk, organizational learning, development of trust, the computer system and the system of conflict management. The trust between partners and involvement in cooperation of leaders of the organization are the most important thing in establishing cooperation.

Unfortunately, scholars pay more attention to the big players of economy rather than to the mechanism of cooperation of SMEs. This direction could be perspective for future research especially from micro and macroeconomic perspectives.

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# Motor vehicle production and trade sector performance: the influence of Croatian motor vehicle trade on the European Union motor vehicle production trends

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**Abstract:** The paper addresses the question of the influence of Croatian motor vehicle trade sector performance, as a representative of the trends on eastern European Union automotive trade markets, on the other European Union member countries motor vehicle production within the period from 2000 to 2015. The methodology of this research is based on the implementation of different production and trade performance indicators like production exports, motor vehicle import penetration and other important indicators. The results showed that, although the overproduction has led some European Union motor vehicle producers to the edge of bankruptcy, European Union holds an outstanding position in automotive industry with over half of the world turnover. Moreover, low incomes in sales resulted in formation of new motor vehicle manufacturer alliances and supply chain restructuring initiatives among many European Union motor vehicle producers. Also, the results showed that although the Croatian motor vehicle market is on the way to recovery, the motor vehicle trade sector still faces major challenges in the reduction in sales, which directly influences on the negative trends in European Union motor vehicle production sector. The paper is a valuable contribution to research fields of motor vehicle production and trade development, especially for the European Union market because it deals with data collected in a specific geographical market.

**Keywords:** motor vehicle production sector, motor vehicle trade sector, performance, Croatia, European Union member countries

## 1 Introduction

The automotive industry is important to the entire world economy and is the source of many innovations in production technologies (e.g. JIT Inventory Management, Kanban etc.) as well as in product design. According to Eurostat data in 2012 (2012b), the European Union motor vehicle trade (NACE Rev. 2, Division 45) counted 3.7 million employees and achieved 136 billion euros in value added, in 806 700 distributive trade companies. On the other hand, the motor vehicle production sector (NACE Rev. 2, Division 29) numbered 2.2 million employees in the European Union and generated 846.8 billion euros turnover, in 19 500 companies in 2012 (Eurostat 2012a).



The automotive industry is the world's largest production activity, using 15% of world steel, 40% of rubber and 25% of glass. It also uses 40% of the world's annual oil production. Between 1951 and 1972, the growth rate of production in the automotive industry was 5.9% annually (Suthikarnnarunai 2008). However, the growing production capacities of large automotive companies coupled with a shortage of world demand have resulted in surpluses in supply and low utilization of production capacities. As a result, the profits and financial performance of many large automotive companies have deteriorated. Declines in demand also affected European Union automotive market, causing the financial losses of many European motor vehicle producers which resulted in the formation of new motor vehicle manufacturer alliances.

This paper analyses the characteristics as well as the importance of motor vehicle production and trade sectors for the European Union economies. More specifically, the research question of the paper is whether drop in demand of the Eastern European Union motor vehicle markets, specifically the Croatian motor vehicle trade market in this paper, affects the trends in the European Union motor vehicle production and sales.

## **2 Characteristics of the European motor vehicle market**

Till the early 1980s, production in the European automotive industry was divided between national leaders such as Volkswagen in Germany, FIAT in Italy and British Leyland Group in Britain. Their sales dominated in countries of their origin, while only the British traditionally recorded significant exports at that time. The only challenge represented American multinational companies, whose individual production in European countries began to surpass national producers. Ford had great facilities in Germany, Great Britain and Belgium, and later in Spain as well. On the other hand, General Motors decided to operate under the brand Adam Opel in Germany and other European countries and under the brand Vauxhall in the UK. Opel had a significant production capacity in Belgium and Germany, while Vauxhall had only two plants in the UK. Over time, Ford and GM became the two largest and most profitable companies in Europe. Their only rivals after the mid-1980 were Volkswagen and the less profitable FIAT whose strength lay in almost complete dominance on the Italian market. However, leading multinational and national producers were faced with a steady rise in competition through the import of Japanese vehicles. The Japanese car maker's success was one of the most significant events in the post-war European car market. Although their market share never exceeded 10%, completely different Japanese production management concept encouraged European producers to innovate in production and supply (Hefort 2002).

Until the late 1980s, the European motor vehicle market changed considerably. Division across the national borders was still present, especially with Italy where FIAT continues to dominate the market. However, imports in all countries reached a 30% market share with upward trends (Hefort 2002). Another aspect of the change in the European automotive industry was the increase in export importance, with the largest share of German car makers. Much of their growth at that time was based on the export of their high-value vehicles to the North American market. In order to prevent the sales decrease, it was necessary to switch to other markets which, among other things, offered better prospects for growth during the 1990s. Therefore, motor vehicle manufacturers have mostly produced automobiles for cross-border markets.

In the beginning of the 1990s, Japanese producers established final assembly plants in Western Europe and increased market shares in these markets. During this period, the Japanese production model - Total Quality Management (TQM) and Lean production - is being expanded even in the western companies, with the following features (Gobetto 2014): (1) focus on the overall quality, (2) team approach in the product development department, (3) reducing the time to market required by improvements in product design, prototyping and product innovation, (4) logistic processes simplification (Just-in-time), (5) application of modular (agile) production systems and (6) maximum equipment utilization and minimum production unit costs.

At the beginning of the 21st century, the introduction of new technologies enabled the production of vehicles of lighter structures and improved performance, reduced fuel consumption and increased safety. Innovations in the vehicle structure and the development of new generation engines, coupled with research of alternative energy supply solutions, have led to a significant increase in research and development (R&D) costs compared to previous decade. However, increased production capacities have broken the automotive market, which is why several motor vehicle manufacturer alliances, such as the Renault-Nissan Alliance, the Daewoo and General Motors Alliance, Seat and Skoda with Volkswagen, and Fiat with PSA Peugeot Citroen, appeared in that period. Wad (2009) points out that internationalization, regionalization and globalization of the European automotive industry also contributed to the consolidation of global automotive groupations and alliances through various mergers, takeovers and partnerships. In order to increase the negotiation power in the procurement of materials, components and equipment and to increase the market share, major motor vehicle manufacturers followed the strategy of strengthening R&D capacity and distinctive features of individual brands, while ensuring efficiency in co-operation with partners.

Today, the overproduction has led to significant contractions in the automotive market; this situation has led some motor vehicle producers to the edge of bankruptcy. Therefore, solutions for environmentally sustainable vehicles that would enhance the European motor vehicle industry are required, while the most critical factor for the success is development of Lean production systems that would respond to requirements for quality products. Investing in innovation and new technologies today is one of the main issues in the automotive industry. By advancing technology, new solutions to be used in motor vehicle production are being developed; technological research is a key factor for innovation activities and the determination of technological performance and competitive advantage. Therefore, main automotive production markets started to invest in R&D activities more than ever before. For instance, the expenditures for R&D of the German motor vehicle producers exceeded 30% or about 11 billion euros in total R&D expenditures in Germany in 2000. In Sweden, R&D expenditures are 18%, in France 16% and in Italy 16%; in these countries R&D activities of motor vehicle producers have a significant impact on R&D investments at the national level as well (Heneric et al. 2005).

### **3 The influence of motor vehicle trade sector performance on the motor vehicle production**

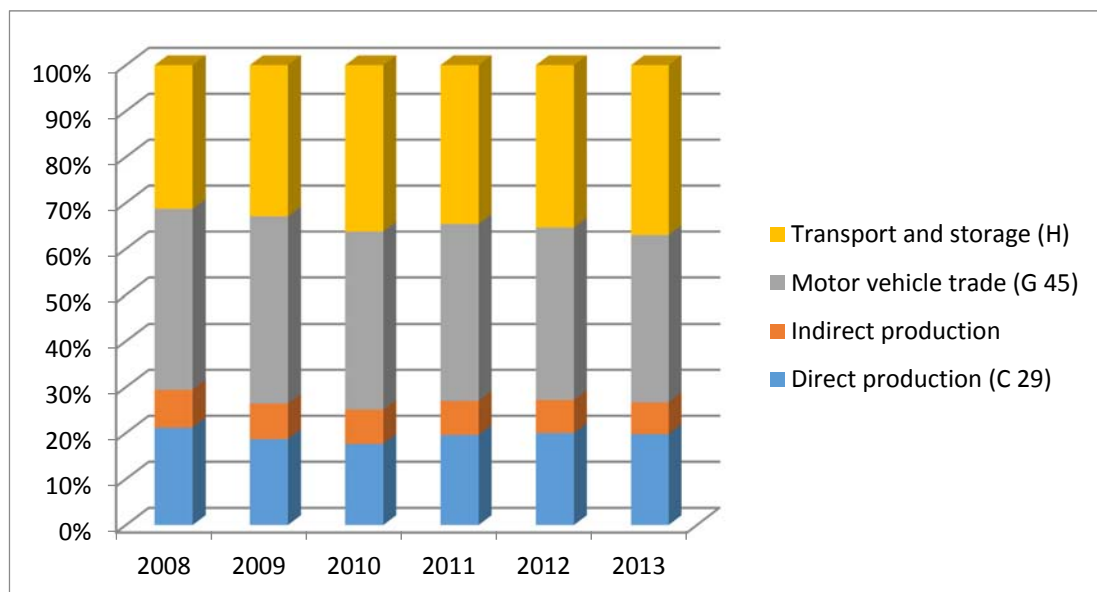
Due to its interdependence with many industries and the consumption of goods and services in many other sectors including raw materials, construction, machinery, legal services,

electronics and finance, automotive industry is a key component of economic growth. However, due to the sharp drop in demand and excess production capacities, the automotive production sector is hardly affected by the current economic and financial crisis. Production and trade sectors for motor vehicles are struggling for growth and profitability at an increasing costs and significant drop in profits. The weak points they are facing in the last ten years are the following (Suthikarnnarunai 2008): (1) inaccurate sales forecasts by dealers, resulting in production that exceeds demand and accumulation of obsolete vehicles; (2) due to unreliable information on manufacturers' demand, suppliers have to keep a high level of stock, in order to avoid production deadlock; (3) the average delay in processing orders and distribution exceeds 40 days; (4) high input and output logistic costs; (5) product proliferation resulting in higher production costs; and (6) reducing customer loyalty.

This chapter gives a review on the importance of production and trade in motor vehicles for the European Union economies. Particular attention is paid to the importance of the motor vehicle production sector (NACE Rev. 2, Division 29), by examining the performance indicators such as motor vehicle import and export penetration. Second part of the chapter examines trends in the Croatian motor vehicle trade sector, representing the movements in the eastern European motor vehicle trade markets which directly influence the European Union motor vehicle production sector.

### 3.1 The importance of production and trade in motor vehicles for the European Union economy

When it comes to the importance of production and trade in motor vehicles for the European Union economy, it is important to emphasize that the European automotive industry employed around 12.2 million people (5.6% of total EU employees) in 2013, of which the largest share, about 35% or 4.2 million, is employed in the motor vehicle and motorcycle trade sector and in transport and storage, which accounts for about 33% of the employees (see Graph 1) (ACEA 2015; ACEA 2016a).



**Graph 1: Structure of employees in the European Union automotive industry**

Source: adapted from ACEA (2015), ACEA (2016a)

Also, the European Union automotive industry is one of the largest research and development investors with up to 32 billion euros investments in 2012 (Crespo, 2014), ie. over 26% of the total R&D investment in the European Union (ACEA 2016a). In the Action Plan for 2020 (European Commission 2012), the European Commission emphasizes the importance of focusing production on quality, value-added and technological leadership in order to keep European production competitive on the global market.

Predicting the share of revenues with over 20% of GDP by 2020, the European automotive industry is justifiably occupying the key position in the reindustrialization program of the European Commission. Five consecutive years (2008.-2012.) of a significant drop in sales and registration of motor vehicles in Europe have returned the automotive sector back to 1995 levels, almost a quarter lower than the peak of registered vehicles from 2007 (European Commission 2014).

Sales drop inefficiently affected motor vehicle producers in Europe, mostly large producers of compact monovolumens, small and medium-sized cars. Strong pressure on costs reduction in these companies have resulted in several restructuring operations in Europe (PSA, Ford, GM and Fiat). Therefore, over the last decade, the automotive industry is witnessing the wave of consolidation and mergers globally, and the main reason are financial pressures in order to cover development costs. As a result, only 14 major production alliances survived, as shown in Table 1.

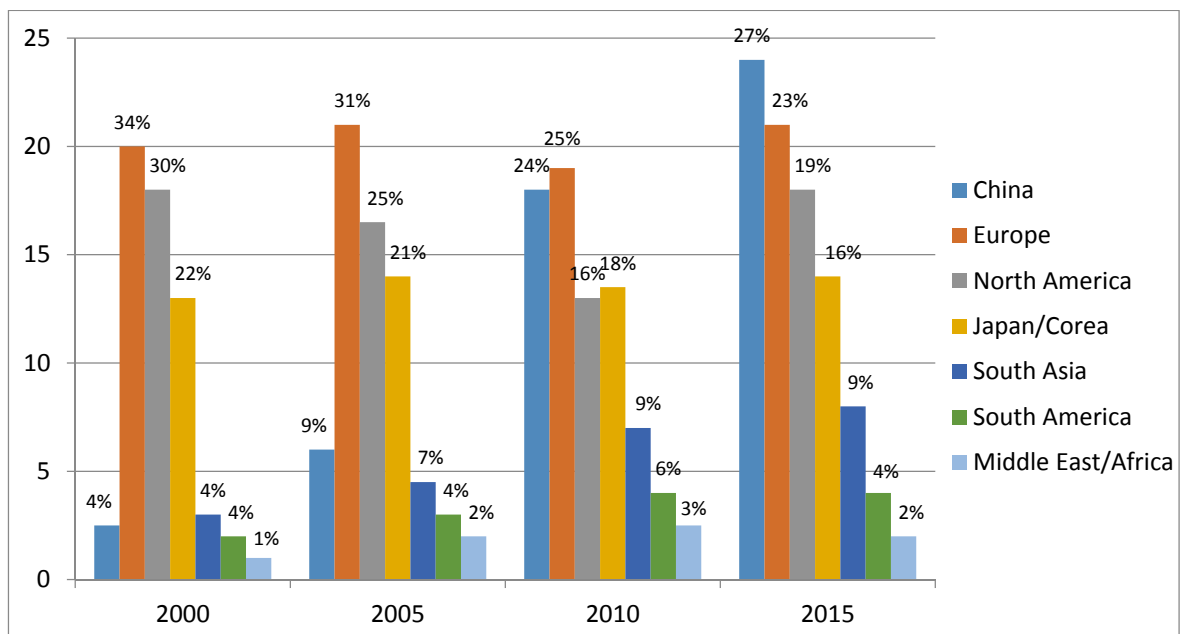
**Table 1:** Motor vehicle manufacturer alliances

Grupation	Motor vehicle brands within the grupation	Annual production 2015 (in million vehicles)
Honda	Acura, Honda	14.2 (of which 10.7 motorcycles)
Toyota Motor Company	Daihatsu, Lexus, Scion, Toyota	10.1
Volkswagen AG	Audi, Bentley, Bugatti, Ducati, Lamborghini, Man, Porsche, Scania, Seat, Škoda, Volkswagen	10
General Motors	Baojun, Buick, Cadillac, Chevrolet, Daewoo (GM Korea) Faw Jiefang, GMC, Holden, Isuzu, Jiefang, Opel, Vauxhall, Wuling	9.9
Renault-Nissan	Alpine, Dacia, Datsun, Infiniti, Lada, Mitsubishi Motors, Nissan, Renault, Renault Samsung Motors, Venucia	8.5
Ford Motor Company	Ford, Lincon	6.6
SAIC Motor UK	Austin, Maxus, MG Motor, Morris, Roewe	5.8
FCA (Fiat-Chrysler)	Abarth, Alfa Romeo, Chrysler, Dodge, Fiat, Jeep, Lancia, Maserati, Mopar, RAM truck, SRT	4.7
Daimler AG	BharatBenz, Daimler, Freightliner, Mercedes-Benz, Mercedes-AMG, MV Agusta, Setra, Smart, Thomas Built Buses, Western Star	2.9
PSA – Peugeot Citroen	Citroen, DS Automobiles, Peugeot	2.9
BMW Group	BMW, Mini, Rolls Royce	2.2
Hyundai Motor Group	Hyundai, Kia	1.9
Volvo Car Corporation	Volvo	0.5
Jaguar Land Rover	Jaguar, Land Rover	0.24

Source: authors work according to data available on the official websites of producers

First and second level suppliers also benefit from the mergers and acquisitions strategy to meet the producer requirements for innovation and product liability increase. The size of an enterprise becomes an increasingly important component in achieving further research and development opportunities, and first-tier suppliers want to retain their position in the global industry.

Considering graph 2, the growing trend in global production of motor vehicles can be noticed, in addition to a significant drop between 2005 and 2010 caused by the current economic crisis. Drop in motor vehicle production across the European Union in 2012 was a direct consequence of the decline in sales. Sales growth in third countries could not compensate the loss on the domestic market and other Eastern European countries due to excessively unused capacities. However, in spite of the European market situation in 2013, the level of light cargo production increased by 0.8% to nearly 16 million units (European Commission 2014). Governments in Europe provided various types of assistance to automotive industry, from favorable loans and guarantees to subsidies for replacement of old vehicles for new ones, which helped sales and indirectly to motor vehicle producers. Sturgeon and Biesebroeck (2010) highlighted several reasons for the intervention: (1) with the support of leading companies, the governments generated output for thousands of other companies in the value chain; (2) the high concentration of employment in the automotive industry disabled politicians to allow the collapse of large companies in this sector, especially at times of growing unemployment.



**Graph 2:** World motor vehicle production  
Source: ACEA (2016a)

Although European motor vehicle production showed an increasing trend between 2010 and 2015 (in units), its share in world production slightly decreased. The average European production in the last five years reached over 18 million vehicles a year, or about 25% of the world's production, making Europe the world's number one producer until 2015. According to the number of vehicles produced in 2015 compared to 2010, one can conclude that automotive industry overcame the crisis. However, increased demand may be the effect of those who delayed the motor vehicle purchase during the crisis. According to the latest data

from 2015 (ACEA 2016a), the growth trend in motor vehicle production will continue in the coming years.

The difficult financial situation of motor vehicle producers has also reflected on other supply chain participants. On the other side of value chain, lower sales volumes have led the dealers and the motorcycle repair sector to a disadvantageous position. Faced with a drop in profit and a lack of export opportunities to other countries, more than 50% of retailers in EU countries reported losses and liquidity problems (European Commission 2014). Overcapacity initiated mergers, acquisitions and strategic alliances, while automotive companies consolidated and simplified management and functions development and tried to minimize new investment costs. The standardization of the tools used in production and the number of components made in the parent company increases as the purchase of individual parts from suppliers decreases. Also, producers use modularity to simplify the final assembly processes.

In the first part of the crisis (2008-2009), the bulk of the restructuring was linked to the upstream supply chain in OEMs production facilities. However, given the rise in demand from other global markets it is estimated that only about 11 000 jobs in the European automotive industry have been lost in 2012 (European Commission 2014). Improved economic conditions and the number of vehicles produced between 2012 and 2015 and raising consumer confidence suggest that the automotive industry has overcome the worst crisis period.

Heneric et al. (2005) outlined the advantages and disadvantages of the European motor vehicle and motorcycle market, among which the most significant advantages are: (1) large domestic market, (2) modular supply chain that promotes flexibility, standardization and risk sharing among chain members, (3) qualified labor force, (4) high expenditure on production innovations and R&D, (5) strong market position and sustainable competitive advantage in the automotive industry; and (6) highly developed road transport that represents the backbone to European transport system. On the other hand, Heneric et al. (2005) point out some shortcomings of the European motor vehicle market, such as: (1) low labor productivity, (2) high labor costs and ineffective market regulation, (3) loss of knowledge due to forced company mergers and takeovers, and (4) political influences on supply chain decisions.

Table 2 shows the comparison of the number of produced and registered motor vehicles in 2010 and 2015 for all EU member countries. It is important to note that the European Union automotive industry is highly concentrated in Germany, which accounts for more than one third of the total production generated by Member States (about 33%). The six largest national industries, Germany, Czech Republic, France, Spain, United Kingdom, Italy and Poland account for more than 85% of total motor vehicle production in the European Union. As a result, it can be concluded that Germany plays a key role in this industry, since most of the key European producers are located in Germany. The automotive sector is one of the largest employers in Germany with about 866 000 employees (Heneric et al. 2005). Also, the automotive industry is responsible for about 4% of the Czech Republic's GDP, while in some member states, whose industry is more diversified, this share is much lower (Mashilo 2010).

Table 2 also shows that the number of motor vehicles produced in Czech Republic, Hungary, Germany, Poland, Romania, Slovakia, Slovenia and Spain exceeds the number of registered motor vehicles, indicating that these countries are motor vehicle exporters. Among the listed countries Slovakia is leading, exporting over 90% of motor vehicles produced, followed by Hungary and the Czech Republic, which export about 80% of motor vehicles produced.

**Table 2:** Motor vehicle production and sales by EU member countries 2010./2015.

Country	Motor vehicle production (C 29) 2010.	Motor vehicle production (C 29) 2015.	Number of registered motor vehicles 2010.	Number of registered motor vehicles 2015.
Austria	104 814	121 613	362 564	349 897
Belgium	338 290	395 786	608 524	571 524
Bulgaria		1 733	20 082	28 053
Czech Republic	1 076 385	1 256 332	187 008	260 070
Cyprus	-	-	-	11 834
Denmark	-	-	171 225	245 319
Estonia	-	-	10 410	24 921
Finland	6 500	79 842	126 396	123 476
France	2 227 374	1 993 775	2 708 883	2 345 092
Greece	-	-	141 499	82 044
Croatia	-	-	38587	35 715
Ireland	-	-	99 986	150 821
Italy	857 359	989 510	2 168 919	1 724 725
Latvia	-	-	6 189	17 831
Lithuania	-	70	10 365	23 359
Luxembourg	-	-	53 784	51 607
Malta	-	-	-	-
Hungary	167 890	522 955	56 826	100 933
Netherlands	115 487	119 263	543 400	521 221
Germany	5 905 985	6 101 812	3 198 417	3 539 825
Poland	869 376	654 932	388 871	432 436
Portugal	158 723	155 358	272 782	213 647
Romania	350 912	381 080	104 139	100 491
Slovakia	556 941	909 551	73 819	90 091
Slovenia	205 711	128 829	65 596	68 972
Spain	2 387 900	2 735 546	1 114 119	1 214 212
Sweden	217 084	207 867	334 134	396 693
United Kingdom	1 393 463	1 677 797	2 295 142	3 061 406
European Union	16 904 436	18 433 651	15 135 420	15 792 848

Source: adapted from ACEA (2010a), ACEA (2010b), ACEA (2016a), ACEA (2016b), Promocija plus (2010.-2015.)

Regarding location distribution in EU countries, table 2 shows that with over 10 million registered motor vehicles, Germany, United Kingdom, France, Italy and Spain account for more than 75% of the total number of registered vehicles in the European Union. It is also interesting to note that in the markets of Eastern Europe the production of motor vehicles exceeds the number of registered vehicles, where in Slovakia, for example, only 8% of production covers domestic demand and in the Czech Republic where over 18% of production capacities cover the demand for motor vehicles in the domestic market.

Finally, trends in the motor vehicle production and the number of registered motor vehicles from 2010 to 2015 in European Union member countries show that the increase in number of registered motor vehicles (4.34%) did not follow the increases in number of produced motor vehicles (9.04%). Thereat, the highest decrease in the number of registered motor vehicles recorded Southern and Eastern European Union member countries, such as Italy, Greece,

Bulgaria and Croatia. These trends considerably affected European Union motor vehicle production market, so the following chapter will explain the situation in the Croatian motor vehicle trade market in detail, which represents the movements in other Eastern European Union member countries.

### 3.2 Croatian motor vehicle trade performance trends

When considering the importance of motor vehicle trade for the Croatian economy, it is important to emphasize that this sector employed 12 790 people in 2015, which is 2% less than in 2013 (Table 3).

**Table 3:** Number of employees in the motor vehicle trade sector in the Republic of Croatia

	2013.	2014.	2015.
<b>Motor vehicles and motorcycles trade (G 45)</b>	13 056 (1,15%*)	12 835 (1,17%*)	12 790 (1,21%*)

Source: DZS (2015) *Statistički ljetopis*.

\* Share in total number of employees in the Republic of Croatia

However, despite the drop in the number of employees, table 3 shows that the share of employees in motor vehicle trade sector in the total number of employees in Croatia has risen (from 1.15% in 2013 to 1.21% in 2015). Such indicators certainly positively reflect on the movements of the unemployment rate which is still positive in Croatia. The average salary in this sector was 8 302 kunas in 2015 (DZS 2015b).

**Table 4:** Registered motor vehicles in the Republic of Croatia

Year	Total	Of the total			
		Motorcycles	Personal vehicles	Buses	Cargo vehicles
2005.	1 790 971	44 196	1 384 699	4 851	152 663
2006.	1 866 741	49 788	1 435 781	4 914	159 147
2007.	1 949 936	56 401	1 491 127	5 043	165 742
2008.	2 021 936	63 357	1 535 280	5 099	170 704
2009.	2 005 210	63 691	1 532 549	5 071	164 761
2010.	1 969 587	62 210	1 515 449	4 877	157 731
2011.	1 969 405	62 876	1 518 278	4 841	154 884
2012.	1 863 741	58 006	1 445 220	4 655	141 567
2013.	1 869 370	58 311	1 448 299	4 789	141 491
2014.	1 899 538	59 643	1 474 495	5 040	143 660
2015.	1 966 683	61 208	1 499 802	5 276	149 006

Source: DZS (2015) *Statistički ljetopis*.

Table 4 shows the number of registered motor vehicles for the period 2005 - 2015. The data show that the total number of registered motor vehicles continued to grow until the crisis in 2008, after which the number of registered motor vehicles decreased by about 7.8% by 2013. Negative trend was present in all segments of road motor vehicles; the most significant decline was recorded in cargo vehicles (17.1% decrease compared to 2008), while the crisis had the least impact on the segment of personal vehicles (5.6% drop compared to 2008). Only 2013 shows the positive increase in the number of registered motor vehicles in all segments.



**Table 5:** New registered motor vehicles in the Republic of Croatia

Year	Total	Of the total			
		Motorcycles	Personal vehicles	Buses	Cargo vehicles
2005.	141 467	6 722	102 123	381	12 650
2006.	157 767	7 775	114 447	376	13 607
2007.	153 518	8 980	106 202	433	13 782
2008.	144 518	8 811	95 697	391	13 148
2009.	81 231	4 717	53 252	484	6 780
2010.	64 383	2 851	46 209	195	4 996
2011.	66 290	2 726	48 883	173	5 198
2012.	56 781	2 397	40 825	217	5 218
2013.	64 692	2 028	46 563	353	7 272
2014.	87 773	2 455	68 522	474	8 395
2015.	98 275	2 692	74 181	482	11 212

Source: DZS (2015) *Statistički ljetopis*.

When considering the number of new registered motor vehicles (Table 5), there is also a 64% drop (i.e. 100 986 motor vehicles) due to the economic crisis from 2006 to 2013. Negative trend was present in all segments of road motor vehicles; the most significant decline was recorded in personal vehicles (76% decrease compared to 2006), while the crisis had the least impact on the segment of the buses (60% decrease compared to 2007). Also, it can be seen from the data that the cargo vehicles segment first started to recover from the economic crisis and recorded the first positive trends in 2011.

**Table 6:** Comparison of first-time registered personal vehicles, new registered personal vehicles and total number of registered personal vehicles in the Republic of Croatia from 2005 to 2015

Year	Number of new registered personal vehicles	Number of first-time registered personal vehicles	Total number of registered personal vehicles	The share of new personal vehicles in the total number of first-time registered personal vehicles	The share of new personal vehicles in the total number of registered personal vehicles
2005.	70 541	102 123	1 384 699	69,07%	5,09%
2006.	78 775	114 447	1 435 781	68,83%	5,48%
2007.	82 664	106 202	1 491 127	77,83%	5,54%
2008.	88 265	95 697	1 535 280	92,23%	5,74%
2009.	44 918	53 252	1 532 549	84,34%	2,93%
2010.	38 587	46 209	1 515 449	83,50%	2,54%
2011.	41 561	48 883	1 518 278	85,02%	2,73%
2012.	31 360	40 825	1 445 220	76,81%	2,16%
2013.	27 802	46 563	1 448 299	59,70%	1,91%
2014.	33 962	68 522	1 474 495	49,56%	2,30%
2015.	35 715	74 181	1 499 802	48,14%	2,38%

Source: DZS (2015), Promocija Plus (2005.-2015.)

Table 6 compares the number of new registered personal vehicles, first-time registered personal vehicles and the total number of registered personal vehicles in Croatia between 2005 and 2015. The long-term crisis has affected the reduction in sales of motor vehicles, so

74 181 vehicles were sold by 2015, out of which 35 715 were new and 38 466 used, while in 2008 around 95 697 vehicles were sold, 88 265 new and 7 432 used motor vehicles. Drastic reduction in the share of new registered personal vehicles in the total number of first-time registered personal vehicles between the 2008 and 2015 for more than 44% is the most worrying issue.

2014 recorded the first increase in the share of registered new personal vehicles in the total number of registered personal vehicles, while the share of registered new personal vehicles in the number of first-time registered personal vehicles continues to show a downward trend, however at a much lower percentage than in the last 6 years. The latest figures show increase in new personal vehicles trade in 2015 by 5% compared to the previous 2014, so it can be concluded that the motor vehicle market is on the way to recovery. However, one should bear in mind that Croatia is ranked 22nd in the EU by the number of new personal vehicles per 1000 inhabitants with only 8 new vehicles sold, while the EU average is 25 new vehicles per 1000 inhabitants (HGK 2016).

Croatian motor vehicle trade is facing major challenges such as increasing competition on the domestic market and the introduction of new technologies. The future development of motor vehicle trade primarily depends on its adaptation to emerging conditions both globally and regionally as well as in the local market. However, from the report on the number of new registered motor vehicles, it can be concluded that the motor vehicle trade in the Croatia shows positive changes in the past few years at almost all levels, which is the result of more stable and more transparent business conditions.

#### **4 Conclusion**

This paper analysed the influence of Croatian motor vehicle trade movements, as a representative of the trends on Eastern European automotive markets, on the European Union motor vehicle production trends. The first part of the paper analysed the characteristics as well as the importance of motor vehicle production and trade sectors for the European Union economies. Second part of the paper examined trends in the Croatian motor vehicle trade sector, representing the movements in the Eastern European Union motor vehicle trade markets which directly influence the European Union motor vehicle production and trade sector.

Although the overproduction has led some European Union motor vehicle producers to the edge of bankruptcy, the European Union automotive industry is still important for the European economies as one of the largest R&D investors. However, the increases in production coupled with declines in demand have resulted in the formation of new motor vehicle manufacturer alliances due to financial losses of many European Union motor vehicle producers.

Although the Croatian motor vehicle trade market is on the way to recovery, as well as other Eastern European markets, it will take a long time to reach the new motor vehicle sales level from the pre-crisis period. Therefore, European Union motor vehicle producers should put an emphasis on innovation development and supply chain restructuring to compensate for sales losses, which is already evident in the level of R&D investments.

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## Understanding the Soft Side of BPM as a Competitiveness Driver: a Preliminary Research

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**Abstract:** The aim of paper is to investigate the employees' resistance to business process management (BPM) initiatives. Academics and business practitioners agree that BPM impacts the organizational competitiveness and a lot of effort was put into investigations related to BPM implementation critical success factors. Many researchers emphasize that human resources must be considered a very important element of BPM. However, there is still no unified understanding about employees' resistance to changes that are caused by BPM implementation. The findings of previous researches into reluctance related to BPM acceptance are analysed and systemized in order to answer the following question: which key problems regarding the employees' change resistance are mentioned in the literature? A qualitative content analysis of the findings is presented. Additionally, a research model that is based on the theory of reasoned action (TRA) is developed. The research results contribute BPM holistic approach by shedding more lights on the factors that increase and empower, or weaken and inhibit employees' tendencies to engage in BPM initiatives and to accept the changes. The deployment of model proposed by this research could help SMEs to conduct BMP initiatives successfully.

**Keywords:** theory of reasoned action, business process management, competitiveness, employees' behaviour, resistance

### 1 Introduction

Business process management (BPM) concept is often seen as a competitiveness driver since it help organizations to improve its' processes and to increase business performance. Many authors defined BPM during the last two decades. According to Harmon (2007) "BPM is a holistic concept that comprises different phases, from process modelling, managing, and automating to monitoring and measurement of business process". During the years the focus of BPM researchers moved from information technology, organizational structure and managerial issues toward the "soft side" of BPM, such as culture and people related questions (Grau 2014). According to Kettenbohrer (2015), "to make BPM projects successful, the 'human resource' has to be taken into consideration". Though SMEs are an extraordinarily vital part of every economy, BPM principles are rarely applied to their practice. It is suggested to

intensify BPM initiatives in SMEs in order to improve their competitiveness. Therefore the findings of this research could serve SMEs as a guideline for implementation of BPM concept.

The aim of this research is to identify the most important factors that influence the resistance on BPM-induced changes among the employees affected by BPM initiatives. After the formulation of the problem the existing literature about the research area is reviewed. Next, the findings of previous researches into reluctance related to BPM acceptance are analysed and systemized. A qualitative content analysis of the findings is presented. A research model that is based on the theory of reasoned action (TRA) is developed, research results and implications for further research are discussed and, finally, the conclusions are given.

## **2 BPM as a competitiveness driver**

During the last two decades numerous studies dealt with the determinants of BPM projects success. The results show that implementation of BPM can be a complex and time-consuming effort (Rosemann and de Bruin 2005; Harmon 2010). It requires a holistic organizational perspective and the success of BPM implementation is influenced by different factors, obstacles and barriers (Rosemann and vom Brocke 2010). Besides, the BPM literature overview shows that there have been diverse discussions about the effects of BPM implementation. Several authors emphasize that the empirical confirmation of BPM implementation benefits is quite scarce (Kohlbacher 2010; Kohlbacher and Reijers 2013). On the other hand, the analysis of surveys related to influence of BPM to organization performance evidence that BPM implementation helps organizations' to increase the process performance, thus influencing positively the overall organizational performance (Roeser and Kern 2015). The investigation conducted by Roeser and Kern (2015) revealed 16 papers that evidenced the positive influence of BPM adoption on process or organizational performance. The research of Kohlbacher and Gruenwald (2011) implies the existence of relationship between organizational performance and process performance measurement while Hernaus et al. (2012) prove "an indirect impact of process performance measurement on financial performance measures through non-financial measures". McCormack et al. (2009) argue that "advancing in BPM, the organization will become more efficient and will achieve improvements in process performance, but on the other hand these achievements will increase the management complexity".

In order to avoid a risk of implementation failure, BPM practitioners and researchers tend to identify the major factors of BPM success (Kohlbacher 2010). Numerous authors developed quite similar lists of core elements of BPM success, such as: strategic alignment, project management, information technology, methods and methodology, performance measurement, collaborative environment, top management support, continuous improvement and change management, user focus, culture, people and governance (Bai and Sarkis 2013; Van Looy et al. 2014; Buch et al. 2015, Trkman 2010). According to Vom Brocke and Schmiedel (2014) "a general list of BPM critical success factors (CSFs) must be extended with the specific factors that influence BPM project success"; like BPM maturity level, company-industry, country-characteristic and company-size (Trkman 2010; Buch et al. 2015).

Despite a general attitude about BPM as a concept that is devoted to large organizations, Murphy and Ledwith (2006) suggest its application to SMEs. According to the authors "weak top management commitment toward BPM initiatives and lack of understanding of the BPM

concept and its perceived benefits has led to limited adoption of BPM in SMEs (Riley and Brown 2001; Smith and Fingar 2003; Imanipour, Talebi and Rezazadeh 2012). Similarly, the research conducted by (Singer 2015) showed that “there is lack of a common understanding of the term BPM in SMEs”. This result is aligned with the findings of Chong (2007) showing that “poor knowledge of process oriented approach and lack of top-management support is among 5 top factors inhibiting BPM implementation in Western Australian wine SMEs”. Since SMEs play an important role in many economies it is important for SMEs to achieve the employees’ common understanding of BPM and to motivate them to implement the concept.

### **3 Role of the soft side of BPM for organizational competitiveness**

Though BPM is tightly coupled with technology and managerial issues, business practitioners and academics have to understand and agree on social and human questions of BPM. Trkman (2010) identified “the lack of linkages between hard and soft factors as the main reason for BPM failures”. According to Hanafizadeh and Osouli (2011) “the failure of most BPM projects is caused by the combination of soft and hard factors”. These authors examined 32 credible papers in order to identify the key factors dealing with change. Their research was based on the model of BPR key success and failure factors recommended by Al-Mashari and Zairi (1999). After the analysis of literature review results, 9 factors within 2 soft dimensions (“change management” and “management competence”) of BPM holistic concept were derived. The paper shows that “the factors leading to the success of change management dimension are: (1) revision of motivations and rewards systems; (2) communications systems; (3) empowerment; (4) people involvement; (5) training and education and (6) organizational culture (Hanafizadeh and Osouli 2011). As the BPM concept has become mature, the researchers have intensified the efforts to examine its change management factors, so the paper by Hanafizadeh and Osouli (2011) is only one among many others trying to extend the knowledge in human and cultural aspect of BPM. To illuminate the people-oriented issues of BPM a further literature review is conducted. The results are presented in a list of statements, thus illustrating chronologically the most common findings on soft side of BPM implementation success factors.

- “Cultural capacity for change and management’s willingness to impact people are important factors that influence the level or radicalness that process change should take” (Al-Mashari and Zairi, 2000).
- “The people issues and over-reliance on IT-based technology are the main barriers to successful implementation of business process reengineering projects” (Tennant and Wu, 2005).
- “Organization-wide beliefs in the need of change have significant influence on employees’ perception about the ease of use and usefulness of BPM” (Kamhawi, 2008).
- “Employees are the core element of BPM capability. The organization needs to develop the capabilities to assure the workforce to be BPM-ready” (Rosemann and VomBrocke 2010).
- “The full potential of BPM system is achieved when targeted end-users really adopt BPM technology and feel comfortable using it” (Poelmans and Reijers 2010).
- “BPM as a broader context of process modelling is a complex activity mandated by management, but influenced by individual and socio-political factors” (Eikebrokk et al 2011).

- “People and organizational cultures are identified as the main barriers to changes related to BPM implementation” (Aparecida et al 2012).
- “For BPM system implementation, human participation is of the essence. No reengineering effort will succeed without first reeducating and retraining business users” (Goksoy 2012).

Though the list of statements evidences that the researchers’ attention on the people issues of BPM is present continuously for about two decades, a deeper understanding of resistance to BPM acceptance is still missing.

#### **4 Theory of reasoned action and BPM**

Theory of Reasoned Actions (TRA) was developed by Fishbein and Ajzen (1975). It is a general, well established social psychological model that defines the links between beliefs, attitudes, norms, intentions, and behaviours of individuals. TRA suggests that the main determinant of an individual’s behavior to carry out a specific behavior is subject to the individual’s antecedent attitude (ATT) and the subjective norm (SN) (Fishbein and Ajzen 1975; Laumer et al 2010). According to Fishbein and Ajzen (1975) “ATT is the individual’s positive or negative feeling about performing a behavior. The assumption is that two important factors influence ATT: (1) initial beliefs and feelings regarding the consequences arising from individual’s behavior and (2) evaluation of the advantages or disadvantages of those consequences”. “SN is the person’s perceived pressure of what important others think the individual should do” (Fishbein and Ajzen 1975). SN is similar to the broader term “social norm”. However, social norms comprise “a broad range of permissible, but not necessarily expected or desired behaviors” (Fishbein and Ajzen 1975).

Besides, similar theories were developed, such as: Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Diffusion of Innovations (DOI) and Unified Theory of Acceptance and Use of Technology (UTAUT). These theories identify additional factors that influence individual behaviour: organizational characteristics, innovation characteristics or individual interactions with the environment. Many researches have been conducted to investigate whether the presence of such factors will ensure the adoption of the information technology. However, some authors favor the use of TRA since its origins lie firmly in the research field of psychology (Laumer et al 2010). The others suggest that future researches should abandon alternate theories and return to the original theory – TRA (Benbasat and Barki 2007; Laumer et al 2010). Besides, Recker (2010) found that existing theories of user behaviour can be introduced from the broader IT and IS field in explaining BPM success or failure factors.

A number of authors agree that change management is fundamental for BPM. According to Abdolvand et al. (2008) and Palmer (2004) employees’ fear of losing jobs, skepticism about project results, feeling uncomfortable with changes in working environment and authority loss are the most common factors influencing individuals’ resistance to change and BPM rejection. Empowering employees, promoting trust, creating a critical mass at the operational level through engaging them proactively in BPM project, openness and resolving conflicts play a critical role in successful implementation of business process change (Sikdar and Payyazhi, 2014). Still, the human dimension of organizational change, change readiness and



organizational commitment at the individual and group levels has been missing in the researches on BPM implementation (Helfert, 2009; Sikdar and Payyazhi 2014; Trkman 2010). Organizational commitment at the individual level is associated with ATT. This term represents the emotional component and is defined as “the psychological state or mindset that ties an employee to the organization” (Meyer et al. 2012; Kuo, 2013). It is related to employee’s evaluation of behaviour consequences.

According to Pieterse et al. (2012) “resistance to change is generally considered collateral damage of change endeavours”. Business change acceptance is “driven by an individual’s ability to recognize the need for change and by the will to promote and implement such change” (Cavalcante et al. 2011). The resistance to change is related to the quality of individual-level adaptation in organizational change and caused with the anxiety about job stability and growth. It is also concerned with the individuals’ logic of the decision-making, communication and interaction within the new working environment and redesigned processes.

## **5 Model of resistance to BPM initiative**

Following the findings of preliminary literature overview this research builds upon the idea that an individual’s personality traits (attitudes - ATT and subjective norms - SN) are related to the resistance to change, thus influencing BPM success. Further, the ATT issues are categorized in two groups:

- Initial beliefs (ATT-IB) - the reflection of the individual’s salient behavioral beliefs toward change (understanding the need for change, feelings and expectations, assessment of new way) and
- Individual’s commitment toward organization (ATT-OC) - the intention of an individual to participate in changes within the organization (level of commitment to changes, loyalty).
- Subjective norms reflect the relevance of reference groups (colleagues, managers or subordinates) for individual behaviour within BPM initiative, thus influencing its success or failure.

Table 1 presents change management issues related to BPM success in the context of TRA.

The addressed factors could help understanding the resistance to change in BPM initiatives. Further, “resistance to change” (RES) is introduced as a dependent variable which covers 4 important issues addressed by other researchers:

- Employees fear of losing job (Abdolvand et al. 2008),
- Feeling uncomfortable with new working environment (Abdolvand et al. 2008),
- Empowerment of people (Al-Mashari and Zairi, 2000),
- Involvement in decision-making and communication process as major contributing factors to the success of BPR-related organizational change (Al-Mashari and Zairi, 2000).

**Table 1:** Change management issues that can lead to resistance to change in BPM initiatives: the perspective of TRA

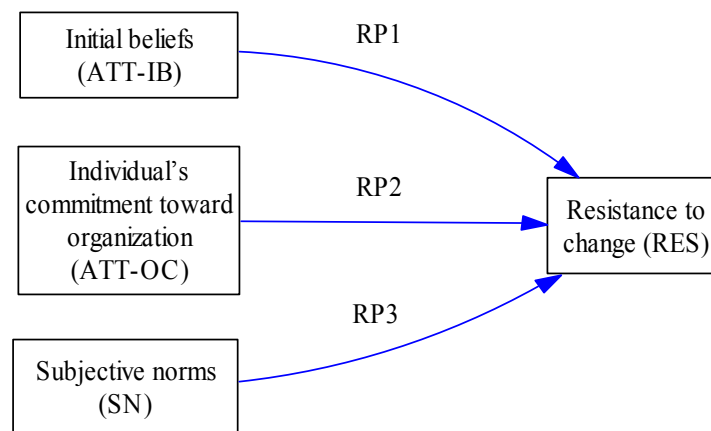
TRA determinant	Change management issue	Source
Initial beliefs (ATT-IB)	Understanding the need for change: the change is not needed; the change is not realistic.	Decker 2012
	Feelings and expectations: low motivation to change; little Buy-in, low moral.	Decker 2012
	Assesment of new way: hard work expected; too much change coming.	Decker and McCormack 2008
Individual's commitment toward organization (ATT-OC)	Low commitment: employee's needs are not met; no desire to stay in the organization; no job satisfaction; lack of establishment of common goals, low emotional commitment.	Wong et al 2005; Faisal and Al-Esmael 2014; Aprecaida et al. 2012.
	Loyalty: acceptance of organizational changes; eager to work hard for the organization; low turnover intentions, job security; considering the organization as the best of all organizations; a strong belief in organizations's values effort and desire to achieve organization's goals.	Faisal and Al-Esmael 2014
Subjective norms (SN)	Social pressure to perform or not perform changes: the users' perception that most people who are important to him or who influence his opinion think he should or should not perform the behavior in question.	Fishbein and Ajzen, 1975; Eikebrokk et al. 2011

Next, a list of statements is developed from the results of previous qualitative research, prior to conducting a quantitative study. Table 2 presents the questionnaire structure and statements for both TRA determinants and resistance to change.

**Table 2:** Survey structure and sample statements

TRA determinant	Change management issue
Initial beliefs (ATT-IB)	Due to BPM I would accomplish tasks more quickly.
	BPM could help improve the quality of my work.
	BPM would give me greater control over my work.
	BPM could enhance my effectiveness in my work.
Individual's commitment toward organization (ATT-OC)	I feel very little loyalty to this organization.
	It would take very little change in my present circumstances to cause me to leave this organization.
	There's not too much to be gained by sticking with this organization indefinitely.
	Deciding to work for this organization was a definite mistake on my part.
	I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.
	I would accept almost any type of job assignment in order to keep working for this organization.
	I find that my values and the organization's values are very similar.
This organization really inspires the very best in me in the way of job performance.	
Subjective norms (SN)	People who influence my behavior think that I should actively participate in BPM initiative.
	People who are important to me think that I should actively participate in BPM initiative.
Resistance to change (RES)	I don't want BPM to change the way I do my job.
	I don't want BPM to change the way I interact with other people in my job.
	I don't want BPM to change the way I make decisions in my job.
	I don't want BPM to change the way I share documents on my job.

Figure 1 presents the preliminary research model. The research propositions of the model are briefly elaborated.



**Figure 1:** Preliminary research model of the factors that impact the resistance to change

Previous research presumed that the BPM initial beliefs are often related to hard work expected (Decker and McCromak, 2008), the change is not realistic and low motivation to change (Decker, 2012). Therefore, we develop the first research proposition (RP1) that presumes that Initial negative beliefs about the BPM increases the Resistance to change.

Aperecaida et al. (2012) focus to the lack of establishment of common goals, low emotional commitment, that is often present in organizations in relation to the resistance to change. Wong et al. (2005) indicated that often employee's needs are not met in organizations, while Faisal and Al-Esmael (2014) that individual's commitment toward organization could be measured by the feelings such as no desire to stay in the organization; no job satisfaction. Faisal and Al-Esmael (2014) have found out that the willingness to work hard for the organization is often negatively related to the acceptance of organizational changes. Based on these researches we develop the second research proposition (RP2) that presumes that low Individual commitment toward organization increases the Resistance to change.

Fishbein and Ajzen (1975) as well as Eikebrokk et al. (2011) indicate that social pressure has a strong impact to the acceptance of changes in organizations. They refer to the social pressure as the user's perception about the future actions and beliefs of the people important to workers regarding the changes in organizations. Therefore, we develop the third research proposition (RP3) that presumes that low social pressure in terms of negative attitudes towards changes increases the Resistance to change.

The model could be tested using the following statistical procedure. First, we plan to test the research instrument on the sample of 5 respondents in order to evaluate the content validity (de Vaus, 2001; Haynes et al. 1995). Second, correlation analysis will be used in order to identify if negative or low correlations exist, which would indicate the potential problems with data validity. Third, convergent validity will be tested using explanatory factor analysis with the goal to detecting the underlying structure of the variables (Hair et al., 2006). Fourth, reliability analysis will be performed using Cronbach's alpha indicator for the purpose of

detecting the internal consistency of the research items (Feldt and Kim, 2008). Finally, the structural equations model will be used to test the research propositions, using the following indicators such as normed-fit index (Fornell et al., 1981, Anderson et al., 1988; Hooper et al., 2008).

## **6 Conclusion**

This paper presents a future research framework for analysing the “soft side” of BPM as a critical success factor for the project success. After the existing literature about the research area is reviewed, a qualitative content analysis of the findings is presented. TRA is selected as a theoretical basis to explain variation in employees’ intention to support and become active participants of BPM initiatives. Three groups of factors are found to be significantly related to resistance to BPM initiative changes: (1) initial beliefs; (2) individual’s commitment toward organization and (3) subjective norms. A research model that is based on the theory of reasoned action (TRA) is developed and deployed in the context of BPM implementation.

The results of this research contribute to the literature on BPM, change management, human resources management and organizational behaviours. The paper addresses the human dimension of BPM which has not received adequate attention among academics and BPM experts. Though TRA has been extensively used across disciplines from communication and marketing to knowledge management and information system management, the use of TRA to examine the resistance to BPM initiatives is extremely scarce. Hence, the findings add to the literature of TRA and BPM.

The model could serve as a guideline for business practitioners, regardless the company size, in understanding the specific factors that influence the resistance to BPM initiatives in companies. The findings identify important factors that managers should take into account to successfully implement BPM, so the model can be used during BPM implementation process to adapt to situational factors and to avoid obstacles.

Future research should test the model on the sample of companies. Our goal is to test the model using the described procedure, on the sample of Croatian and Slovenian companies. However, the limitation of the proposed research stems mainly from the fact that the survey is planned to be conducted in two post-transition countries. In addition, our model does not take into account the impact of the organizational culture, although the previous research has indicated that the resistance to BPM initiatives is often closely related to organizational culture (vom Brocke and Sinnl 2011). Therefore, future research should be planned on larger sample of countries, with the possible focus to the cross-cultural comparison and measurement of organizational culture.

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## Private Label and the Competitiveness of the Retail Stores

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**Abstract:** Competition in retail sector, particularly in fast moving consumer goods (FMCG) segment is not only horizontal but more and more has its vertical component. Concentration of manufacturers and retailers leads market from the competition of single companies to the competition of vertical value chains. Private label products, launched by growing retail chains, contribute to this complexity of competitions, introducing retailers as the competitors to the manufacturers of branded products. Definition of relevant market, as the first step in concentration monitoring, is changing. There is open question whether retailers, who introduced private label as the competitive instruments against other big retailers, now use private label as negotiation instrument in their relationship with suppliers of branded products.

**Keywords:** retail, competition, private label, concentration, brand

### Introduction

Retail sector appear to be the most important segment of the marketing channel of fast moving consumer goods (FMCG). Competition of big retailers depends on their relationships with major suppliers. It is not so complicated for the competitors nowadays to replicate different products, but it is not so easy to replicate relationships with suppliers and customers. Hence, competition among big retail chains actually is the competition among different value chains. Big retailers are developing cooperation and integration of the whole vertical chains, offering their own (private) label products, competing at the same time not only with other retailers, but also with manufacturers of branded products. Bearing on mind dominant role of big retail chains in distribution of food and other fast moving consumer goods, protection of equal access to the suppliers become one of the key areas of the competition protection policy.

FMCG market structure in the vast number of European countries appear to be characterized by high market share and market power of big retail chains, with the objective possibility to limit or violate the competition. Retail concentration increase was accompanied with the processes of modern retail format strengthening and higher and higher participation of retail



private label products. Private labels are instrument of differentiation from the other retailers. However, with its development, private labels influence more and more the instrument of the competition with product brands. Hence, penetration of private brands may have horizontal but also vertical effects on the competition in FMCG value chain.

## 1. Relevant market of the modern retail formats

Retail of fast moving consumer goods (FMCG) in great number of EU countries has witnessed great changes in last couple of decades. Concentration of retail sector enables investment in new modern store formats, and modern efficient formats, in return, obliges companies to restructure their retail network in order to keep the pace with the competition. Dawson wrote that customers in a first step make a choice of retail store, and after that choice of the products offered in the store.<sup>1</sup> Retail evolution usually is described through the change of prevailing retail formats. This evolution also is supported with strong concentration, which enables higher investments in modern formats but also investments in production of own products branded as private label. New formats bring new combination of assortment dimensions, price level, service level, etc. These modifications very often raise the question do new and existing retail formats belong to the same relevant market or they serve different need of the customers.

Demand-side substitution in retail occurs when customers have a choice among number of retail stores. Choice of the store may be influenced by price, but also may be influenced by other factors such as assortment, product quality or services.<sup>2</sup> In geographical relevant market, demand-side substitution depends on readiness of the customers to travel to the other market area in order to buy what is needed. Supply-side substitution in FMCG retailing usually occurs when high prices of one supplier initiate others to offer the same or similar product. Also, supply-side substitution in retail occurs either in another store in same market area or in the store in neighbor market area. Supply-side substitution frequently assume product or geographical limits that retailers should overcome in short time period in order to make substitutable offer of same or similar products and services.

Although regulatory institutions in different countries may define relevant market in more precise way, for the sake of this analysis, supermarkets, hypermarkets and discount stores will be considered as the single retail market of FMCG products. Just to mention as an illustration, British regulatory body in charge for the protection of competition, in one report from 2006 determined two interrelated retail FMCG markets: *one-stop shopping market* and *other shopping places (including convenience stores)*.<sup>3</sup> In the other report from 2008, British regulatory body realized *hypothetical monopolist test (HM test)* among different retail formats. Conclusion of this study was that customers did not consider different formats to be perfect substitutes, so that it is possible to achieve profitable increase of the prices in certain types of formats.<sup>4</sup> Three types of stores were differentiated: big (1.000 to 2.000 m<sup>2</sup>), medium

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<sup>1</sup> Dawson, John, *Retail Trends in Europe in Retailing in the 21st century: Current and Future trends*. Eds. Kraft, M., Mantrala, M. K. , 2005

<sup>2</sup> Richards, T. J., & Hamilton, S. F. (2006). Rivalry in price and variety among supermarket retailers. *American Journal of Agricultural Economics*, 88(3), 710-726. DOI: [10.1111/j.1467-8276.2006.00890.x](https://doi.org/10.1111/j.1467-8276.2006.00890.x)

<sup>3</sup> OFT Office of Fair Trading, *The grocery market: The OFT's reasons for making a reference to the Competition Commission., 2006*

<sup>4</sup> Competition Commission: Market investigation into the supply of groceries in the UK, 2008,

(from 280m<sup>2</sup> to 1000 m<sup>2</sup>) and small (convenience, less than 280m<sup>2</sup>). British body actually abandoned former division of market where the key factor of relevant market was the type of shopping (daily or weekly). The reason why they changed it is the change in the customer pattern of behavior. Through the analysis of possible price increase, it was concluded that there are three relevant markets: market of big stores (supermarkets and hypermarkets, without small and medium sized stores), market of medium and big stores (different supermarkets and hypermarkets) and market of all size stores (hypermarkets, supermarkets, medium and small stores of lesser potential). European commission had different approach in the case number Comp/M.6588 - Koninklijke Ahold/Valk Holding, where relevant product market was defined as three separated markets: retail market of FMCG in supermarkets, market of FMCG supply to the retailers and market of franchised supermarkets. The first market consisted of modern retail formats like hypermarkets, supermarkets and discount stores, but not the neighborhood stores, gasoline stations and specialized stores.<sup>5</sup> Very similar approach applied French regulatory body in defining the relevant market. In the processes of approving mergers and acquisitions, it differentiates market of hypermarkets from the supermarkets.<sup>6</sup> If the case in question is about concentration of retailers with dominant share of supermarkets, regulatory body for the competition protection will analyze all supermarkets, hypermarkets and discount stores within the geographic area shaped by 15 minutes of driving from the store. If the case in question is about concentration of retailers with dominant share of hypermarkets, regulatory body will analyze all supermarkets, hypermarkets and discount stores within the geographic area shaped by 15 minutes of driving from the hypermarket but also all hypermarkets and discount stores within 30 minutes of driving. Furthermore, this body reserves the right to adjust its approach to shape the relevant market according to the local conditions, where particularly the city of Paris is in focus. German federal body for cartels took the standpoint that discount stores are different from the other stores taking into account assortment width i.e., number of stock keeping units (SKU) and assortment depth (number of brands and private labels), then merchandising and the use of the net sales space in the store<sup>7</sup> This body pointed out the differences in operations of different marketing channels, particularly when looking at retail chains like *Edeka*, *Rewe* and *Schwarz Group*. However, conclusion was that these differences cannot justify the definition of different relevant markets. Looking at all these decisions, conclusion that hypermarkets, supermarkets and discount stores form single relevant market, can be derived.

Relevant geographical market can be defined on national, regional or local level. In the process of concentration, European Commission and national bodies for the competition protection usually define geographical relevant market on the local level. This level usually is defined on the level of communities or towns, being the distance among 15 to 30 minutes of driving between two points, depending on the country.<sup>8</sup> Swedish regulatory body for competition protection is an exception, defining the relevant market on regional and national level. It is notable that Swedish regulatory body has different approach towards local level. The

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<sup>5</sup> Case No COMP/M.6588 - KONINKLIJKE AHOLD / VALK HOLDING Commission decision following a reasoned submission pursuant to Article 4(4) of Regulation No 139/20041 for referral of the case to the Netherlands

<sup>6</sup> Oxera competition economics, *The (w)hole truth? Local markets in French merger cases*, 2014

<sup>7</sup> German Federal Cartel Office, Final Report of the Sector Inquiry into the food retail sector, 2011.

<sup>8</sup> Predmet COMP/M. 3905 Tesco/Carrefour, (2005), Commission of the European Communities, Predmet COMP/M.2604 . ICA Ahold/Dansk Supermarked/JV, (2001), Official Journal of the European Communities, C 291/2, Predmet COMP/M. 4686 – Louis Delhaize / Magyar Hipermarket KFT, (2007), Commission of the European Communities, Komisija za zaštitu konkurencije, rešenje broj: 6/0-02-925/2015-5, AMAN/ IDEA

explanation is that customers from the urban places in the vicinity of big cities are regularly shopping in these cities.<sup>9</sup> Looking at numerous cases, the conclusion that definition of relevant market must take into account specific characteristics of each single market environment.

Also, it is important to notice the dynamics of the relevant market, being more and more complex over time. In the countries of European Union, participation of modern retail formats was significantly different. In this paper, modern retail formats are defined as non-specialized retail formats: supermarkets, hypermarkets and discount stores, in line with the national classifications of retail formats.

*Table 1. Participation of modern retail formats in the FMCG turnover, 2015*

Country	Modern formats	Country	Modern formats
Great Britain	88,1%	Slovakia	63,2%
Norway	87,9%	Spain	62,4%
Portugal	87,8%	Croatia	61,6%
Holland	85,1%	Hungary	60,6%
Belgium	82,8%	Poland	58,8%
France	82,5%	Romania	54,0%
Austria	81,0%	Denmark	51,9%
Germany	75,2%	Bulgaria	43,0%
Czech Republic	66,8%	Serbia	30,3%

*Source: Kantar WorldPanel and GFK, Europanel, 2015*

From the above presented table, it can be seen that the participation of modern retail formats in the FMCG turnover was higher than 50% in 2015, in chosen EU countries with the exceptions of Bulgaria and Serbia, where still traditional retail formats dominate. Also, it can be seen that modern retail formats are much more active in western countries, with the exception of Denmark, where traditional stores still participate with 48,1% in turnover of FMCG.

## **2. Market power and negotiating power of suppliers and retailers of fast moving consumer goods (FMCG)**

Market power in FMCG retailing represents the level of control that one or small number of retail chains have over the prices of goods and services. Buying power, on the opposite to the market power, represents the ability of one company or a group of companies to get better terms of purchasing over the other interested buyers, thanks to its dominant position when buying products and services. It is very useful to differentiate market power on B2C selling market and buying power in B2B relationship with the suppliers of FMCG brands. Important research question might be whether the final customers are paying higher prices on highly concentrated FMCG markets caused by market power or buying power. Dobson and Waterson concluded, for example, that prices of products and services in retail may increase with the increase of concentration, but also may decrease because of the higher efficiency.<sup>10</sup>

Concentration processes in retailing led to the high market share of the very small number of the retail chains. These processes naturally initiated many questions and problems concerning monopolistic and oligopolistic structures and their influences on social welfare.

<sup>9</sup> Predmet: 747/2006, ICA AB /Netto i predmet: 744/2002, Kesko/Tuko

<sup>10</sup> Dobson W. Paul, Michael Waterson and Stephen W. Davies, The patterns and implications of increasing concentration in european food retailing, Journal of agricultural economics ¾ Volume 54, Number 1, 111-125, 2003.

That is why it is important to analyze market share of the growing retail chains. In the EU Commission study „The economic impact of modern retail on choice and innovation in the EU food sector“, from 2104, data on the concentration level of the suppliers as well as the modern retail formats were presented in the states of European Union. Analysis of Herfindal Hirschman index (HHI) on supply side in 14 countries showed that market is highly concentrated in 9 countries, while in the countries market on supply side is moderately concentrated, analyzing 23 product categories. As an illustration, HHI in Denmark for the 2012 was calculated to be 2.840 points while in Holland, for the same year it was 2.839 points.<sup>11</sup> Taking into account these data, it could be said that market power and, consequently, negotiating power of the suppliers is on a very high level on these national markets.

However, it is also important to take into account private labels in the process of defining relevant market, which was not a case. These private labels participate in B2C market competing with the product brands. Furthermore, same study brought data on concentration of retail chains and their modern formats on the national markets. The highest score of HHI was recorded in Finland, where it was on the level of 3.935 for the 2012, while in Denmark it was 2.320 and in Holland it was 2.478. Again, looking in these numbers, it could be concluded that huge retail chains have high market power and consequently negotiating power. However, for the final conclusion on market power and negotiating power, it is important to evaluate the level of development and influence of private label.

### **3. Private label development and influences on competition**

Starting point in understanding influences on competition is to define properly relevant market. Is someone want to evaluate concentration and to plan some measures, first step is to shape the boundaries of the market and to understand who stakeholders in this process of competition are. The situation is even more complicated in retailing where customers are facing with several choices: which format, which retailer, which location, which product brand/ private label? Important factor of the competition is customers' perception of brand and private label. Knowing that private label products participate more and more in total turnover, it is of crucial importance to understand different effects of private label products on limitation, violation and/or control of the competition. Even more, it is important to understand these influences not only on horizontal level, but also in vertical relationships among different levels of marketing channel.

Some published researches have shown positive correlation between increase of retailers' market share and participation of private label in turnover.<sup>12</sup> Private label development introduces retailers as the stakeholder on the supplier side. Furthermore, private label development may initiate barriers creation in vertical relationships and limitation of competition. Vertical competition among retailers and suppliers is nothing new. However, competition of retailers with own label products against manufacturers now is horizontal competition. Hence, when evaluate competition in fast moving consumer goods retailing, it is

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<sup>11</sup> European Commission, *The economic impact of modern retail on choice and innovation in the EU food sector - Final report*, 2014

<sup>12</sup> Clark, R., S. Davies, P. Dobson, and M. Waterson, *Buyer Power and Competition in European Food Retailing*, Edward Elgar, Cheltenham, 2002

unavoidable on the contemporary market to evaluate simultaneously horizontal and vertical competition of suppliers and retailers.

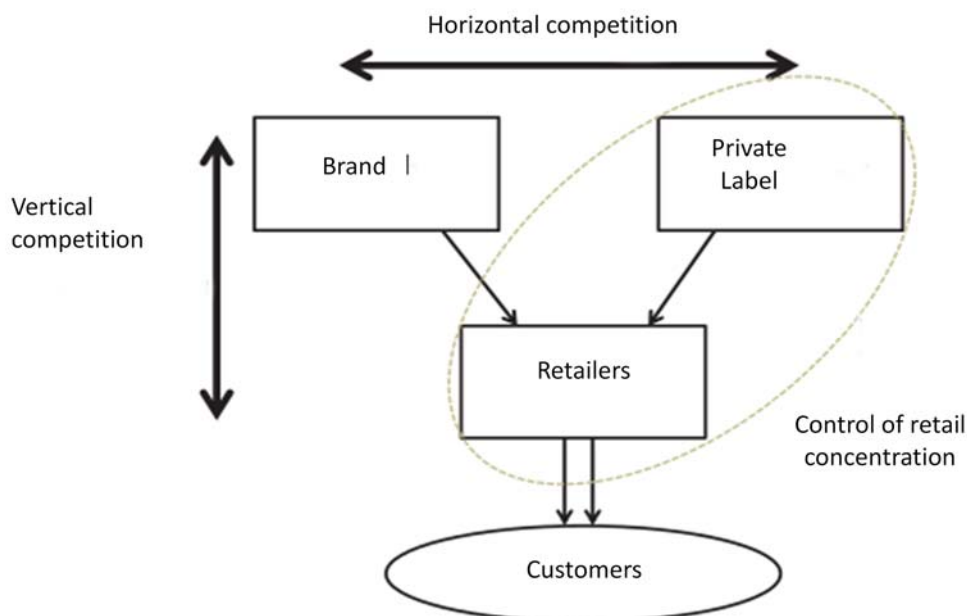


Figure 1. Competition in the marketing channels<sup>13</sup>

Double role that retailers are playing in modern marketing channels initiate at least three groups of problems for the concentration policy aspects. First, retailers as the „controllers of the shelf space“ are increasing their market power, increasing the importance of the shelf as the rare resource. Second, retailers are in position to control price competition among own labels and product brands, in the situation when they control all prices and are able to design final prices according to its own marketing strategy. Third, retailers are in a position to request detail information on ingredients and recipes of all their products, with no guarantee how this information will be used in the future. All these influences are reinforced with the introduction of private label products and may initiate violation of the competition.

Literature contains different attitudes and research results when discuss effects of private label on the competition. There are authors who claim that double role of retailers may enforce price orientation, cause even price wars and limit innovations in manufacturing sector.<sup>14</sup> Others have opposite standpoint, stressing benefit of better choice and benefit of fair prices for the customers, caused by new competition for product brands coming from the retail level of marketing channel.<sup>15</sup>

<sup>13</sup> Paul W. Dobson, Ratula Chakraborty, Assessing Brand and Private Label Competition, 26 European Competition Law Review, 2015

<sup>14</sup> Eklund Elisabeth, EC guidelines on vertical restraints and the definition of manufacturers, Trends in Retail Competition: Private labels, brands and competition policy, Report on the twelfth annual symposium on competition amongst retailers and suppliers, Institute of European and Comparative Law, University of Oxford, 2016

<sup>15</sup> Mills, David E., Why Retailers Sell Private Labels, *Journal of Economics and Management Strategy*, 1995, Vol. 4 (3), 509-528.

European Commission, following its guidelines on vertical restrictions, in article number 27 which relates to the vertical agreements states that distributors who are providing (request) specifications for the private label products manufacturing, cannot be considered to be manufacturers of these products.<sup>16</sup> Swedish association of retailers interpreted this quote from EU commission guidelines in a way that private label products are not competitors to the brands of national manufacturers. However, this interpretation may be absolutely wrong, particularly taking into account definition of the product relevant market, confirmed in the numerous decisions of the EU Commission, like in the cases Kesko / Tuko, or SCA / P&G.<sup>17</sup> furthermore, it is not to be forgotten that among retail private labels and manufacturers' product brands, besides price competition there is also very influential non-price competition.

This non-price competition relates, first of all, on the product quality, i.e. on the positioning of private label products on the retail shelves. Empirical researches show that most of the retailers position their private label products close to the leading manufacturers' brands, stressing price differentiation and trying to use this different to attract and acquire new customers.<sup>18</sup> In these cases, it can be expected that manufacturers sell their brands only to the brand loyal customers, while customers seeking for the value for money are oriented towards private label products. Gabrielsen and Sorgard proved that strong brand loyalty prevents influence of private label products on the brand prices, enabling even the possibility of their increase.<sup>19</sup> Loyalty of the customers to the specific brand may cause decrease of demand elasticity and thus decrease of the sensitivity on price changes. These authors showed also, that in some cases, according to the exclusive contracts, retailers were actually forbidden to launch private label products.

Manufacturers of strong brands believe that retailers strengthen their negotiation position introducing their private label. That was the reason to initiate numerous cases in European Commission in order to protect own position. In the case of P&G / Gillett, manufacturer pointed out strong negotiation power of big retail chains (Metro, Carrefour and Wal-Mart) after introduction of private label products. These retailers used the advantage to better position their products on the shelves and appeared to be much less sensitive on the problem of delisting product brands than before.<sup>20</sup> Same authors also pointed at the asymmetric information on prices as well as at the strategies of double prices and category management control accompanied with the elimination of certain brands. The Commission rejected such claims, quoting that private label market share is relatively small, as well as it is small the influence of the private label prices on branded products. Similar conclusions were in the cases of Unilever / Sara Lee and Kraft/Cadbury.

If the relevant market of the product is defined so that also includes brands of manufacturers and private labels, market analysis of the horizontal and vertical competition become very complicated. Furthermore, it is expected that private label products and product brands appear in the same retail market, but not on the same B2B market on the wholesale level of

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<sup>16</sup> European Commission, Guidelines on Vertical Restraints, Official Journal of the European Union, 2010

<sup>17</sup> Predmet COMP/M IV/M.784 -Kesko/Tuko, (1996), Commission of the European Communities, Predmet COMP/M.4533 - SCA / P&G, (2007),

<sup>18</sup> Jeffrey M. Perloff M. Jeffrey , LaFrance T. Jeffrey and Chouinard H. Hayley, Brand Name and Private Label Price Setting by a Monopoly Store," Economics Letters, 116(3), September 2012, 508-511

<sup>19</sup> Gabrielsen T. i Sorgard L, *Private Labels, Price Rivalry, and Public Policy*, European Economic Review, 2007, p. 403-424.

<sup>20</sup> Case: Comp /M. 3732, P&G/Gillet, 2005

the marketing channel. Market positioning of the brands may also be absolutely different, so that private labels may compete in premium segment, in discount segment or both, when retailers launch different private labels. Institutions in charge for the competition protection, thus, need to monitor different developments in the marketing channels and to adjust their monitoring instruments with the evolution of the horizontal and vertical relationships in these channels.

#### 4. Empirical analysis of the modern retail format impact on private label development and competition

Research was focused on direct impact of the modern retail formats on the private label development in 18 European countries in the period from 2008 to 2015 year. Consequently, it was analyzed the relationship of the concentration level on the market and the private label development in modern retail formats. Important limitation of this research relates to data availability on concentration level for the researched period. Data on concentration level in retail of the fast moving consumer goods are available from the market report produced for the European Union „The economic impact of modern retail on choice and innovation in the EU food sector“ ending with 2012 year. Data limit in this case did not enable to form econometric model based on data panel. That is why this research is oriented only to the correlation analysis between two variables: participation of the modern retail formats in the turnover of the fast moving consumer goods in the period of 2008 to 2015 year. Introductory research is based on descriptive statistical analysis of single series and presentation of basic statistics (mean and standard deviation).

**Table 2. Descriptive statistics on participation of modern retail formats and private label**

Country	Average participation of modern retail formats in FMCG turnover	Average participation of private label products in the FMCG turnover
Norway	87,65%	14,49%
Portugal	85,50%	34,95%
Holland	85,04%	38,55%
Great Britain	84,74%	47,09%
France	83,78%	35,86%
Belgium	82,35%	36,03%
Austria	78,44%	28,20%
Germany	72,78%	32,88%
Czech	65,65%	17,46%
Poland	61,10%	14,69%
Hungary	60,66%	24,35%
Slovakia	60,49%	20,60%
Spain	59,71%	31,60%
Croatia	58,03%	18,24%
Denmark	54,68%	24,45%
Romania	46,85%	9,34%
Bulgaria	39,13%	8,56%
Serbia	29,15%	3,50%
<b>Total</b>	<b>66,43%</b>	<b>24,49%</b>

Source: Calculation of the authors based on data from Kantar WorldPanel and GFK, Europanel, 2008 - 2015

Analysis is based on the balanced data provided for the limited period of 8 years and 18 countries (N=18,T=8, total number of observations 144).

Using statistics  $\bar{y}_{it} = \frac{\sum_{t=1}^T y_{ijt}}{T}$ , an average value is determined. In the period in focus, average

value of the modern retail format participation in the turnover of fast moving consumer goods was 66,43%, while the average participation of the private labels in the turnover of fast moving consumer goods was 24,49%. From data presented, it is possible do conclude that in 7 of 8 countries, where the participation of modern retail formats was above the average, the participation of the private label products was also above the average, except Norway. In the second group of the countries, where the participation of modern retail formats was under the average, the participation of the private label products in the turnover also was less than average, except Spain, and to somewhat Denmark where it was very close to the average. The series of data on the participation of modern retail formats and private label products for all countries monitored are presented in the following table.

**Table 3. Descriptive statistics of the participation of modern retail formats and private label (time series)**

Year	Average value of the participation of modern retail formats in total turnover	Average value of the participation of private label in total turnover
2008	64,32%	21,32%
2009	64,60%	22,29%
2010	66,27%	23,12%
2011	66,41%	24,25%
2012	67,01%	25,33%
2013	67,34%	26,05%
2014	67,52%	26,74%
2015	67,94%	26,82%
<b>Total</b>	<b>66,43%</b>	<b>24,49%</b>

Source: Calculation of the authors based on data from Kantar WorldPanel and GFK, Europanel, 2008 - 2015

Using statistics:  $\bar{y}_t = \frac{\sum_{ij=1}^N y_{ijt}}{N}$  annual averages are calculated for all countries monitored.

Looking at the data presented, it can be concluded that the participation of modern retail formats in the period 2008 – 2015 tended to increase in each year monitored, with the biggest single increase in 2010 year (1.67 % point). Data on private label products participation in total turnover, also point out the tendency of permanent growth in each year monitored. In this case, the biggest single increase was one year later, in 2011 and it was 1,13 % points. Bearing on mind the limitation of this research, which is based on relatively short time of observation, an assumption can be formed that modern retail formats development comes first, causing integration, concentration. In the next stage, concentrated modern retail formats are supporting private label development and participation in retail turnover.

In the next research step, level of correlation between two variables, participation of modern retail formats in turnover and participation of private label in total turnover was calculated in order to explore level of the relationship.



**Table 4. Coefficients of correlation**

Correlation (probability)	Modern retail formats	Private label
Modern retail formats	1,00	
	-	
Private label	0,765	1,00
p value	(0,00)	-

Value of the coefficient, 0,765 implies that in the period monitored, 2008 – 2015, there is statistically significant correlation between participation of private label products and participation of modern retail formats in turnover of fast moving consumer goods. This correlation coefficient also indicates that there is positive correlation between market structure, dominated by modern retail formats and private label development. Hence, it can be speculated that the strengthening of the retail power negotiating position is dependent on the development of the modern retail formats and the concentration, which is actually present in the monitored years. These processes induced also the development of the private label products. Market power acquired by modern retail chains enabled them to create new type of more favorable relationship with their suppliers. Sustainability of such relationships is developing in two opposite directions, either transactional one, leading to the price competitive formats (hard discounters) or relational ones offering value added (modern hypermarkets).<sup>21</sup>

##### **5. Brand awareness comparison between PL and product brand – case study: Belgrade FMCG market**

Public opinion survey on the Belgrade market was performed on the randomly generated sample of the 570 citizens. All of the respondents were asked about their perceptions and attitudes about the shops selling fast moving consumer goods. This interviews took place in the home of the respondents, making them more comfortable to think and answer under the less pressure than if were on the street. Average time of interview was about 20 minutes. That was acceptable in home atmosphere, which would not be the case on the street where potential impatience may cause break of the interviewing process. Questionnaire consisted of several parts, one of which was the part about the awareness and perceptions of private label products.

In general, Serbian citizens are not aware of private labels in high percent – 39% did not recall any of private label products. Two leading systems had above average awareness of their private brands. Delhaize had better level of awareness with its PL “Premia” and relatively modest recall of newly introduced company brand “Delhaize 365”. The other competitor, regional player, Idea introduced ten years ago its Croatian brand “K Plus”, offered in their

<sup>21</sup> Egan J., Relationship Marketing, 4<sup>th</sup> edition, Harlow, Essex, England, Pearson Education Limited 2011, p. 104

Croatian chain Konzum, and it has been gladly accepted by Serbian customers (declared as the most preferred private label in Serbia<sup>22</sup>)

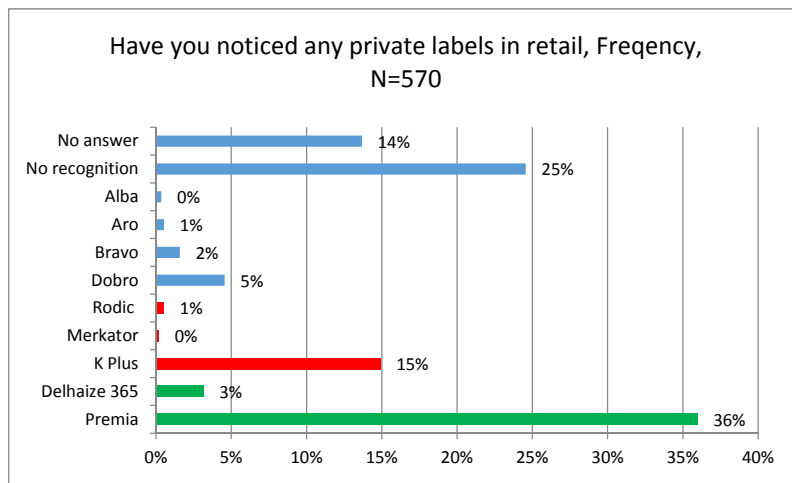


Figure 1. Private label general awareness on Belgrade food market

In this survey, an interesting experiment has been executed. Respondents were asked to express their general attitude towards the quality of manufacturers' and retailers' products. Almost all respondents had their opinion about this comparison of the quality, although former question showed that a lot of them cannot recognize anyone PL brand. However, two thirds expected that PL products are of the same quality as the product brands, even small group of 8% expected PL products to be of better quality.



Figure 2. Quality of PL and manufacturers' brands

However, in the next responses, citizens expressed the different opinion, when they were in a position to choose between two same products branded as a PL and as manufacturer's product.

<sup>22</sup> <http://www.roda.rs/vest/317/K-Plus-je-omiljena-trgovacka-marka-u-Srbiji>, accessed 18 June, 2017.

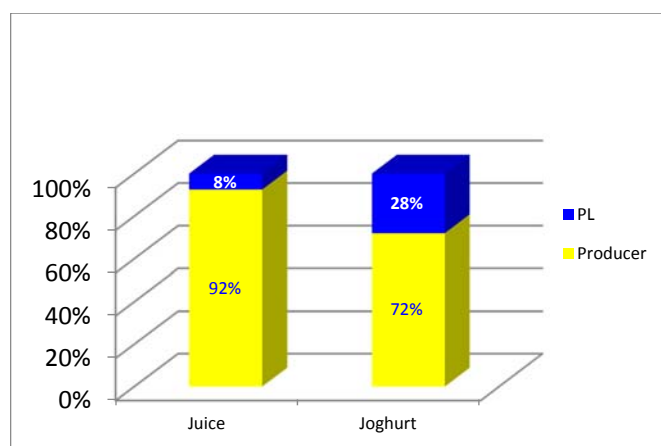


Figure 3. Choice between PL and manufacturer's brand

Although in the former response, citizens claimed in significant percent (65%) that PL is of the same or even better quality in comparison with the manufactures' brands, in this particular situation they have chosen differently. For the absolutely same product, orange juice, under the famous manufacturer brand, huge majority of 92 % respondents claimed that is better quality product in comparison with the same juice, packed in the famous retailer PL. Similar, although not so convincing result happened when 72% of the respondents claimed that national brand of yoghurt is product of better quality in comparison with the same one, but packed as the PL of the other big retailer.

So, if somebody wants to understand better the competitors and their positions on the market, it is important to compare their presence (prices, presence on the shelves) but also, their positions in the mind of the shoppers. When products labeled as retailers' products have better positions on the shelves, theirs' competitive power increase against branded products. Also, when after some time elapsed, these PL products improve their position in the mind of customers, their competitive power further increases. However, if manufacturers take care on their brands and develop their image constantly, natural reaction of the shoppers still is to choose famous product brand before PL product.

## CONCLUSION

In the marketing channels dominated by huge retail chains, it is of the key importance to enable fair competition and equal access to the actors in the channels for the manufacturers and the other suppliers. Market power enables to the retail chains to impose unfair buying prices or terms of buying to the manufacturers. Also, it enables retailers to squeeze the position of manufactures further, introducing PL products on the shelf, asking from the manufacturers to actively cannibalize their own brands, producing PL as the competing brand. On one hand, development of the private label increased competition of brands offered to the shoppers, giving them more choice at better prices. On the other hand, PL development imposed new barriers to the manufacturers on all levels of the marketing channel.

Equal conditions for all participants in marketing channel are necessary in order to maintain competition. Only fair competition can enable improvement of the offer to the customers. This competition nowadays needs to be protected not only in B2C market but also in B2B

relations where PL emerge as the new tool of negotiation in the hands of large retailers. It is expected that further concentration in Serbian retailing support increase of the participation of the PL products in total turnover and worsen the position of the manufacturers' position even more.

Having all that in mind, manufacturers cannot only wait to be protected by the government and the independent regulatory institution. Although, it is something that is expected that regulating institutions protect market competition, there are some market possibilities that manufacturers can do for themselves. Good positioning of own private store brands, obviously still is mighty tool on Serbian market. Results from market survey shows that still citizens prefer well-known manufactures' brands over PL products. It means that investment in own brand is „must“ for those who wants to maintain equal position in the negotiation with growing retailers.

This research has one important limit and that is lack of the final information about citizens' real behavior. It means that results show what citizens think (they prefer national brands), but still, it does not mean that they behave in the expressed way. Next step in some further research needs to be done, and that is to find out what brands in analyzed product category they are, actually buying. Second limitation of the presented research relates to the data from which correlation between concentration and PL market share is calculated. Correct data from EU countries were used, but without data from Serbia. These data for Serbia do not exist as the secondary data, which is major lack of the official statistics. With the realization of the recommendations given in the strategic document adopted by the Serbian government, this lack might be overcome.<sup>23</sup>

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<sup>23</sup> Strategija razvoja trgovine Republike Srbije do 2020. godine, Official Gazette of the Republic of Serbia, 05 number: 330-10731/2016-1, Belgrade, 17. November 2016

# Consumer Satisfaction and Retail

Blazenka Knezevic

Retail industry is an important part of each national economy (in some European countries even 25% of all active companies are operating in this industry). The retail industry is the most sensitive to changes in consumer behaviour. It is the industry that firstly responds to both positive and negative trends in the environment. Therefore, retailers are constantly under pressure to assess consumer satisfaction and to adjust to customer needs rapidly. The recession and the rapid technological innovation puts even greater challenges in front of contemporary retailers because consumers are more and more sensitive to prices, on one hand, and they are excessively informed, on the other hand. So it gets harder and harder to maintain competitive advantage in satisfaction of their needs. The aim of this stream is to address the necessity for constant innovation and rapid knowledge creation cycles in companies in retail industry which enables fast and efficient satisfaction of consumer needs.

## Do the millennials make a difference in retail?

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**Abstract:** The present retail industry is dependent on numerous factors. Unfortunately, we are witnessing great struggles for both the domestic and foreign retail companies. Cumbersome companies, failing to heed the market demands and changes can no longer function. Their time has passed, with new, younger companies entering the market, ones responsive to the newly arisen needs. In sharp contrast with the previous business tactics and strategies, with the dominating position of retail companies guaranteed by offering bulk products, low prices and huge assortment, the situation has changed significantly. The retail companies need to understand customer behaviour and buyer motivation. Lifestyle, digitization, urbanisation and other life shifts influence the changing strategies of retail's top management. A single generation imposed itself on the entire retail industry, significantly altering the buyer's decision process and behaviour, thus prompting the retail companies into change. This generation is called the millennials, people born between mid-1980's and early 2000's. Their influence is evident in all the facets of life, with the brunt of the impact yet to follow. It is predicted that the millennials will become the biggest consumers in history, therefore the interest in them and their preferences is quite understandable, especially for the retail companies and the manufacturers. The goal of this paper is to research the extent of the millennials' influence on the retail companies and their future business strategies, as well as the overall impact on lifestyles held by the rest of the populace. Throughout the paper, previous research results will be analysed and the lifestyle of the millennials scrutinized. General opinion with regard to millennials is that they are highly educated, quite career-driven and ambitious, politically active and, which is most important for the paper, loyal to a particular brand. The term itself was coined in the U.S., however, their European counterparts have arisen, with similar characteristics and a distinctiveness which will be carefully examined in the paper. The previous research dealing with the millennials indicates they have a unique lifestyle, one quite differing from those of previous generations, including a particular outlook on life and a peculiar buying decision processes. The marketing practice that once was, simply does not suffice when millennials are concerned, with the classic advertising campaigns using magazines and TV simply not reaching this particular demographic. The millennials tend to believe in real experiences of previous users, something easily verifiable via Internet and social networks. It was this manner of operating that ushered a whole array of new business concepts, which toppled and changed entire industries. The research dealing with the millennials' lifestyle indicates that they are a force to be reckoned with and adapting a new business style is a necessity. The retail companies must not fall in the trap of the increasingly eldery populace and make business plans based on solely that particular demographic, a

state of affairs especially indicative of Europe. Unfortunately, the economic influence of retail companies diminishes as time passes, with millennials simultaneously experiencing the increase of purchasing power with each passing year. The importance of this paper is in its suggestive influence, a proposition for the retail companies to heed the millennial demographic, scrutinising their behavioural patterns and preferences, the only way retail companies can reasonably expect a long-term growth and survival on the unstable retail market.

**Keywords:** millennials, knowledge, retail

## 1 Introduction

The retail sector undergoes numerous changes, all of which are evident in everyday life. The causes behind these shifts are myriad, ranging from the increase of elderly population within an overall demographic structure, to the overwhelming urbanisation and digitalisation trends. This paper examines the millennial influence. This group wields a great, perhaps even dominating influence on the retail companies. Certain retail companies already respond to their demand and behaviour, serving as an efficient benchmark for other companies that need to adapt to new market conditions or simply face extinction. The millennials, as a demographic force, have been mostly researched in the U.S. However, they wield immense economic power on the entire global scale. The focus of this paper is on the millennials' behaviour patterns, as well as their knowledge levels and experiences, which ultimately all serve to form their purchasing decisions.

## 2 The millennials

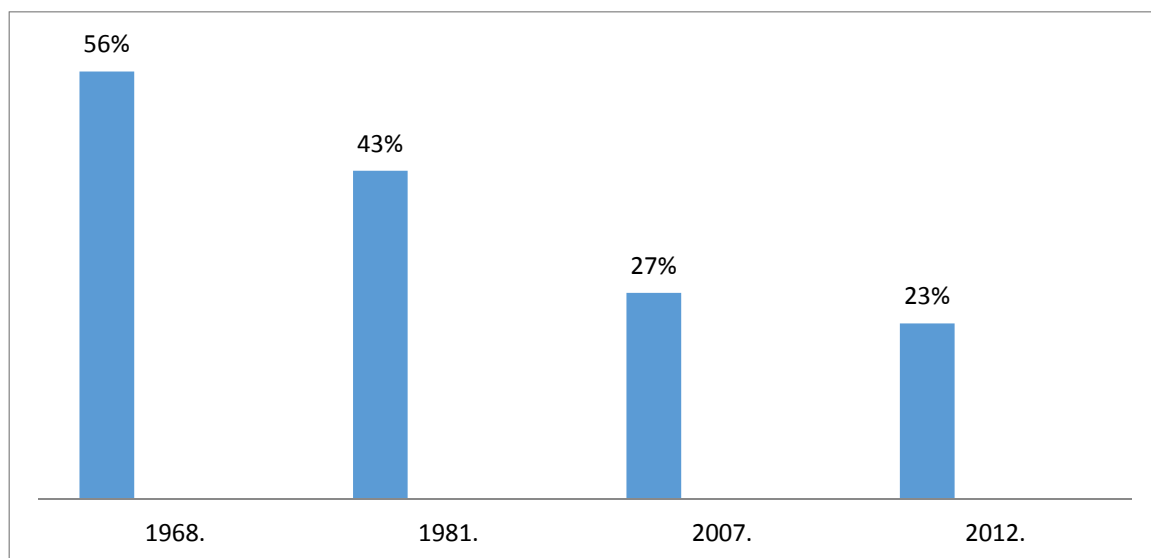
The Merriam-Webster dictionary defines a millennial as follows: a person who was born in the 1980's or 1990's (Merriam-Webster,2017). The millennials represent the last generation of the XX. Century, the first truly digital generation in existence. This generation is also marked by the transition from one millennium to another, hence the name. Millennials are the successors to a couple of influential generations, the "baby boomers", people born between the year 1946 and 1964, as well as the "generation X", people born between the year 1965 and 1979. According to the Goldman Sachs research, there are 92 million millennials living in the U.S., making them the biggest U.S. generation in history, larger than even the baby boomers. Globally, the millennials number over 2 billion people (Nielsen, 2016) and are mostly richer, smarter and freer than the previous generations. Considering the fact that nowadays the millennials are entering their prime purchasing life period, the retail companies are trying to understand their purchasing decisions. The millennials spend 600 billion dollars yearly (Donnelly and Scaff, 2013a), with the estimate that, by the year 2020, millennials will spend a whopping 1.4 trillion USD on annual basis and be responsible for 30% of all the retail sales within the United States (Donnelly and Scaff, 2013b). It is important to accentuate that the millennials will also shape World politics during the next 30 to 40 years, which only serves to add to their overall importance. The general millennial characteristics are the assuredness in their own particularity and the knowledge of what exactly it is they want. They are

globalistic, ethnically diverse, technologically savvy, better educated, less politically inclined, while prepared to take on the U.S. on all the detrimental ecological, political and social issues, and are keenly aware of the importance of sustainable development (Mušura, 2010). In contrast to the previous generations, the millennials, are quite vocal in expressing their preferences and attitudes, which is much easily achieved by using Internet, social networks and cellular phones, the technological achievements which marked their entire lives, making them dependent on such technological marvels (Nielsen, 2016b). Precisely because of these lifestyle characteristics, the millennials influence each other, as well as other non-Millennials. This behavioural patterns serves to quickly generate a particular trend, so they remain of vital importance to the marketers. The millennials have also been forged by both the globalization processes, as well as the global economic crisis of 2008, all of which have formed their expectations, attitudes and behaviour, giving rise to very specific responses, when contrasted to the previous generations.

### 2.1 Millennial characteristics

Due to all the mentioned factors, the millennials' life habits differ to those of previous generations. Marrying or leaving the nest is more difficult and generally not on the list of priorities.

Table 1. Percentage points of adults 18-31 married and living in their own household



Source: Pew Research Center, Current Population Survey

Considering the global economic crisis of 2008 and the underlying breakdown, the Millennials are hesitant to marry and live on their own. From Table 1, it is evident just what kind of impact a decreased income has on the realization of life goals, such as marriage and owning a home (Current population survey, 2015). In the year 1968, as much as 56% of the U.S. populace, aged between 18 and 31 were married, living in a home of their own. This trend wakened as time passed, therefore, in the year 2012, the percentage was down to just 23%. According to the Goldman Sachs Global Investment Research, once most people bought a home at 25 years of age. Nowadays, that purchase is done at 45 years of age. Also, according to the research, the millennials grew up with considerable family support, both financial and psychological, so leaving the nest is not high on their list of priorities, for they are accustomed to a relatively



easygoing life. As high as 59% of the respondents prefer renting a home to purchasing it (Elite Daily Millennial Consumer Study, 2015), with 61% admitting the fact they are unable to afford a home at all. The recession, student debt and working underpaid jobs simply serve to completely negate an alternative of obtaining a home, so millennials postpone the purchase for a time when they have better paying jobs and are able to ensure better living conditions for their families. For 40% of the respondents, buying a home is a significant priority, with 30% considering it a significant decision, but not a priority; 15% do not plan on buying a home in the near future, 8% do not feel strongly about it and 7% are indifferent (Goldman Sachs Fortnightly, Thoughts intern survey, 2013a). Nowadays, renting is of the utmost importance, with the trend on a constant rise. In the year 2005, 52% of people between the ages of 25 and 34 rented a home, with the percentage number rising to 60% in the 2013 (Goldman Sachs Fortnightly, Thoughts intern survey, 2013b).

Although the millennials postpone marrying and having offspring, which does not mean that that is something undesirable for them, quite the contrary. According to the Pew Research Center, as much as 70% of millennials want to marry, with 74% wanting children of their own (Goldman Sachs Fortnightly, Thoughts intern survey, 2013c).

In contrast to the previous generations, the millennials aren't focused on ownership, instead prioritising the access to services. They are ardent supporters of the sharing economy, with sharing or renting things such as bikes, cars, tools, food, apartments, houses, or even food leftovers. This trend is on a continuous rise, with a possibility of gradually completely changing the consumer economy, with access and experience becoming more important than ownership. The only problem is the governmental regulation, which still does not keep up with the sharing economy, creating obstacles, such as the case of taxi services deemed illegal in certain cities. The total U.S. sharing economy value was at 26 billion USD in 2014 (Envisioning the future of retail, 2016a). According to the 2014 "New Consumer and the Sharing Economy" study, published by Havas Worldwide, more than a third of millennials already belong to a sharing service or expect to join one within the next year. On the business market there already emerged numerous companies, drawing on opportunities and imposing themselves, such as Zipcar, Rent the Runway and Airbnb. The degree of their importance is evident by the data that the car rental company Avis bought Zipcar for 500 million USD in 2013 (Envisioning the future of retail, 2016b).

Millennial attitude toward economic and social development is quite interesting, differing between countries. Those in the emerging markets, such as India, Columbia, China, Peru and Phillipines are convinced they will be more happy than their parents (The 2017 Deloitte Millennial Survey Apprehensive millennials: seeking stability and opportunities in an uncertain world). In contrast, those in the mature markets of Japan, South Korea and Europe hold that previous generations lived in better conditions and were much happier. The U.S. is the only mature market where most Millennials think they will live better than their parents, with 79% considering they have an opportunity to make a difference, when compared to the previous generations. With regard to the attitude toward the future, mature markets generally exhibit anxiety, emerging markets increased optimism. Major concern influencing these attitudes is the great fear of terrorism, particularly in Europe. According to research, conflicts and political tensions are the cause for concern for most Millennials, with 56% of the respondents singling it out as the number one cause, followed by criminal, corruption, food concerns, healthcare and inequality. Because the millennials have been forged by the economic crisis of 2008, 31% of respondents hold great concern regarding unemployment prospects.

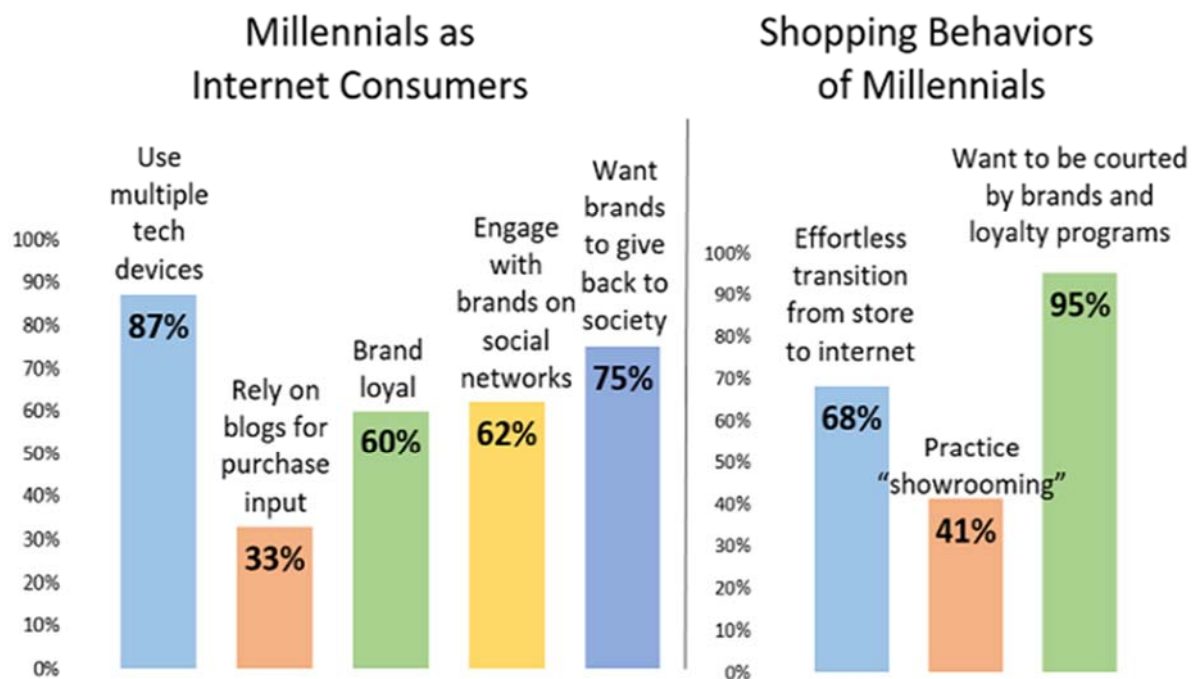
The millennials are the first digitalized generation, used to solving most issues by Internet or smartphone, don't have the need of going out frequently, instead opting to stay at home. This was formed by the great popularity of social networks, such as Facebook, coupled with the rise of the gaming industry and an overall technological progress. Of the entire U.S. populace, 75% has a profile on at least one of the social networks, with 62% logging in their Facebook profile each day (Graphica, 2015). According to the same research, the millennials send more than 2000 messages monthly, with 43% of the respondents considering text messaging on par with a phone call. The level of 190illennial dependence on smartphones is indicative by the fact that for 65% of the respondents the loss of the smartphone is worse than loosing a car. The millennials spend 17.8 hours daily engaged in various forms of media, such as social networks, TV and text messaging. Although this hourly rate seems impossible at first glance (Taylor, 2014a), it is crucial to point out that millennials are constantly online, multitasking, all the while utilising numerous platforms. It is quite common for a 190illennial to text or search Facebook, while watching TV. Numerous hours are spent passively, for different activities tend to overlap. Social networks are a top priority for millennials, with as many as 71% of the respondents using them each day. The user-generated content – which encompasses social-media posts, photos, blogs, e-mail, texting and talking to others about media – encompasses about 5.4 hours of an average millennial's day. In percentage points that amounts to 30% of their total daily media consumption output (Taylor, 2014b). The traditional media (newspapers, TV or radio) amounts to 33% of an average 190illennial's time. Although the time spent on social networks and traditional media is almost the same, social media is of the utmost importance when the impact of the 190illennial's life is considered, because it is the content they themselves create. The millennials hold the information received through social networks to be 40% more credible than that received through traditional media. They also hold such information 30% more memorable than that received through traditional media channels.

### **3 Millennials and retail**

The millennials' behaviour and life choices serve to change the business strategies of retail companies. The previous chapter dealt with the general 190illennial behaviour. This one will concentrate on choices directly influencing the retail companies.

The Millennials lost faith in traditional media advertising attempts. Just 1% of the respondents hold advertisements credible, with the majority regarding them purely as a marketing spin, denying them any degree of authenticity. Particularly because of this, the millennials utilise services such as TIVO, enabling them to avoid TV advertising content, and they go so far as to avoid Facebook advertising as well. The picture provided showcases that as high as 87% of the millennials use gadgets such as smartphones, laptops or tablets while purchasing products. A third of millennials reach purchasing decisions by reading Internet blogs. In contrast, the impact of TV news, books and magazines is almost negligible, amounting to less than 3% (Elite Daily Millennial Consumer Study, 2015). This data is most peculiar, for it most clearly showcases the change in marketing expert's behavioural paradigm patterns. Throughout history, the products or services were advertised using traditional media, yielding considerable success. The payoff of costly retail companies' marketing campaigns was ever present. Nowadays, the marketing has shifted to social networks, enabling the smaller companies to compete with large entities, for, at times, customers need to see the product in use before purchase. A

specific group of users, the influencers, are quite important, driving the demand for a certain product. Social networks have created this specific user subset, a group of people able to create a significant increase in demand just by advocating a specific product. Until recently, such a role was strictly reserved for various TV and music stars or sportspeople. However, nowadays everyone can become a star. As high as 60% of the millennials have said that they would consider buying a product endorsed by a YouTuber and a third consider blogs to be a top media source when reaching a purchasing decision (Donnelly,2016a). A great portion of consumers, 92%, relies on referrals from people they know, above everything else (Donnelly, 2016b). The blog influence on purchasing decisions has become exceptional, with the bloggers attaining star status. Simply put, the millennials trust a specific person a lot more than a particular company. Also, the millennials are environmentally conscious, putting great emphasis on a company's social responsibility. They prefer a company providing trustworthy information, carrying out business mission helping those in need, all the while guided by morality principles when conducting overall business practices. The millennials consider having those characteristics themselves. In this manner they differ greatly to the previous generations. When the Internet is considered, business information is difficult to hide, so companies are, in general, quite responsible in this regard (Global retail trends 2016). The local, small producers, utilising domestic resources could most profit from this millennial mindset.



Picture 1: Behaviors of Millennials (Source: Elite Daily Millennial Consumer Study, 2015)

Although the millennials are dependent on technology, they still do frequent physical stores, so the brick and mortar concept is definitely here to stay. Though the millennials most assuredly initially browse the products on-line, reading the comments, examining the scores and the buyer's feedback status, they also most definitely want to see, smell and feel the product in

question (Accenture analysis, 2015a). The millennials hold that it is extremely important for a product showcased on-line to be identical to the one in store, with the same listed price. Simply, they require the same value for money, which is precisely why the retail companies need to focus on authenticity. The millennials practice “showrooming” – the act of examining merchandise at a nearby retail store and only then shopping for it on-line afterwards, in search of the lowest price available. As much as 82% of millennials still prefer brick and mortar stores, 91% frequent drugstores, 68% frequent electronic equipment stores, 80% frequent clothing stores, 84% prefer going to department stores, while 83% of the respondents go to the supermarkets (Accenture analysis, 2015b). Although the Internet purchases are on the constant rise, it is clear that the brick and mortar stores’ influence remains.

Likewise, there exist vast discrepancies between millennial and non-millennial purchasing behaviour when purchasing clothes (Barton et al, 2012). With regard to female millennials, 47% of them go shopping clothes more than twice a month, in contrast to 36% of the female non-millennials. The difference in male preferences is even more pronounced, with 38% of male millennials buying clothes more than twice per month, which is in stark contrast to 10% of male non-millennials doing the same. Also, male millennials spend twice as much on clothes, when compared to the previous generations. This difference holds true for all the ethnic groups, income levels and household types. The millennials also prefer to shop in groups, taking into consideration the opinion of others much more than non-millennials. In comparison to female non-millennials, millennial woman buy twice as frequently with husbands and friends. Fashion magazines, Internet pages and social networks are the main sources of information for millennials, both male and female, regarding trends, products, brands and stores. Male millennials frequent less stores and try on less brands than female millennials, exhibiting a higher degree and duration of both brand and store loyalty. There are also differences in store expectations, with the millennials preferring the stores offering the experimental and lifestyle environment, for they tend to put greater emphasis on experience than the product itself. They are prepared to spend a lot more money on the product offering an authentic experience. According to the research results (Poll, 2014), 78% of millennials prefer spending money on experiences, rather than using it to buy desired products. Also, 69% of the respondents believe experiences enable bonding with friends, society and other people worldwide. Based on the research done by Mintel’s American Lifestyle, in 2015, the U.S. citizens mostly spend their money on the following product categories: alcoholic beverages consumed at home, dining at restaurants, vacationing and tourism. Between 2014 and 2019, the vacationing and tourism expenditures will reach its highest level, increasing by 27%. Likewise, dining at restaurants will also increase by 27%.

The millennials also prefer the help and advice from fashion consultants, preferring it to a regular seller service. Likewise, the store decoration is more highly regarded and valued than with non-millennial customers. Female millennials pay attention to music playing in the store, a well decorated and clean dressing rooms, preferring roomier stores which can be frequented with friends, giving them the opportunity to socialize and enjoy the experience. From the salesperson, they expect knowledge and experience, as well as being dressed up in the clothes the store sells, in a unique and creative manner. Male millennials seek fun and energetic store places (54%) when compared to non-millennials (39%). Somewhat surprising, the male millennials hold professionalism in higher regard than female millennials (Barton et al, 2012b)

For the millennials, loyalty is always a questionable matter, however, this group exhibits a high degree of loyalty only in case a retail company is ready to invest the necessary effort. They

crave unique experiences, want to be at the centre of attention, feeling appreciated as soon as they step into the store. They consider that the product and price are important factors, but the relationship toward them is a key factor. A most interesting data is what an average millennial will do in case his/her favourite store is closed. For as high as 69% of the millennials, this has no repercussions, with 28% visiting the next day, 37% buying on-line, 4% utilising a smartphone (Barton et al, 2012c)

The loyalty programmes are also quite significant, with millennials expecting direct, proactive contact from the retail companies, demanding targeted, personalised offers and discounts as a sign of appreciation of their loyalty. The retail companies should know what a particular buyer wants and be prepared, all of which puts focus of gathering vast amounts of customer data. What and when is bought and preferred, along with the significant motivators at play, should all be known to each retail company.

An example:

*For the past few years, Nordstrom has been investing heavily in data-driven, personalized customer experiences. For example, the retailer tracks popular items pinned on the social network Pinterest, which is then displayed in-stores and labeled as “top-pinned items” with a logo. By incorporating social feedback into the shopping experience, Nordstrom can take the lead from the customer, to ensure that merchandise in-stores is personalized and in better alignment with what shoppers actually want (Mcgee, 2017).*

The retail companies need to be present and proactive on the social networks. According to the research, 34% of respondents aged between 18 and 35 years prefer a brand active on social networks, while just 16% of respondents older than 35 appreciates the social network active presence (Goldman Sachs Fortnightly, Thoughts intern survey, 2013d). Nowadays, the proactive social network participation is a survival precondition for each and every company. The effort must be done so that each product and company is openly discussed and dissected, with the company clearly communicating all the changes in real time, as they happen, the product upgrades, the discounted products, and so forth. They need to guarantee a positive buyers' experience, one that will anthropomorphise the company, bringing it closer to customers, an act which will, in turn, serve to draw additional customers. As was previously mentioned, the millennials regard recommendations made by people on social networks as being much more credible than advertising via any other media form. When product brochures feature the photos taken from social media, the millennial customers are 6 times more likely to make a purchase.

Most millennials prefer paying in cash or by using debit cards. The most probable reason for this lies in the fact that they were brought up during the economic crisis. Therefore, 57% of the millennial respondents' prefers purchasing with cash, 48% by using a debit card. Only 33% of the respondents' pays with credit cards, with as little as 1% utilising the mobile payment option.

The product quality still remains as the most important factor when reaching the purchasing decision, with the price much more important for the millennials when comparing them to previous generations. As much as 55% millennials prefer to be loyal to a brand based on the quality of its products, contrasted to 59% of non-millennials. However, the responses differ in case price is the deciding factor, with 33% of the millennials considering it to be of the utmost importance, contrasted to 27% of non-millennials (Barton et al,2012e)

Numerous research dealing with millennials' preferences have proliferated several characteristics particularly important when buying a certain brand or from a specific retailer, as follows: being trustworthy, being high quality or having a low price.

#### **4 Recommendation for the retail companies**

After analysing the behavioural patterns of a population subgroup that will soon be the most numerous one and, consequently, rule the World, there are several recommendations that may prove useful for the retail companies in order for them to adapt their strategies to the millennial preferences. Unfortunately, most retail companies have still not reacted to this particular issue, which they are bound to do, or otherwise - face extinction.

The retail companies need to ensure that they provide customers with experiences. The millennials regard the product or the retail store as secondary to the purchasing experience. Present technological achievements are able to provide tracking of specific on-line buyers, giving insight into needs and purchasing motivators. This provides the retailer with a possibility of tailoring a specific experience to a particular buyer, thus gaining loyalty, which remains as both the most important characteristic and also the hardest goal to achieve.

The millennials resist trends imposing upon them, so the only way to guide their interests is through influencers, social networks, recommendations and positive comments. With regard to the stressful lifestyle, longer working hours and the frenetic pace of living, the millennials prefer to determine the time and place of consuming products and/or services. The most important factor is that the product is available once the purchasing decision has been made. The simplest example of this is evident in the click-and-collect retail options, with the buyer ordering and paying for products on-line, picking them up on the way home, in the local retail store. However, that entire process requires the existence of a most complex, expensive and seamless integration of local store and digital technology.

The millennial generation grew up with the notion that everything can be custom made. Particularly because of this specific way of thinking the retail companies should provide customers with the option of being involved in creating the products. This practice has already grown in scope and frequency, especially in the sportswear industry, where one can design one's own sneakers. It is not shocking that the increase in profits of one of the companies doing business within this particular sector was 9.7%, thanks to this particular option. The customer craves to be at the focal point, with the opportunity to participate in both the product and company creation. When the recent technological capabilities are taken into consideration, the companies should and have to make this a possibility for their customers.

The companies need to create customer loyalty. The millennials tend to consider the benefits from buying from a certain store. Because of this, the retail companies need to closely monitor their purchasing behaviour and habits, creating the personalised, discounted products accordingly.

Millennials are generally educated, self-aware of both themselves and their place within society, so it is only natural they want additional benefits from buying products. They expect the companies to contribute to the local community and the society at large, showing discontent with corporate greed and opting for proactive companies that protect and refine the community, rewarding such principled actions with loyalty.

The stores need to offer a complete experience for their millennial customers. For them, the stores are locales where they can look at, touch and try out a particular product. However, the digital, mobile and on-line content has to be available as well. The millennials require a seamless integration of digital technology and brick-and-mortar stores.

## 5 Conclusion

The millennials are the largest generation in whole of history, one that will soon rise to the prominence of being the greatest customer subset. With their specific behavioural patterns, forged by the global economic crisis, they influence the business practices of all the economic entities, which also encapsulates the retail sector. Although a somewhat depressed generation, used to saving, refusing to leave the nest, the millennials are an interesting group, one that has to be put into focus of each retail company, or else they face definite extinction. Definitely, they are making the difference in retail industry.

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## Selection of Retail Chain for the Average Consumer by Using AHP Method

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**Abstract:** From retailer's perspective, knowing consumer habits, consumer preferences and what is their opinion and impression about specific retail store can be extremely important for their competitive advantage. From consumer's point of view, in this difficult recession period, choosing a basket of basic groceries needed, for instance, while preparing for Easter feast can be of crucial importance. Of course, due to poor financial situation in which a large amount of consumers are currently in, one of the most important factors while choosing a store where they will make their purchase is, certainly, price of the product. However, many other various researches have shown a series of other factors which are important to consumers while shopping for food and groceries. Intent is, to explore what are these factors which consumers list as main when shopping, how much do they participate in the consumer's decision and in what amount do specific retail stores possess them. Based on these findings, a model will be made that can be described as "consumer's mind" which purpose is to give insight to average consumer's way of thinking. The main objective is to synthesize these thoughts into an optimal decision for an average consumer.

**Keywords:** selection of retail chain, consumer behavior, average consumer, consumer targeting, AHP method

### 1. Introduction

Most people share the general opinion that prices are the only and most important criterion when it comes to shopping for basic provisions. The fact is that citizens' purchasing power has significantly decreased due to difficult crisis period, and as many as 44% of households consider their financial state worse compared to one year earlier (GFK 2012). Therefore, it is understandable that many are forced to employ such a method of choice accordingly. Why are then certain retail chains, which are considered to be more expensive than others, registering an increase in revenue? This research will attempt to answer that question.

The idea behind this paper is to create a mathematical model which can, in a way, be described as average consumer's mind, behavior and thoughts. Considering various criteria which consumers, deliberately or subconsciously, employ while making choices, among which is the criterion of price, the aim is to find out which retail chain is optimal for the average consumer.

Firstly, it is necessary to analyze the current retail market and choose those alternatives (retail stores) which seem significant for the consumer, and among which the consumer will make

his/her final choice. After this, the main criteria consumers employ while shopping will be examined and ten most important criteria will be determined.

Furthermore, in order to make a more objective comparison of characteristics of consumers' alternatives, it is necessary to choose a standard product shopping cart to which the model will be applied. The criterion for choosing products in the cart is evaluation of most common groceries used during every holiday. For each alternative a research in geographic areas of Zagreb and Slavonia will be conducted, in terms of evaluating characteristics that define each criteria shown to be significant for the consumer.

Therefore, this paper will demonstrate two mathematical models of equal hierarchical structure – model of consumer's consciousness in Zagreb and model of consumer's consciousness in Slavonia. This will offer a parallel insight of model application on consumers in these two areas. If certain consumers' practice to impulsively reach decisions about shopping is put aside, and if it is presumed that consumers from Zagreb and Slavonia make very rational decisions, while precisely weighing various criteria, these two mathematical models may represent the process of thinking and behavior of typical consumer from Zagreb and Slavonia while making the final decision regarding the choice of retail store where he/she will conduct shopping.

Based on final optimal ranking of alternatives for average consumer from Zagreb and from Slavonia, analysis of sensitivity will be conducted from the perspectives of both consumers and retail chains. The latter implies locating in which segments a certain retail shop failed, according to the opinion of average consumer, as well as suggestions how those segments can be amended with the aim of increasing its total position in the consumers' consciousness.

This paper, beside the introduction, which was marked as Chapter One, consists of three more chapters, conclusions and bibliography. Chapter Two offers analysis of the market and consumers' habits, as well as choice of alternatives and main criteria. Chapter Three elaborates on problem modeling using multicriteria analysis. Main research results are exhibited here, while in Chapter Four analysis of sensitivity is shown, especially from the perspective of consumers, as well as from the retail chain's point of view.

This paper is based on author Marin Fatović's research results, conducted for the purpose of his final paper.(Fatović 2013)

## **2. Analysis of the market and consumers' habits. Choosing alternatives and main criteria**

Croatian retail network is characterized by several main characteristics, the most notable of which are the trend of further growth of retail market concentration, great range between the leader and first follower, as well as significant growth in total sales areas of which the most newly opened retail shops are in the category of supermarkets (Croatian Competition Agency 2011). While choosing retail chains, i.e. consumer alternatives, several criteria were taken into consideration, of which the most important is total income, i.e. market share, relative growth or fall in relation to previous years, familiarity of consumers with the retail chain, etc. within areas of Zagreb County and Slavonia (GFK 2012; Croatian Competition Agency 2011; Independent Association Supermarkets 2010).

Careful market analysis according to above-mentioned criteria has separated the most relevant alternatives which will be included in the research and the model: Konzum, Lidl, Spar, Plodine, Kaufland, Billa, Mercator i Getro.

Consumers' shopping habits are one of key factors which influence the overall picture of the retail market. Research of attitudes and habits enables better understanding of consumers' behavior and provides firm base for evaluating success of retail companies' strategies.

Surely one of the most significant researches of this kind in our geographic area is the continuous reasearch conducted by independent agency (GFK 2012).

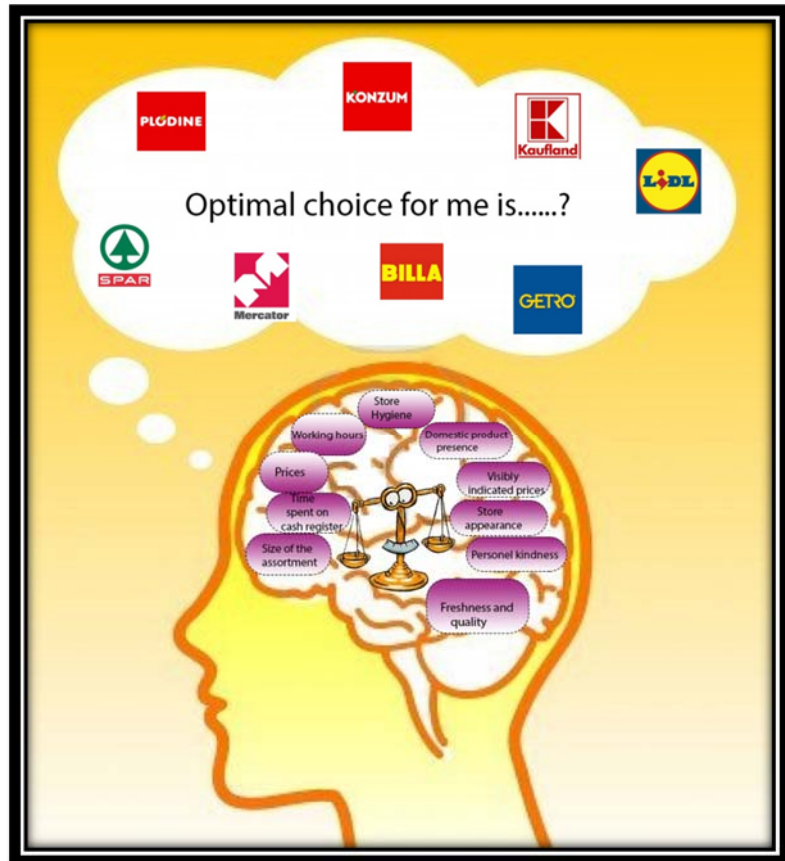


Figure 1 Process of weighing criteria in consumer's Consciousness (Source: Authors)

This paper exhibits interest in consumers' preferences and habits while buying groceries. Research in this segment has shown that the most important factor for consumers is freshness and quality of products, followed closely by price levels, product range in stores, visible indication and consistency of prices, cleanliness and hygiene in shops, kindness and facility of staff, time spent at the cash office, presence of domestic products, appearance of the store, working hours, and other factors which will not be considered in this research (Morpace Omnibus 2011). This means that in the moments of choosing consumers consciously or unconsciously weigh these criteria and make the best and most affordable choice. This is exactly the reason why these 10 factors in the model of consumer behavior from Zagreb and Slavonia will represent the main criteria for choosing optimal retail store.

### 3. Problem modeling through multicriteria analysis

Mathematical method intended for solving this problem is Analytical Hierarchy Process (AHP) method (Satty 2001). So far, this method has been most frequently used in management for making important decisions and strategies (Hillier and Lieberman 2005), but in this paper, for the first time – as far as we know, this method will be employed for modeling consumers' behavior or generally human behavior in a certain life situation where we must make a decision. This approach is different from the use of this method so far in the fact that every

decision, starting from the lowest level, is averaged based on conducted research about, among other things, habits and preferences of consumers, and in that way “pattern of behavior” of a person in a particular situation is created. Thusly set model should offer a different insight into problem of behavior modeling for consumers in retail, and consequently give various possibilities in analytics, which can be useful to management of retail stores in creating strategies. Analytical Hierarchy Process is a multicriteria approach to decision-making, and among its criteria, which are hierarchically assorted, relative significances are determined and accordingly, alternatives for each criterion are compared in order to gain relative classification of alternatives from the best to the worst choice option (Hunjak 2009). A short presentation of the AHP method is given below.

“The Analytic Hierarchy Process (AHP) is one of the most outstanding multi-criteria decision-making approaches. The AHP method (Saaty 2001) has a great importance in problem structuring and decision making. Its application allows an interactive creation of the problem hierarchy that serves as a preparation for the decision-making scenario. The next step is a pairwise comparison of the hierarchy elements (goals, criteria and alternatives) and eventually all the mutual comparisons are synthesized and weight coefficients for each element are determined. The sum of weight elements on each hierarchy level is equal to 1 and allows the decision maker to rank all the hierarchy elements in terms of importance.

In the AHP, multiple paired comparisons are based on a standardised evaluation scheme (1 = equally important; 3 = slightly more important; 5 = much more important; 7 = very much more important; 9 = absolutely more important). The result of the pairwise comparisons of  $n$  elements can be summarised in an  $n \times n$  evaluation matrix  $A$  in which every element  $a_{ij}$  is an estimate of the ratios of the relative weights, e.g.  $a_{ij} = w_i / w_j$ , where small errors in the consistency of judgements are acceptable.

In the next step the largest eigenvalue  $\lambda_{\max}$  of the evaluation matrix has to be determined. It can easily be seen that  $\lambda_{\max} \geq n$ . The difference  $\lambda_{\max} - n$  can therefore be used as a measure of consistency and consistency index is  $CI = (\lambda_{\max} - n) / (n - 1)$ . The consistency ratio (CR) is given by  $CR = CI / RI$ , where  $RI$  is the random index (the average of 500 randomly filled matrices). If this ratio is significantly small (about 10% or less), we accept the estimates obtained by this process. Otherwise, we attempt to improve inconsistency.

Namely, the value is adopted as the consistency index (CI). This value is compared to the same index obtained as an average over a large number of reciprocal matrices  $(\lambda_{\max} - n) / (n - 1)$  of the same order, whose entries are random.

The estimates of relative weights of elements on the corresponding level of a hierarchical structure will allow the calculation of local priorities (weights) of criteria, sub-criteria and alternatives, which are then synthesized into global priorities of alternatives. The global priority of an alternative is calculated by addition of its local priorities weighted with the weights of elements on the higher level.” (Perić, Babić and Resić 2017)

### 3.1. Choice of food items in model shopping cart

In order to correctly set and solve this problem, it will be necessary to apply the model for the shopping cart with arbitrarily chosen food items. Through detailed analysis, and taking into consideration, among other things, frequency of shopping and presence in all stores, 10

food items were chosen, which are most frequently consumed during holidays.(Portal me, the Trader; Croatian Chamber of Economy 2004; Croatian Chamber of Economy Trade Sector 2010). It is interesting that, during research, every retail chain except Lidl had on its shelves a representation of products from the manufacturer we opted for. Therefore, in the following text it will be interesting to see how this will reflect on its ranking in the final order. (Fatović, 2013).

### 3.2. Graphic demonstration of hierarchical structure of the model problem

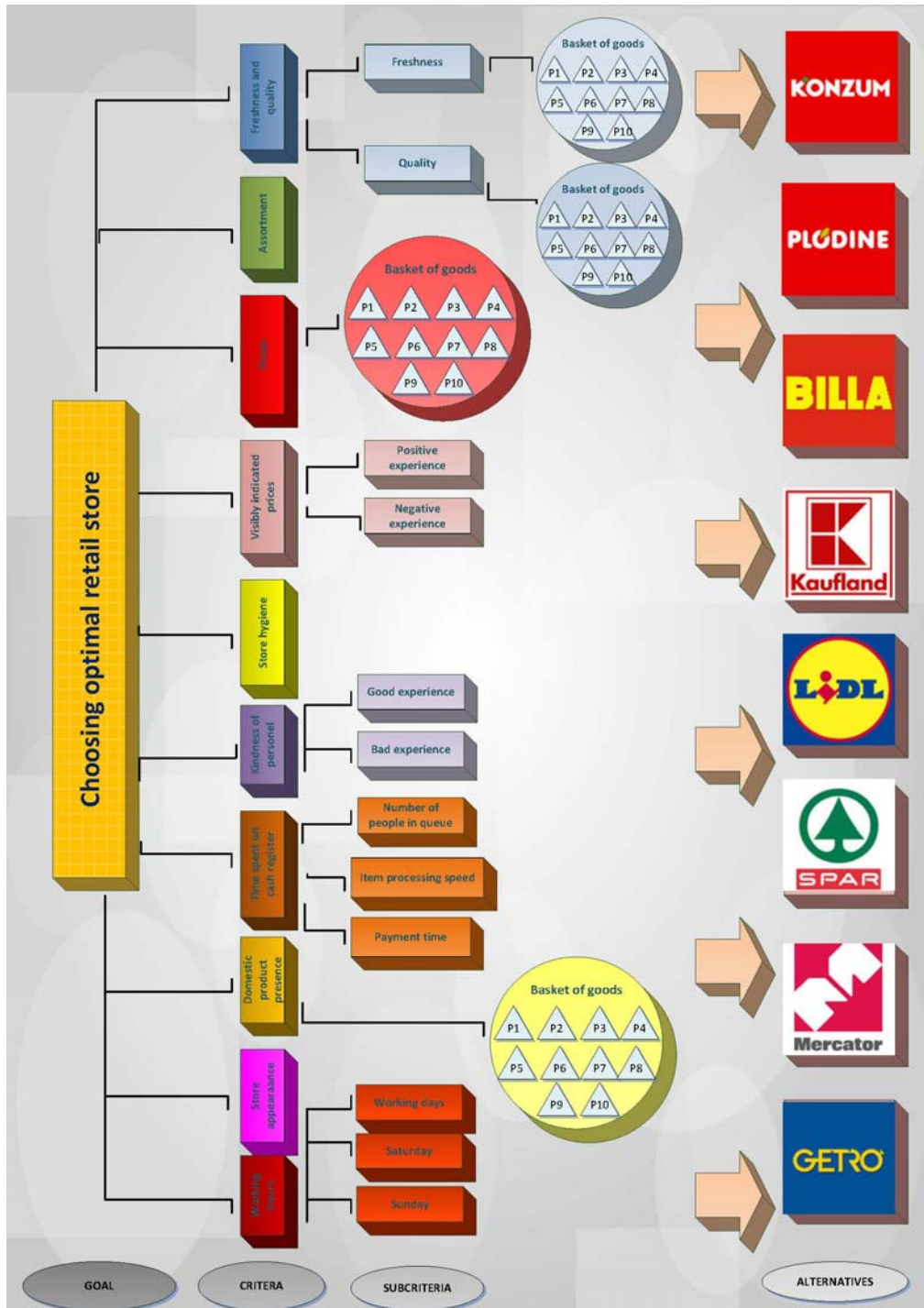


Figure 2. Graphic demonstration of hierarchical structure of the model problem  
 Source: Marin Fatović , 2013

Graphic hierarchical demonstration shows the decision-making structure. On the lowest level, decisions and comparisons are made for retail chains in terms of superiority in a particular category. The total number of decisions which have to be made between retail chains is 1484. On middle and highest levels, decisions about importance between individual criteria and sub-criteria are made. The number of such decisions which must be made is 234. At the very top of hierarchy is the objective of the model, i.e. choice of optimal retail store based on average consumer's food items shopping cart (Fatović, 2013).

### **3.3. Defining the main criteria and sub-criteria**

The main objective, i.e. optimal choice of the retail store is defined by interaction between ten main criteria. Graphic demonstration shows the idea of defining individual main criteria. Some criteria are estimated as affected by multiple factors, and are therefore divided to multiple sub-criteria, and for some direct comparison suffices, so in that sense they have no sub-criteria. Due to insufficient research of some areas in Croatian retail, which are important for defining and comparison of certain criteria and sub-criteria, it was necessary to conduct research of those segments. The research was conducted in the areas of Zagreb and Slavonia.

#### **3.3.1. Results of research conducted in the areas of Zagreb and Slavonia**

Custom research of retail market was conducted during 2012 in Croatia in the areas of Zagreb and Slavonia. It can be divided into three parts. The first part encompasses measuring certain characteristics in stores belonging to retail chains, while the second part is oriented more at consumers' perspective and examines attitudes, perceptions and habits of retail consumers. The third part of the research consists of tracking online criticism, compliments and other measurements which require online research.

Field research of retail stores was conducted on the sample of 30 stores belonging to retail chains Konzum, Plodine, Billa, Kaufland, Lidl, Interspar, Mercator and Getro in the area of Zagreb County and, due to smaller representation, a bit less in the area of Slavonia - Konzum, Plodine, Billa, Lidl, Mercator and Kaufland.

For the first group of research, over 2500 information were gathered via method of direct measurement in the stores. Measured characteristics for certain retail chains can be divided into two groups: those measured through product characteristics and those gained by measuring time and fluctuation of queue at the cash-desk, which represent the second group. During measurement, and for the purpose of gaining more believable final result, special attention was paid to measurement in the most even time periods of day and week for each retail store. For each of ten products from the holiday basket, measurements of expiry date and product price for each alternative were conducted. Besides measuring product characteristics in stores, research was also conducted on the sample of 142 randomly chosen cash-desks by measuring 3 different segments which define the total time of waiting at the cash-desk: number of people waiting in queue, time needed for the cashier to read bar codes of 10 articles at the scroll bar (number of products in the model shopping cart), and total time needed for the cashier to take money, return the change and begin working with the next customer.

The second group of research is marked by insight into the consumers' perspective, i.e. knowledge about their preferences while buying food and other stock items. This research was also two-parted: conducting survey and experiment to the purpose of examining product

quality. The survey was conducted with the sample of 131 examinees, and data was collected via method of personal survey (59 examinees), CAPI method of survey and Web survey (total of 72 examinees). Structured survey questionnaire was comprised, beside 3 general, of 7 specific questions with multiple choice answers, specially designed for this research. Data gathered for the needs of this model fall in the area of grading the look of stores, size and width of product line, and intensity of importance measured with T. Saaty's scale between freshness and quality of products and sub-criteria of number of people at the cash-desk, time of reading bar-codes and time for completing payment.

For the needs of this specific research, method for calculating average of examinees' replies measured with Saaty's scale was devised:

If  $x_i$  is used to mark levels of intensity with significances from -2 do -9,  $i = 1, \dots, 8$ , where intensities with negative algebraic sign represent the left hemisphere of Saaty's scale, and  $z_i$  represents their associated percentage of examinees' answers in the survey, expressed through proportions  $z_i \rightarrow [0,1]$ ,  $i = 1, \dots, 8$ , the average corresponding to the left hemisphere is determined with the expression

$$\sum_{i=1}^8 (x_i + 1)z_i$$

Seeing that the intensity of the left hemisphere begins with intensity of significance -2, adding one to negative intensities  $x_i$  gives average amount of significance intensities for the left alternative without a starting point which is by the scale definition number 1. This way the average in the expression can be viewed as 'force' of replies which pulls the average exclusively toward the left alternative.

If  $y_j$  marks levels of significance intensity from 2 to 9,  $j = 1, \dots, 8$ , where intensities with positive sign represent right hemisphere of Saaty's scale, and if  $w_j$  marks their percentage of examinees' replies in the survey expressed with proportions  $w_j \rightarrow [0,1]$ ,  $j = 1, \dots, 8$ , response average for the right hemisphere is determined with the expression

$$\sum_{j=1}^8 (y_j - 1)w_j$$

Taking into account that we are working with intensities with positive sign, subtraction of number one gives average which can also be viewed as 'force' of examinees' replies which will pull the complete average exclusively toward the right alternative.

Facing these two forces through their summation gives insight into the alternative which examinees lean toward in average. The following expression represents the average of replies of examinees who decidedly opted for one of the alternatives, that is, the average of replies of examinees who were not indifferent.

$$\left| \sum_{i=1}^8 (x_i + 1)z_i + \sum_{j=1}^8 (y_j - 1)w_j \right| + 1$$

It is important to notice that by adding one, the beginning point of Saaty's scale which was subtracted in previous expressions is brought back.

If  $\sum_{i=1}^8(x_i+1)z_i + \sum_{j=1}^8(y_j - 1)w_j > 0$ , then the alternative from the right side of Saaty's scale is more important related to the left alternative for average intensity level  $\bar{P}$ .

If  $\sum_{i=1}^8(x_i+1)z_i + \sum_{j=1}^8(y_j-1)w_j < 0$ , then the alternative from the left side of Saaty's scale is more important related to the right alternative for average intensity level  $\bar{P}$ .

The above expression needs to be corrected for the percentage of replies of those examinees who were indifferent in their decision, that is, those who chose number 1 on Saaty's scale. Having this in mind, the average of examinees' replies in the survey is defined with the following expression

$$\bar{P} = [|\sum_{i=1}^8(x_i+1)z_i + \sum_{j=1}^8(y_j - 1)w_j| + 1](1 - n) + mn,$$

for intensity level  $m = 1$ , which represents the middle of the scale, or examinees' indifference in choosing between two alternatives and pertaining percentage of replies of indifferent examinees  $n$  expressed with proportion  $n \rightarrow [0,1]$ .

In the second part of the second group of research, an experiment was conducted to the purpose of research and comparison of product quality, due to inability to locate certain products in Lidl stores. The experiment was conducted on sample of 10 examinees whose task was to try the best substitute products in Lidl retail chain and compare them to standard products in model shopping cart which are available in all other retail chains.

The final third group of individual research is different from the previous ones by the fact that data was collected through the Internet. It can also be divided into two parts. The first part relates to gathering data about working hours of stores, on the sample of 127 stores, while the second part relates to monitoring compliments and complaints of consumers regarding kindness and facility of staff in the stores, as well as compliments and complaints regarding consistency and visibility of prices. The research was conducted on the sample of 986 comments, which were left by satisfied or unsatisfied buyers in the guestbooks of webpages of independent web portal supermarketi.info.

Data presented in this chapter is based on author Marin Fatović's research results, conducted for the purpose of his final paper (Fatović, 2013).

### **3.4. Average consumer's optimal decision in choosing retail chains in the area of Zagreb and Slavonia**

Through analysis of an extensive quantity of data collected in the research, it was possible to calculate a string of parameters necessary to set up this model. In the context of observing the model as a process of consumers' thinking or behaving, the gained parameters and set model can be interpreted as follows. Upon receiving all information about leading retail shops, weighing their advantages and shortcomings in concurrence with own wishes and needs, and keeping in mind potential benefits for himself, while dividing his decision into simple factors and weighing every segment of the decision separately, the imaginary model consumer synthesizes all that knowledge in his consciousness and creates the final list of alternatives, while placing on top the alternative, or retail store, which is the best (optimal) for him. Even though this is rational decision-making, the entire process can be looked at in the frame of interpreting consumer behavior and as a summary of previous consumer experience, and as such it belongs to his sub-consciousness as well.



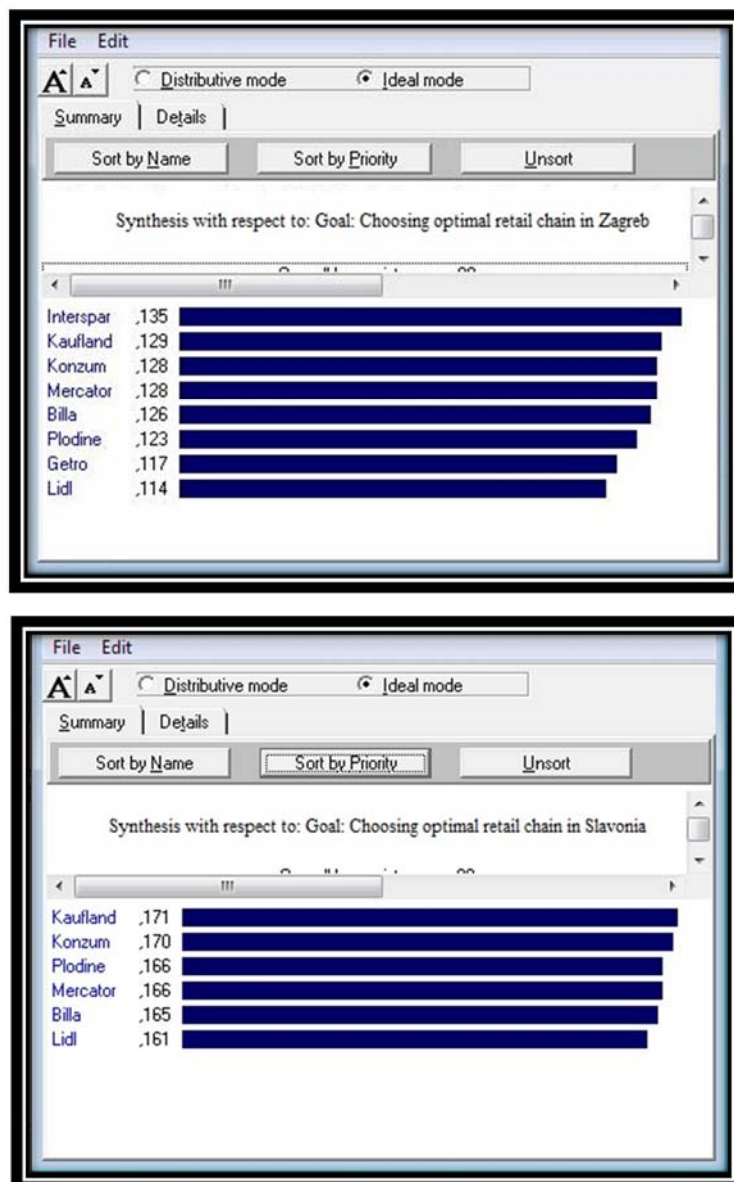


Figure 3. Graphic demonstration of the final order of alternatives in the consciousness of average consumer from Zagreb and Slavonia (Source: Authors)

Average consumer from Zagreb and Slavonia, who needs to go shopping for holiday groceries and must choose the most suitable retail store, finds that optimal choice for shopping are retail stores of Spar and Kaufland. In those stores the consumer can find the best combination of affordable prices, freshness of products, range of products, comfort and cleanliness of space, quick cash-desk service, fair treatment of buyers, employees' kindness and many other characteristics which make his shopping the most comfortable. They hold buyer priority 4.6% (Zagreb) and 0.6% (Slavonia) higher than priority of second-ranked retail store. The model also reveals their weaknesses and clearly shows that, regardless of their leading position, there are segments which stores do not hold at the level of their other segments. Those segments require effort to raise efficiency (Fatović, 2013).

Total decision inconsistency is 0.00, which points to maximum consistency in comparison between criteria, sub-criteria and alternatives according to criteria and sub-criteria.

#### 4. Sensitivity analysis

This chapter emphasizes possibilities of application of this model in retail. Analysis of behavior of the model, i.e. imagined consumer, is conducted in situations when the consumer has different social status, habits, preferences, and even different personalities from the one calculated through average. On the other hand, analysis is also conducted for model behavior in situation where retail stores make an effort for certain segments and raise them to higher levels of efficiency. More concrete, shortcomings of those stores who level very close to leaders and whose goal (and real possibility) is to become the best alternative for consumers. Combination of these two analysis approaches allows targeting a specific group of consumers.

##### 4.1. Sensitivity analysis from the consumers' point of view

The following text isolates 4 examples of consumers who have a more 'extreme' difference in some segment of the model in comparison to the average and the way they form their final decision. In all models it is possible to perform further, more detailed analysis in various segments, but the accent here will be exclusively on the objective function, that is, on changes in the optimal decision (Fatović, 2013).

Consumer who is 'on the edge of poverty' considers the price as extremely important in relation to other factors. Model with such set values in consciousness of this group of consumers results in choosing Kaufland in Zagreb, or Lidl in Slavonia, as optimal retail chain. In this example of consumer Lidl climbed from the last alternative to the first one in terms of priority for the consumer.

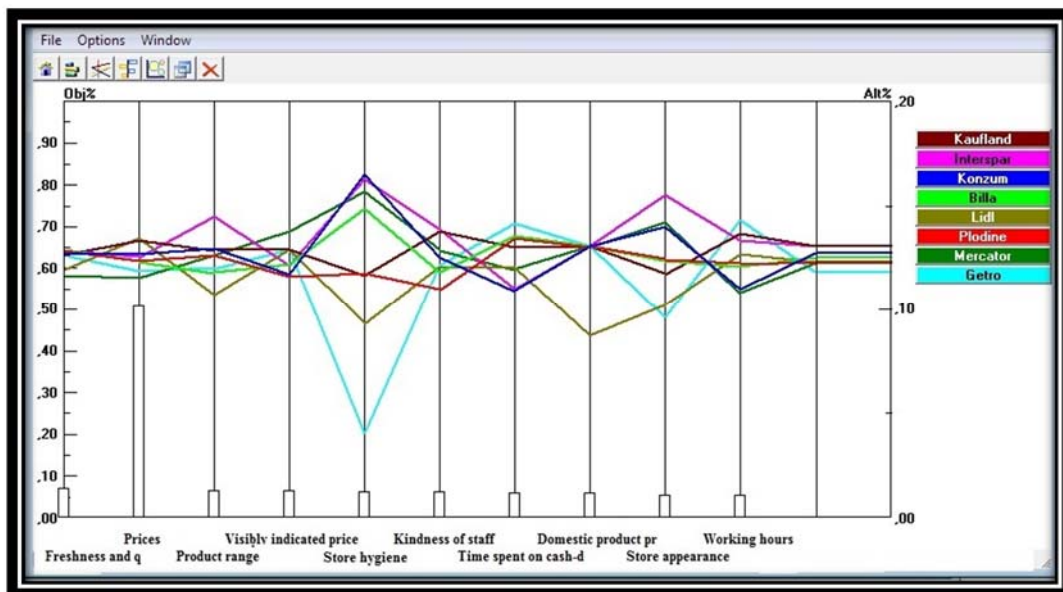


Figure 4 Sensitivity analysis from the point of view of consumer 'on the edge of poverty' from Zagreb (Source: Authors)

In the model of consumer who is not sensitive to price, factors *Price level* and *Visibility of prices* do not play a role, considering that this model's presumption is consumer's high earnings. For this consumer, what is more important is atmosphere, visual sensation and good personal service in stores, while the price is not of interest to him. Therefore, optimal solution or best

choice for him is Spar, who additionally increased his advantage for the Zagreb consumer model and Konzum for Slavonia consumer model.

So far, the assumption was that the average consumer 'draws' his good and bad experiences from previous shopping experiences from his memory in equal importance. Consumer 'pessimist' is more prone to focusing on negative experiences. Such consumer will ignore positive experiences gained at certain store, which will reflect in the model frame on criteria *Kindness and facility of staff* and *Visibly indicated and consistent prices*. Optimal choice for such consumer is still Spar (Zagreb) and Konzum (Slavonia).

Model of consumer in 'extreme hurry' is based on the assumption that the consumer is in a situation when he, for example, has a meeting scheduled and before that he must urgently complete shopping for some reason. For him, going to the store with least possible crowd is imperative, while satisfying his need for other characteristics which a store must have according to his criteria. Within model frame, criterion *Time spent at the cash-desk* has a very strict significance. With such presuppositions for the model, optimal choice for this group of consumers is Billa for Zagreb County and for Slavonia Plodine and Billa which share the rank of highest priority level in this model.

#### **4.2. Sensitivity analysis from the point of view of retail chains**

In the previous chapter we were able to observe how consumers form decisions when their personality, attitudes, life situation, etc. change. Retail stores cannot affect this area, but they can attempt to adjust as much as possible to consumers' wishes and needs by making an effort to improve critical segments. This analysis looks at those alternatives which are not in the leading place, but belong to the very top of best alternatives according to standard model of average consumer.

In Zagreb consumer's consciousness Konzum is the third best alternative and is 5.46% behind leader Spar. The model suggests its greatest shortcomings which place it on that position. Sensitivity analysis points to efforts which are needed to make Konzum the first choice for the consumer. Only certain will be mentioned, such as: time of completing payment should not be longer than 35.52 seconds in average, number of people at the cash-desk should not be over 2, working hours should be extended by 63.39%, product range should be expanded by 9.23%, complaints about price inconsistency should be reduced by 11.10%, etc. For the model of Slavonia consumers, Konzum requires less effort to achieve the same.

Analysis was conducted by targeting the average consumer, but it is possible to locate what efforts are required to satisfy other groups of consumers as well.

Retail store Kaufland is 4.65% behind Spar and is the second best choice for the average consumer from Zagreb. It has a realistic possibility to become number one choice for Zagreb consumer, but that, among other smaller investments, requires drastic investment in redecorating interior and exterior of stores. Sensitivity analysis shows necessity of raising general consciousness about hygiene and outlook of their stores for 25.86% or 17.09%.

Plodine, as third best alternative for Slavonia consumer is behind first-ranked Kaufland for 3.01%. If Plodine leadership in Slavonia, among other things, reduces prices by 1.21% and finds a way to motivate its employees and educate them about importance of good behavior and relation towards buyers and consecutively raises customer satisfaction by 9.02% and also reduces complaints by 18.05%, it can become Slavonia consumer's first choice (Fatović, 2013).

## 5. Conclusions

This paper shows research of possible application of AHP method in choosing retail chain for average consumer and for determined shopping cart (10 standardized products) with assumption of rational decision-making about shopping.

Methodology was presented which enables the decision-maker for retail chain to explore factors which influence the decision of the average consumer when choosing store where he/she will complete shopping. It also helps retail stores aim their offer at precisely determined consumer groups.

Also, the presented methodology enables sensitivity analysis of gained solutions from the perspective of the consumer, observing how consumers make decisions when their personality, attitude, life situation, etc. change. Retail stores cannot affect this area, but they can attempt to adjust as much as possible to consumers' wishes and needs by making an effort to improve critical segments.

Suggested methodology also enables sensitivity analysis from the point of view of retail chains, where alternatives are analyzed which are not in the leading place but are at the top of best alternatives according to standard model of average consumer. Analysis points to key shortcomings which placed the retail chain in the given position and shows which efforts are needed to make the analyzed retail chain the first choice for the average consumer. Combination of sensitivity analyses of above-mentioned points of view, retail stores can target desired specific group of consumers.

Suggested methodology can be generalized to increased value of shopping and expanding the shopping cart, as well as to including new factors which can affect the decision about choice of store where average consumer will complete his shopping, such as, for example, importance of store distance for the consumer. The model can be expanded by including information from the research about sex and age division, which provides parallel insight into decision-making for mentioned groups and, finally, enables consumer targeting according to those criteria. Furthermore, it is desirable to conduct research in the future about retail chain management strategy regarding consumer division to groups, with the aim of further adjusting the model to the needs of retail store management. Additionally, it can be explored what is the limit of shopping cart monetary value where consumers care more about added value, and where they care more about the price. If we assume that consumers make decisions differently when planning to go shopping in larger amounts, introducing the aspect of changeable-value shopping cart can give the model a new dimension.

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## Online Dispute Resolution Platform as an Advanced Tool for Consumer Protection

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**Abstract:** According to the European Commission, one of the basic goals of consumer protection is to empower consumers to be able to claim the rights as individuals. Therefore, the organization and functioning of governmental and non-governmental institutions should be fostered to develop methods; techniques and legislative framework, which will ensure that consumers can, in timely and efficient way satisfy their need for protection in their purchasing and post-purchasing activities. In this paper, we focus on consumer protection foundations and describe consumer alternative dispute resolution as an effective opportunity introduced for consumer protection, which is developed and supported by European Union. Finally, we present online dispute resolution platform as a supportive tool of alternative dispute resolution. Special attention is given to general benefits of consumer dispute resolution and specific benefits of online dispute resolution platform.

**Keywords:** consumer protection, retail, alternative dispute resolution, consumer dispute resolution, online platform, CADR, ADR, ODR

### 1 Introduction

In past decades, retail industry became more concentrated (for more details see: Knežević et al., 2014). Retail concentration strongly influences wealth and power distribution within supply channels and large retailers benefit more in comparison to suppliers and consumers. As described by Khan & Vaheesan (2017), several academic studies have found a link between higher levels of local retail concentration and higher grocery prices, on one hand. And on the other hand, the farmer's share of the retail dollar of food has been dramatically decreasing. Therefore, Khan & Vaheesan (2017) conclude, that powerful firms in concentrated markets possess greater ability to extract wealth from consumers and producers than they would in competitive markets. In such conditions, consumers appear to be in a weaker position when it comes to enforcing and defending their own interests (Novikoviene, 2010). Therefore, this unequal bargaining position of parties in commercial legal relationships will usually be corrected throughout the legal and institutional system.

In numerous member states, disputes at the court are not being resolved in quick and efficient manner (for illustration see data on number of disputes at Commercial Courts in Croatia since

2012 till 2016). In addition to shown figures, we have to point out to exhaustive and time-consuming court procedures. For instance, by default, the duration of the three-stage trade process in court in Croatia is 1104 days or three years on average. This time for both for entrepreneurs and for consumers is extremely long and financially exhaustive because of attorneys' costs and depending on the individual case and the cost of the expert witness.

**Table 1:** Number of disputes at Commercial Courts in Croatia

Year	At the beginning	New disputes	Total disputes*	Unresolved disputes	Percentage of unresolved disputes*
2012.	14.110	9.672	23.782	14.456	60,79%
2013.	14.456	11.180	25.636	18.455	71,99%
2014.	18.455	10.030	28.485	20.845	73,18%
2015.	20.845	8.910	29.755	20.221	67,96%
2016.	20.221	8.700	28.921	16.194	55,99%

Source: Republic of Croatia, Ministry of Justice, Statistical Review 2016 (in Croatian: Statistički pregled za 2016.), available at:

<https://pravosudje.gov.hr/UserDocsImages/dokumenti/Pravo%20na%20pristup%20informacijama/lzvje%C5%A1%C4%87a/Statisticki%20pregled%20za%202016%20godinu.pdf>

(Accessed on 29th May 2017), \* - own calculation

Therefore, in order to empower consumers for selfprotection, legal framework is being set across European Union member states. This is done in accordance with The EU Consumer Policy Strategy (European Commission, 2007) giving consumers and entrepreneurs to find out-of-court solutions of their disputes, i.e. to offer them a possibility of alternative dispute resolution that is enabling them to find a suitable solution in timely and more effective manner.

The cross-border economic cooperation between EU members states creates the increase of the exchange of goods and services and increases competitive climate among providers. Consequently, this has a positive impact on quality and prices of goods and services available to consumers. However, in spite of the existing EU policies and frameworks, Jeretina & Uzelac (2014) claim that, in practice, for consumers in EU it is still difficult to enforce their rights when such a need arises. Therefore, EU is developing new frameworks and methods for empowering consumers.

In this paper we will turn our attention towards the basic principles of consumer protection, then we will describe what is alternative dispute resolution regarding protecting consumer rights, and finally we will describe online platform for alternative dispute resolution. In addition, some benefits of consumer alternative dispute resolution and online dispute resolution will be highlighted.

## 2 Theory of consumer protection

In circumstances of growing market concentration, misbalancing of information and power between consumers and entrepreneurs grows in favour of entrepreneurs and consumers are often provided with inadequate information about quality, expiry date and other factors related to the goods and services (Novikoviene, 2010).

The legal rules are suited to protect a 'weaker party'. Rules on the jurisdiction of courts in civil and commercial disputes are unified on the EU level in the Brussels Jurisdiction Regulation and they include jurisdictional ground for certain categories of disputes that involve 'weaker parties', which includes consumers as well. (Lazić, 2014)

By summarizing European Directives in area of consumer protection, Novikoviene (2010), outlines features of consumer's conception (in which consumer is considered as a "weaker party") applied in EU law schemes:

- Consumer is any natural person, who concludes a contract for the purposes outside his business and professional activity; he/she is the end user of goods and services;
- Service provider or seller of goods has to act for purposes of business, i.e., selling of goods / services and related to his business or professional activity;
- Goods offered for sale and services provided have to be intended for private use and outside professional use;
- A person who has not directly concluded a contract with service provider or seller of the goods, but uses these goods and services to meet his own and/or family's needs.

Many documents regarding the protection of consumers in the EU area will highlight that the consumers come from the center of Europe. And that is a fairly accurate statement; namely the EU respects ten fundamental principles of consumer protection (see European Commission, 2005):

- Buy what you want, where you want
- If something does not work, send it back
- High standards on food and consumer goods
- Know what you eat
- The contracts must be fair to the buyers
- Sometimes buyers can change their minds
- Facilitate price comparison
- Consumers should not be deceived
- Protection on vacation
- Mobility between countries (with corresponding tax returns).

In the EU, the freedom to choose the place of purchase is cared for in a way that the products within the EU are not taxed twice. If the purchased product does not work in accordance with what was stated in the ad, the buyer has the right to return the product within a reasonable period of time.



The manufacturers and the distributors are responsible for the safety of the product placed on the market, while safety standards are issued for all consumer goods, such as toys, household appliances, cosmetics, etc.

Food safety is specially regulated. Each food product has to be labeled with full information about the composition, especially as far as allergens are concerned. If the product contains genetically modified organisms (GMOs), it must also be highlighted. Special rules apply when using the term "organic", "good quality" and "regional origin".

In some cases, the period of time in which the buyer can cancel the contract is set, so-called "the cooling off period". That is the period of time during which the buyer, without the influence of the seller or the sales representative, will be able to judge the correctness of his decision better.

The prices in the stores should be emphasized with the tax included, and that for the whole product and for the basic unit of the product (eg. for the detergent packaging and per kilogram of detergent).

The consumer has to obtain the correct and complete information based on which he will make the decision to purchase. It is forbidden to apply the practice of false advertising (for example, suggesting that the product treats all possible types of illness, while there is no valid scientific evidence).

The EU Consumer Policy Strategy (European Commission, 2007) highlights the three fundamental goals of consumer protection:

1. To empower the EU consumer
2. To increase the welfare of EU consumers
3. Protect consumers from serious risks and threats.

The first goal is to increase the market competition and transparency, to increase the consumer awareness (by accurate information), to develop consumer confidence based on a firm and effective protection of their rights.

The welfare of consumers stands out as the heart of a well-functioning market, and welfare refers to price, choice, quality, diversity, availability and security of goods.

Thirdly, the European Commission points out that consumers, in certain situations, are not able to claim the rights as individuals, so they should be helped by the establishment of a legislative framework and by encouraging the organization and functioning of governmental and non-governmental institutions.

Croatian Consumer Protection Act (CPA, 2017) in entry paragraph states that basic consumer rights are:

1. The right to the protection of the economic interests of the consumer,
2. The right to protection from dangers to life, health and property,
3. The right to legal protection of consumers,
4. Right to information and education of consumers,
5. The right to associate of consumers with the purpose of protecting their interests,
6. The right to represent the consumer and the participation of consumer representatives in the work of bodies that resolve issues of their interest.

The law defines that the product notice should contain essential information that the average consumer needs to make a purchase decision. Important information is about (CPA, 2017, paragraphs 7 and 9):

- The basic features of the product to the extent appropriate to the product and the communication medium being used
- The head office and the identity of the trader, such as his company, the brand or name and, if necessary, the address and identity of the person to whom he is acting
- The retail price of the product, or where the nature of the product does not allow the price to be calculated in advance, the manner in which the price will be calculated and, where appropriate, the additional postal costs and the cost of transport and delivery, and when those costs cannot be calculated in advance, the indication that these additional costs are also payable
- The terms of payment, delivery, other elements of contract fulfillment, as well as the complaint handling system, if these elements deviate from the requirements of professional attention
- The existence of the right to terminate or cancel the contract, in the case of products or legal transactions for which such rights are foreseen
- The country of origin.

In addition, the trader shall clearly, visibly and legibly indicate the amount of the retail selling price and the price per unit of the product or service provided.

Except for regular retail sales, the Consumer Protection Act also prescribes rules on the specific forms of sale of goods on action, on a discount, for sale and when selling defective goods.

It also deals with issues of prepayment, contracting outside of the business premises, distance contracts, and consumer lending.

The handling of unfair terms in consumer contracts is also legally regulated. These are the provisions that were not individually negotiated about causing a significant imbalance in the rights and obligations of the contracting parties at the expense of the consumer. The problem of a pre-formulated standard contract for a merchant where the consumer had no impact on the content is especially highlighted (CPA, 2017, paragraph 96).

The unfair business (CPA, 2017, paragraph 109) practice is being defined as being contrary to the requirements of professional concern and which, in the sense of a particular product, is materially affected or likely to have an important effect on the economic behavior of an average consumer to whom such practice is intended or to whom it reaches, that is the average member of a particular group of consumers to whom this practice is directed. Particular attention is given to two forms of unfair business practice: (1) customer delusion and the (2) aggressive market performance

According to CPA (2017, paragraph 122) Consumer Protection carriers in Croatia are: the Croatian Parliament; the Government of the Republic of Croatia; The Croatian Ministry of Economy, Labour and Entrepreneurship; the State Inspectorate and other competent inspectorates; the National Consumer Protection Council; the Croatian Chamber of Commerce; the Croatian Chamber of Trades and Crafts; the Croatian Employers' Association

and other public authorities (each from their jurisdiction in the area of consumer protection) and consumer protection associations.

### **3 The foundation and benefits of Consumer Alternative Dispute Resolution (CADR)**

According to Hodges et al (2012), Alternative dispute resolution (ADR) can be broadly defined as „any [dispute resolution] mechanism that is ‘alternative’ to the traditional model of civil proceedings issued in the courts.“ Moreover, Hodges et al (2012) claim that ADR includes a range of possible techniques and methods, such as: in-house complaints procedures, mediation, conciliation, arbitration, adjudication, ombudsman schemes and other legal mechanisms.

The European Commission document entitled „EU Consumer Agenda“ (European Commission, 2012) established a new consumer protection policy and set 4 key objectives of consumer protection:

1. Improving consumer safety
2. Enhancing knowledge
3. Improving implementation, stepping up enforcement and securing redress
4. Aligning rights and key policies to economic and societal

The EU Consumer Agenda determines that the European Commission (2012) will work on achieving two specific objectives under every one of the 4 key objectives. Namely, under the key objective no. 3 (Improving implementation, stepping up enforcement and securing redress), „Giving consumers efficient ways to solve disputes“ is identified as one of the two specific objectives. On those grounds, alternative dispute resolution was finally recognized as *conditio sine qua non* of consumer protection policy in the EU and the process of its codification has been started at the EU level.

In consumer disputes, the acronym CADR (Consumer ADR) is more used than common ADR acronym to emphasize the very nature and characteristics of disputes being solved. Nowadays, efficiency of CADR is strongly discussed among experts (Cortes and Lodder, 2014; Moreno, 2016). Therefore in the future, the term 'efficient' could be more appropriate for this type of dispute resolution than the term 'alternative', which would then bring us to the term „Consumer efficient dispute resolution“ (CEDR).

The passing of the first EU Directive on CADR (Directive 2013/11/EU and amending Regulation (EC) No 2006/2004; Directive 2009/11/EC), along with the two Recommendations of the Commission from 1998 and 2001 (Commission Recommendations 98/257/EC and 2001/310/EC) is a great contribution to consumer protection in the EU and a possible incentive for improving upon the 2008 EU Mediation Directive (Directive 2008/52/EC). Along with the Directive on CADR, Regulation on online dispute resolution (ODR) was passed in 2013 as well (Regulation (EU) No 524/2013 and Directive 2009/22/EC). As of February 15th 2016, the Regulation on ODR has a direct effect in the member states. The aim of this Regulation is to

encourage online trade and provide a „reliable and efficient online dispute resolution (ODR) “by creating an interactive website „offering a single point of entry to consumers and traders seeking to resolve disputes out-of-court which have arisen from online transactions.“ (Preamble of Regulation (EU) No 524/2013).

In Croatia, Directive on CADR was implemented into the Croatian Alternative Dispute Resolution Act (CADRA, 2016) which passed on December 15th 2016 and became effective on December 30th 2016. Before the 2013 Directive, Croatian CADR schemes weren't sectorally developed (except for the Mediation Centre at the Croatian Insurance Bureau, established in 2007). Instead, effective ADR schemes were already in place at the economic associations of entrepreneurs (Croatian Chamber of Trades & Crafts and Croatian Chamber of Economy), whose jurisdiction is determined based on trader's membership to either association. Therefore, consumer disputes for all traders and craftsmen, as natural persons performing economic activities, fall under the jurisdiction of the Court of Honour of the Croatian Chamber of Trades & Crafts. On the other hand, traders as legal persons fall under the jurisdiction of the Court of Honour at the Croatian Chamber of Economy. Since the ADR schemes in both chambers are constituted very similarly and since their work was already based on the same principles established in the Directive on CADR even before the Directive itself was even passed, the implementation into Croatian legislation wasn't particularly difficult.

The benefits of CADR compared to consumer dispute resolution in regular courts are many. One of the basic benefits is the acknowledgement of the unequal positions of the parties in the procedure, which means the consumer as a weaker party, both by economic power and expert knowledge in the matter. Said benefit is evident in the principle of voluntariness that is present throughout the entire procedure as proposed by the Directive (Directive 2013/11/EU), and is actualized by regulations that establish the initiative for starting and remaining in the procedure on the side of the consumer. Also, this Directive does not apply to procedures which are initiated by the trader against the consumer. Another important benefit of CADR for consumers is the absence of high costs of participating in the procedure. According to the Directive (Directive 2013/11/EU), member states have to ensure efficiency in such a way that the consumers can participate in the procedure without the obligation of using legal representation. Procedure should also be either free of charge for the consumer, or a symbolic fee should be charged (Directive 2013/11/EU).

Other benefits of CADR compared to regular courts include less complexity and less formality in the procedure, as stated in the Directive (Directive 2013/11/EU). Article 7 of the Directive prescribes the requirements which the ADR bodies have to fulfill to ensure transparency. In 23 paragraphs, the Article states how the transparency principle is carried out, by listing information that the ADR bodies have to make publicly available and easily accessible to consumers. Required information includes, among other things, the procedural rules of the ADR bodies in order to make the procedure easier to follow and more understandable to consumers.

The short duration of the procedure represents a significant advantage compared to duration of the procedures in regular courts where regular procedures can go on for many years. Duration of the procedure, as prescribed by the Directive, should be no longer than 90 days (Directive 2013/11/EU). In highly complex disputes, CADR body has the discretion to extend this timeframe. For instance, according to the official data given by the Court of Honour at Croatian Chamber of Trades and Crafts, procedure takes 78 days in average (data for years: 2013, 2014 and 2015).

In addition, the interest-based dispute resolution is also significant advantage of CADR compared to the regular court system. Such dispute resolution has the aim of reaching a settlement among disputing parties. Regular courts, however, have a different approach. In most member states, the main task of courts and judges is considered to be litigation, and not settlement. Litigation entails determination of verifiable facts about a past event in accordance with the law, with importance placed on the legal positions of the parties, which means that the parties, as law persons and not legal experts, have to be represented by solicitors. Interest-based dispute resolution, on the other hand, looks to the future instead of the past and seeks out solutions that would be equally acceptable to both parties. With this approach, the parties' legal positions are not crucial and a solicitor is no longer needed.

The practice of the Court of Honour of Croatian Chamber of Trade and Crafts, in the period between 2000 and 2017, has confirmed that precisely the interest-based consumer dispute resolution represents the greatest advantage compared to procedures in front of regular courts, because it's led by an impartial third party, using skills and techniques of mediation, without the presence of a solicitor, in a procedure that is fast and simple and, in most cases, free for both parties.

With these regulations, consumer protection associations should have no troubles in directing consumers to the correct sources of complete information. If we want an effective and increasingly used CADR system (by both the consumers and traders) that isn't serving as „just“ an alternative to regular courts, a system for quality information and education of all stakeholders has to be built at the EU level. Special attention has to be placed, alongside education of consumers, on informing and education of micro and SME entrepreneurs.

#### **4. Online Platform for Consumer Alternative Dispute Resolution**

During the past, all disputes were solved offline. With technological development and increasing number of disputes, there was a possibility and need for developing online disputes resolution. Therefore, online dispute resolution platforms started to emerge and to develop. Nowadays, both ways (offline and online) of solving disputes are used.

Online dispute resolution refers to the settlement of disputes in an electronic environment using information technology (Philippe, 2014). According to Goodman (2003) online dispute resolution (“ODR”) can take place either entirely or partly online and concerns two types of

disputes: those that arise in cyberspace and those that arise offline. In particular, it examines and evaluates websites that use mediation techniques to help resolve disputes.

ODR platforms do not spring into being spontaneously, but they are created by designers and programmers according to specifications, addressing the needs of conflict engagement of practitioners.

The ODR platform is a web-based platform developed by the European Commission and it is accessible to consumers and traders since 15 February 2016. (see: <http://ec.europa.eu/odr>). Its objective is to help consumers and traders resolve their contractual disputes about online purchases of goods and services out-of-court at a low cost in a simple and fast way ([ec.europa.eu](http://ec.europa.eu)).

The ODR platform of European Union allows consumers to submit their disputes online in any of the 23 official languages of the European Union. The ODR platform transmits the disputes only to the quality dispute resolution bodies communicated by Member States. Member States have to establish a national contact point to provide assistance to users of the ODR platform. The list of these national contact points is available on the ODR platform ([ec.europa.eu](http://ec.europa.eu)).

Obligations for online traders to provide a link to the ODR platform Businesses established in the EU that sell goods or services to consumers online need to comply with the ADR/ODR legislation:

- online traders that commit or are obliged to use ADR must inform consumers of the dispute resolution body/bodies by which they are covered. They should do this on their websites and in the general terms and conditions of sales or service contracts.
- they are required to provide a link (i.e. <http://ec.europa.eu/odr>) from their website to the ODR platform. For linking to the ODR platform, traders can use the following clickable web-banners that are available in the different EU languages.

The screenshot shows the registration form on the ODR platform. On the left, there is a blue box with the text 'Tell us more about yourself' and instructions to enter personal contact details. The main form area is divided into three sections: 'Trader details', 'Describe your complaint', and 'Personal information'. The 'Personal information' section includes the following fields:

- What is your name?**: Two input fields for 'First name' and 'Family name'.
- Where do you live?**: Input fields for 'Street', 'Postcode', and 'City', and a dropdown menu for 'Country'.
- In which language(s) do you want to receive messages from this site?**: A dropdown menu with options: Български (BG), Čeština (CS), Dansk (DA), Deutsch (DE), Français (FR).
- What is your email address?**: An input field for 'Email address'.

**Figure 1:** Filling in a personal information and information about other party  
(Source: <https://ec.europa.eu/consumers/odr/main/index.cfm>)

Regarding the procedure of complaint submission, consumer or trader, in need for dispute resolution, firstly opens the platform at: <http://ec.europa.eu/odr> . Then he or she has to choose the language and to select who is submitting a complaint: is this consumer or trader. After selecting person who is submitting a complaint on web site, it is necessary to fill in a personal information and information about other party (see Figure 1).

Next step is to describe complaint in details. Information about complaint which are needed are: Which good or service were buy, when they were buy, how much was the price, What is reference number of order, what type of complain it is, etc (see Figure 2). After filling all information, the complaint form is ready for submitting.

The screenshot shows the 'Describe your complaint' section of the ODR platform. It features a sidebar on the left with the heading 'Give us some details about the purchase' and instructions to provide as much detail as possible. The main form area is divided into three tabs: 'Trader details', 'Describe your complaint', and 'Personal information'. The 'Describe your complaint' tab is active and contains the following fields:

- 'Which good or service did you buy?': A dropdown menu with 'Consumer Goods' selected, and a sub-menu showing 'Small domestic household appliances (including coffee machines a...' with a 'View description' button.
- 'When did you buy the good/service?': A date picker showing '3 April 2015'.
- 'How much did you pay?': A text input with '251' and a currency dropdown set to 'EUR - Euro'.
- 'What is the reference number of your order?': A text input with '231478'.
- 'What is the type of the complaint?': A dropdown menu with 'Not in conformity with order' selected.

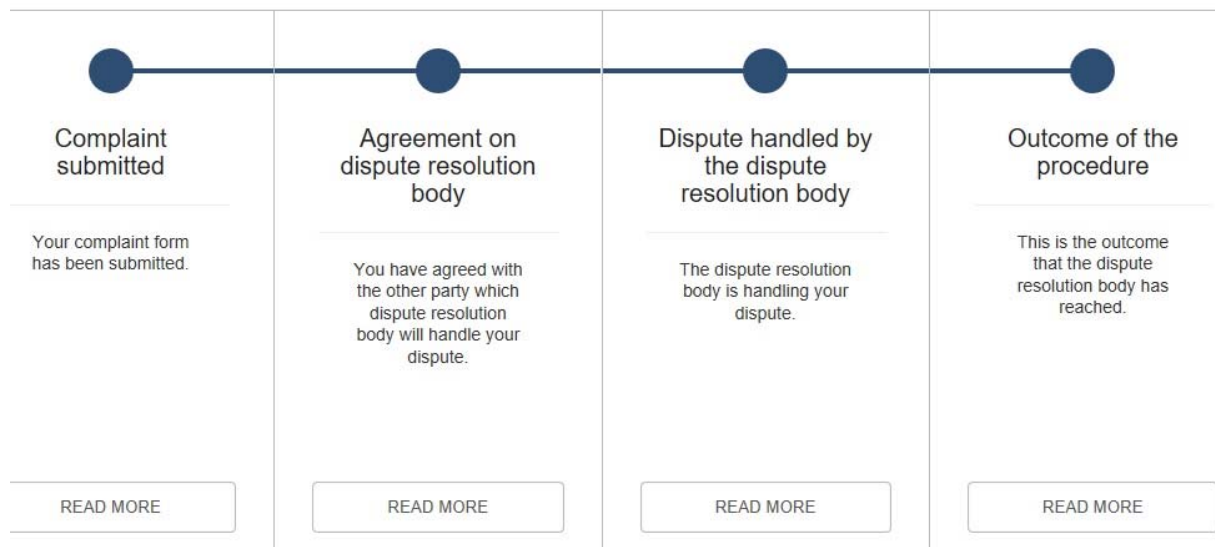
**Figure 2:** Complaint description

(Source: <https://ec.europa.eu/consumers/odr/main/index.cfm>)

Jeretina & Uzelac (2014) describe the proces of online disputes solving and claim that many CADR models involve a sequence of techniques, starting with negotiation, then providing mediation, and ending with arbitration. In such a sequence the parties have sufficient opportunity to reconsider their positions, and hence agree on solutions. In some systems that give powers to a special body for complaints (e. g. to Ombudsman) the sequence of steps can even be extended. Here is such a “sophisticated pyramid”, with several steps that may lead to settlement rather than to submitting the dispute right away for a formal decisions suggested by Hodges et al. (2012).

Similarly, there are four steps in online disputes solving, and each of them is explained on ODR platform by illustration and more textual details on request of the user (see Figure 3), those steps are (according to ec.europa.eu):

1. Submitting a complaint.
2. Agreeing on a dispute resolution body.
3. Complaint handling by the dispute resolution body.
4. Outcome and closure of complaint.



**Figure 3:** Steps in process of solving disputes through the online platform

(Source: <https://ec.europa.eu/consumers/odr/main/index.cfm>)

According to the documentation on ODR platform of European Commission, party have filled in the online complaint form and submitted it to the site. The other party has received it. Then, the first party has to agree with the other party on the dispute resolution body that will handle the dispute. If they need help, they can contact their national contact point. Parties have 30 days to agree on the dispute resolution body that will handle their dispute.

Once they agreed on the dispute resolution body, the ODR platform will automatically send the details of their dispute to that body. If they cannot agree, their complaint will not be processed further. And again, if they need help, they can contact their national contact point.

Then, when the dispute has been sent to a dispute resolution body, it has three weeks to decide whether it is competent or not to deal with that kind of dispute and inform parties thereof. It may contact parties for more information. Once the procedure is over, the dispute resolution body will inform parties of the outcome. This outcome varies per dispute resolution body.

As an addition to general CADR benefits mentioned in previous chapter, Jeretina & Uzelac (2014) outline following benefits of ODR:

- whole procedure from filling the form, defining the competent authority ADR to forwarding the complaint is provided online in electronic form,
- platform ensure communication between the parties and the ADR bodies with free electronic tools (e-mail, mobile messages etc.),
- ODR platform can be to used in several languages what is very important for cross-border disputes between the parties primarily consumer -trader,
- there is an electronic archive of files (such as proposal for ADR, selection of ADR body, record of dispute, agreement on ADR procedures, the settlement of resolving the dispute),



- ODR shortens the term of dispute resolving (within 30 days from the date of receipted request in consideration),
- all involved parties are getting automatic feedback on receiving requests.

Rainey (2014) outlines that use of technology creates possibilities that break through the boundaries that currently define the practice of conflict engagement, for instance, when using ODR platforms to store and analyse data drawn from individual cases handled on the platforms. This makes it possible to describe trends in the creation of disputes, and trends in the resolution of disputes. Moreover, Rainey (2014) proposes that algorithms can be created to handle repeating disputes, as has been the approach for most e-commerce organizations in other types of electronic business. But, on the other hand, he warns that this means that third parties could have access to the 'most likely' resolutions for certain kinds of disputes, and could carry that knowledge into resolution sessions.

Moreover, as two more ODR benefits, Goodman (2003) adds cost savings and convenience while, regarding ODR disadvantages, he claims that ODR is impersonal and potentially inaccessible to some individuals and rise many questions on confidentiality while can be used for only limited range of disputes. In addition, Cortes (2011) emphasize that within ODR, as a consensual method of dispute resolution, rules of formal evidence do not apply which makes procedures more flexible and there is no need for parties to engage a representative and/or a legal practitioner. Cortes (2011) also claim that consensual ODR gives parties more control over the outcome and when parties reach the decision, there is a better chance to voluntary compliance of the reached solution.

In order to overcome the shortcomings of ODR, Rainey (2014) suggest that it is necessary to create a definitive description of the offline mediation process, a description that could then be used to create an online platform built around the precise description of the offline mediation process (Rainey, 2014).

## **5. Conclusions**

Due to the increasing market concentration in many industries and increasing internationalization of businesses across Europe, consumers, as a weaker party need to be protected by the legal framework. European Union is setting general conditions of consumer protection legal framework, which is then implemented into the legal frameworks of member states.

In addition, as resolving consumer disputes at courts are financially exhaustive and timely inefficient, in recent period, framework and methods of alternative dispute resolution for consumer is being developed at EU level. This includes evolution of online platforms for consumer dispute resolution.

According available literature, there are numerous advantages of alternative dispute resolution and online dispute resolution platforms. Namely, the time of alternative dispute resolution is significantly shortened to less than three months (not years as in court resolutions), cost efficiency is higher, there is no need for engaging legal representatives,

complexity of the procedure is reduced, solutions are adjusted to the interests and needs of parties involved etc. Moreover, ODR platforms have some additional benefits for parties involved, such as: it is user friendly and easy to use as complaints are filled into electronic forms, electronic communication between parties and selected dispute resolution body offers possibility of additional time saving in processes and offers the basis of new knowledge creation for future processes (for instance one can observe trends of dispute resolution upon data available in online ODR database). Another benefit is a multilanguage support within the ODR platform, which makes processes between traders and consumers more understandable in international environment.

However, in this paper we used secondary data to describe basic concepts of consumer protection, ADR and CADR and processes within ODR together with their main benefits. In future research, one should pay attention to trends of future development of ODR platform and ODR legal framework. In addition, statistical analysis of trends in usage of ODR platform should also be investigated. Then, primary research could take a place in order to observe attitudes of parties involved into real cases of online dispute resolution processes.

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## Application of New Technologies by Retail Banks in the Context of the Knowledge Economy

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**Abstract:** Appropriate transformation of knowledge resources of a specific entity and its environment, contributes to obtaining of permanent value for customers, employees and improvement of the competitive position of the bank. The scope of application of modern technologies by polish retail banks in the process of shaping the offer, its delivery and communication is developing very dynamically. IT society is important determinant of implementation of new technologies by retail banks. It is determined by further popularization of modern mobile technologies and the development of users' preferences. It should be noted that the current consumers belong to the generation that has an everyday contact with new technologies, which are a part of their daily life. For example in 2016, 80.4% of households in Poland had access to the Internet, including 75.7% - of those with broadband access. Some results of research conducted among bank customers are presented beneath. The purpose of the research was to identify attitudes towards innovative products implemented by banks with the use of modern technologies. The features of the bank's innovation, in the opinion of the respondents are: the application of electronic and mobile banking and security. As research shows, firstly security, followed by a lower price and growth of the comfort of use are the factors that encourage the customers to use innovative solutions in banking. Most important barriers limit the use of innovative banking solutions are the costs that occur together with products based on advanced technologies, risk that raises fears of using new unverified services and the lack of information and knowledge about new banking products. Many respondents are satisfied with previous services and they do not feel the need of using innovative solutions.

**Keywords:** New Technologies, Retail Banks, Knowledge Economy, Information Society

### 1 Introduction

In contemporary conditions of functioning of retail banks, a significant increase in the importance of knowledge as well as intellectual and information potential created by science, education and progressing structural transformations is noticed. As a result, modern services based on information processing, that take the form of innovative products applying modern

technologies and expressing implementation of assumptions of knowledge-based economy emerge.

New technologies performs an important role in shaping the retail banks strategies of influencing the customers. The profile of contemporary customer is definitely different from customers "of the past" therefore also retail banks need to adapt themselves to new challenges related to the characteristics of active customers. According to Ph. Kotler in contemporary economies there are three types of purchasing clients. They are traditional customers and not purchasing on the Internet. Second group is cyber consumers. They usually purchase via the network. And the last group is mixed-type consume. This is the hybrid - ones buying both online as well as in traditional bank branch.

Development of information society is necessary to benefit fully from what the products offer to consumers. Consequently, this may lead to improvement in the quality of life of the society. It is associated with increased use of information and communication technologies, especially thanks to enabling distant social contacts and delocalisation of services that are available via electronic channels from any locations (Archibugi and Lundvall 2001, pp.21-23).

Identification of the degree of development of the information society in Poland in the context of knowledge economy requirements. An indication of the determinant of the use of new technologies by retail banks. Examples of retail banks' use of new technologies in shaping service offerings, delivery and communication.

The goal of the paper is to present changes occurring in behaviour of customers of retail banks and to indicate technological progress as their primary cause. The aim is also to show the preferences of retail banking customers related to the offer of services based on modern technologies. It is also important to identify the limitations resulting from the incomplete development of the information society in Poland. The next goal assumed in the paper is to indicate particular strategic behaviours in the sphere of shaping competitive services offers based on application of new technologies in their creation.

The methods applied to achieve the goal include the critical analysis of the literature of the subject, indirect research of customers of retail banks in Poland concerning their needs in the sphere of modern and competitive offers. In the paper the method of survey research used for conducted among bank customers. The purpose of the research was to identify attitudes towards innovative products implemented by banks with the use of modern technologies.

## **2 Knowledge-based economy in the context of innovative technologies in retail banking**

Changing conditions of operation led, among others to the development of knowledge-based economy, which is characterized by increased ability of accelerated development (Powell and Snellman 2004). Intensification of competition on international scale, that has its sources in technological development and globalization of economic phenomena, as well as increased consumer influence among others contributed to this.

The system of innovativeness based on developing technologies, especially information and telecommunication ones, is one of the key features of a knowledge-based economy, and at the same time important determinants of its development. They enable optimization of the processes of satisfaction of consumer needs through providing products and services of adequate quality, including the upgraded and new ones (Wiig 1997). This means that

appropriately developed infrastructure created by information and communication system is necessary for location, acquisition, generation and transfer of knowledge.

The importance of information for economic growth is emphasised by studies according to which information and communication technologies in recent years have accounted for about a quarter of GDP growth and for 40% of productivity growth in the European Union. Rapid increase in the importance of information and services provided electronically, and thus the use of information and communication technologies in economy and public administration, as well as in everyday life of citizens is associated with global trends in this area (Bartoszewska and Czarnecki 2010).

The use of demands of knowledge-based economy concepts is also important in the banking sector. Appropriate transformation of knowledge resources of a specific entity and its environment, contributes to obtaining of permanent value for customers, employees and improvement of the competitive position of the bank. This is the main purpose of Knowledge Management, the implementation of which offers many benefits. They include, among others (Tanaji 2012, pp.133-137):

- better understanding of customer needs and expectations,
- anticipating and active shaping of buyers' preferences,
- increase in product-related, technological, organizational and management innovations,
- saturation of products, services and processes with knowledge,
- increase in active use of banking products by customers, especially those that are innovative,
- growth in incomes thanks to fast implementation of innovations,
- Intensification of communication, especially the interactive one, that enables development of knowledge resources among customers from target markets,
- aware acquisition and use of external knowledge sources, including suppliers and cooperants, as well as customers,
- increase in the speed and quality of decisions related to the use of knowledge, e.g. decisions about research.

Contemporary information technologies enable creation, codification and transfer of knowledge, while allowing for immediate flow of information and its processing when simultaneous communication is maintained. This information contact allows to generate new value, because information and knowledge enable creation of innovative solutions. Online banking and its form - mobile banking, the dynamic development of which is largely a consequence of the implementation of innovative technologies and their continuous improvement by banks, as well as successive increase in the ability to use such solutions by customers is the example in this area (Devlin 2011, pp. 273-290; Suoranta and Mattila 2004, pp. 354–366).

### **3 Development of information society as a determinant of use of modern technologies in retail banking**

The third wave of globalisation resulted in significant changes and led to formation of the concept of New Economy, in which information is becoming a fundamental value. This is a group of new phenomena, processes and economic, financial and cultural relations based on new information technologies and automation (computer, Internet, mobile phone, WAP, etc.). Acceleration of technological development at concurrent globalization and involvement of almost all countries in the world economy is its characteristic feature. It should also be noted that the current consumers belong to the generation that has an everyday contact with new technologies, which are a part of their daily life.

The knowledge-based economy is accompanied by broader use of Information and Communication Technologies (ICTs), which is related to a new trend of civilization transformation towards “information society” (Brillman 2002, p.16). It is defined as the society in which information processing with the use of information and communication technologies constitutes a significant economic, social and cultural value (*Strategia rozwoju społeczeństwa informacyjnego w Polsce do roku 2013, 2008, p.2*).

IT society is important determinant of implementation of new technologies by retail banks. Characteristics of contemporary active consumers bring observation about the necessity to gather knowledge about them by retail banks. This knowledge is acquired for the need of construction of specific service offers and to determine the strategy for delivering and communicating values. Retail banks knowledge about customers’ preferences and they try to shape competitive strategies of influencing the customers through extensive implementation of innovations, Internet, mobile appliances and social media.

MSWiA [*Ministry of the Interior and Administration*] formulated strategic directions for Poland in the area of development of the information society. They specifically emphasise the need to accelerate the development of intellectual and social capital of Poles with the use of information and communication technologies. Raising the level of motivation, awareness, knowledge and skills in the sphere of use of information and communication technologies are included among the main objectives of this strategy. This is measured by the increase in the ability to perform 5-6 basic operations listed by Eurostat. Another goal is to provide the infrastructure of information and communication technologies that is economically efficient, secure and oriented for future needs of Poles. Increase in the rate of households that have access to the Internet is the measure of its achievement. It should be stated here that Poles are equal to the European Union mean with respect to the scope of use of the Internet for communication (e.g. Internet telephony and video conferencing). However, in other aspects such as the use of e-mail, search for information, Internet media or e-banking, the EU mean is higher.

Accepting the offer of retail banks based on modern technologies is confronted with cultural, technical and business challenges. It is determined by further popularization of modern mobile technologies and the development of users’ preferences. Increasing number of people using modern technologies is a very important factor that can translate into the development of technologically innovative forms of banking (electronic, and over time also mobile banking). In 2007 only 44% of Polish households had access to the Internet, in 2009 there were 50% of them, and in 2011 there were already 63% of them (for comparison, according to world statistics, the penetration rate for Europe was 61.3% in 2011, whereas for the North America

it was 78.6% and slightly less for Oceania and Australia - 67.5%) (Internet World Stats). On the other hand, according to the latest report, in 2016, 80.4% of households in Poland had access to the Internet, including 75.7% - of those with broadband access (it should be mentioned that there was at least one computer in 80.1% of households) (Społeczeństwo informacyjne w Polsce w 2016 roku). For comparison, according to information provided in the report "Digital in 2017 Global Overview" the Internet is already used by 3.77 billion people around the world. On the other hand, nearly 5 billion are the owners of mobile devices. About half of them are active users of social media. The Internet is already used by a total of 3.45 billion mobile users, i.e. 46% of the world population (<http://www.mobiletrends.pl/raport-66-procent-populacji-korzysta-juz-z-telefonow-komorkowych/>).

Popularization of mobile banking that has been progressing in recent years is associated with the widespread use of mobile phones, especially smartphones (Mobile banking 2010). Still in 2003 in Poland only 14% of people used both mobile phones, computers and the Internet. In 2011 over 85% of people had the mobile phone, 60% used the Internet, and 55% used all these technologies (Mobile banking is ringing again 2007). According to data from UKE [*Office of Electronic Communication*], in 2015, 92% of the population used mobile phones (<https://biznes.newseria.pl/kanaly/92-proc-polakow-korzysta,p1467336346>). On the other hand, the level of smartphone-isation at the end of 2015 was 60% ([http://www.tnsglobal.pl/coslychac/files/2015/05/POLSKA\\_JEST\\_MOBI\\_2015.pdf](http://www.tnsglobal.pl/coslychac/files/2015/05/POLSKA_JEST_MOBI_2015.pdf)).

Apart from internet access, using it for banking services is important. It is estimated that in 2010, on average 30% of Europe's population used Internet banking, and the forecasts predict that this rate will have increased to 60% by 2020. This result is diversified depending on the part of Europe. The highest share of 62-77% of people using electronic banking was reported in Scandinavian countries, the second position is occupied by inhabitants of Germany, France and Great Britain with the shares between 35% and 54%. For comparison, this rate for Poland was 21%, whereas for the USA it was 41% (Meyer 2010, p.1-2).

The research of Związek Banków Polskich [*Polish Banks Association*] shows that customers' activity related to innovative banking products based on modern technologies is increasing proportionally to the time of use of online form of banking services. Because of constantly expanding Internet access in Poland, it can be expected that the popularity and the scope of use of this type of banking in the long term will be dynamically improving. In the case of mobile banking, users most often check the account balance (32%) and review the transaction history (23%). They receive alerts from banks, search for the closest ATM or bank branch and make payments with the same frequency (16% each) (2011 State of Online and Mobile Banking, p.24). It is worth emphasising that in the case of mobile banking, some differences are observed due to various socio-demographic factors (age, sex, income).

The analysis of diversification of Polish mobile banking users and the results of international research shows that correlations in all cases were similar. In Poland, 59% of people using mobile banking are young people, aged up to 35, and in the broader category, of people aged up to 45 years, the rate was 93%. Comparable results were reported in American society, where 43.5% of mobile banking users are under 30, and 79.2% were under 45 years old. Typically, mobile banking users are people who earn good or very good money, they account for over a half of them, and the clear majority are people with higher education - in Poland 75%, and in the USA 73%. At the same time it must be stated that a person who earns more



than the national mean is considered a person earning good money in Poland. (Consumers and Mobile Financial Services 2012, p.17).

In the case of results of both national and international surveys, definitely more than a half of the respondents considered accessibility from any location to be the main advantage of mobile banking, and convenience of use was indicated in the second place. Generally, comparable results are observed in the case of perception of disadvantages of mobile banking. The lack of the need to use another channel of access to banking services was the most serious obstacle. Insufficient level of security, lack of sufficient knowledge of the users and too narrow range of offered services were indicated in successive positions among the biggest disadvantages of mobile banking (Bankowość mobilna w oczach Polaków 2011, p.7; 2011 KPMG Mobile Payments Outlook 2011, p.24).

The approach to innovative technologies and willingness to use them are the factors that can influence the development of mobile banking (Papies and Clement 2008, pp. 131–157; Teo and Pok, 2003, p. 483–498; Pikkarainen T., Pikkarainen K., Karjaluoto H., Pahnil S., 2004, pp. 224–235). It results from research of attitudes of Poles towards cashless payments that they are generally willing to use new technological solutions, because 14% of respondents declared that they definitely like using technological innovations, and 37% have a positive attitude towards novelties (Maison 2010). At the same time, positive attitudes towards innovative technologies can be enhanced by promoting the ability to use it among customers, and stimulating interest in mobile banking services (Herington and Weaven 2009, pp. 1220-1231). Promotional and educational activities undertaken by banks on websites and social networking sites (e.g. bank profiles on Facebook, where portal users can find information about the latest technological solutions that enable access to mobile banking, and share experiences of using such services) are helpful here. It is also very important for banks to promote all activities that increase security of the use of advanced innovation.

#### **4 Attitudes towards innovative products implemented by banks with the use of modern technologies – survey results**

Some results of research conducted among bank customers are presented beneath. The purpose of the research was to identify attitudes towards innovative products implemented by banks with the use of modern technologies. The first part presents information about the respondents, and then the following was shown:

- perceived innovativeness of banks,
- the reasons why customers use innovative solutions,
- barriers to the use of innovative solutions by customers,
- the scope of use of innovative solutions.

##### **4.1 Characteristics of respondents**

1196 respondents participated in the survey. The study was conducted online. It was performed between March and April 2016. The questionnaire consisted of questions formulated on the basis of nominal, rank and complex Likert scales. Non-random, quota

sample selection was applied. The share of people in the sample was determined in such a way that it was proportional to their actual share in the total studied population by age, sex, education and place of residence (table 1).

**Table 1:** Characteristics of respondents

Sex	Frequency	Percent
Woman	679	57,0
Man	512	43,0
Total	1191	100,0
Age	Frequency	Percent
18-24	291	24,4
25-34	337	28,3
35-44	249	20,9
45-54	181	15,2
55 – 64	89	7,5
65 <	44	3,7
Total	1191	100,0
Education	Frequency	Percent
Primary and lower secondary	22	1,8
Professional	99	8,3
Secondary	430	36,1
Bachelors / Engineer	253	21,2
Master	387	32,5
Total	1191	100,0
Place of residence	Frequency	Percent
City over 200.000 residents	353	29,6
City 100.000 -200.000 residents	289	24,3
City 50.000-100.000 residents	130	10,9
City 10.000.-50 tys. residents	147	12,3
City of less than 10.000 residents	54	4,5
Country	212	17,8
Total	1191	100,0
Evaluation of the financial situation	Frequency	Percent
Very bad (not enough for basic needs)	14	1,2
Bad (enough for basic needs only)	64	5,4
Average (all major expenses I have to plan)	562	47,2
Good (I can afford some luxury goods)	499	41,9
Very good (I can afford everything)	44	3,7
Total	1191	100,0

## 4.2 Research results

One of the key issues was to identify the qualities through the prism of which their customers perceive the bank they consider their primary bank, to be innovative. It results from the research that for studied respondents the features mainly include the application of electronic and mobile banking, and thus solutions that obviously apply modern technologies. Security is also a very important feature attributed to innovative banks by respondents (see table 2). Interestingly, implementation of technological innovations occurred in the position next from last, and innovative products occurred in the last position. It can be supposed that such responses result from the fact that for customers, banking products still represent the classical division into groups of settlement, card, deposit and loan products, and the way in which they are provided is the secondary issue for an ordinary customer.

**Table 2:** The features of the bank's innovation (in the opinion of the respondents)

	Number of responses	Quota
the application of electronic and mobile banking	667	56%
high level of security	497	42%
layout and functionality of the website (friendly interface)	425	36%
speed of information processing	361	30%
application of modern methods of providing services	323	27%
the use of modern technology	291	24%
implementation of technological innovations	228	19%
product innovations	198	17%

As research shows, firstly security, followed by a lower price and growth of the comfort of use are the factors that encourage the customers to use innovative solutions in banking (table 3).

**Table 3:** Reasons for the use of innovative solutions

	N	Mean	Standard deviation
growth of the security	1172	4,18	0,86
lower price	1160	3,98	0,98
growth of the comfort of use (more usability, like simplicity, speed)	1170	3,91	0,90
recommendations from friends or family	1173	3,37	1,01
degree of novelty originality	1166	3,33	0,95
interest in innovative products	1169	3,21	0,97
attractive promotion of a new banking service	1170	3,20	1,08
recommendation of a bank employee	1166	2,82	1,08
advertising	1167	2,58	1,06

Obviously there occurs a question why customers are convinced that security is growing thanks to innovativeness. It can be supposed that they notice that innovativeness in banks is based on modern technologies, which is usually associated with increase in security.

Recommendations from friends or family are also equally important determinants. This is indicated by continually significant role of personal information, perceived by customers as verified and more reliable than advertising messages. Degree of novelty originality and interest in innovative products are also indicated in this group of determinants. They are key factors associated with the attitudes towards innovative solutions based on modern technologies. It is interesting that advertising was located in the last position, right after recommendation of a bank worker. This may prove a relatively little trust in institutional information sources. Perhaps it can be explained by the ROPO effect – the customers recognise the market and make decisions themselves while trusting their own experience and opinions of people they know most.

Another prominent issue was to establish what barriers limit the use of innovative banking solutions most. Here, the customers firstly indicated additional costs that occur together with products based on advanced technologies (for example the necessity to have an appropriate model of smartphone for making payments while using it). The factor related to risk that raises fears of using new unverified services occurred in the second position. Both this and another factor, the reluctance to change, are barriers of psychological nature. They are blocking determinants of high impact as they strongly affect the attitudes and behaviours of customers. It should be stated that many respondents are satisfied with previous services and they do not feel the need of using innovative solutions. The lack of information and knowledge about new banking products is also an important barrier the use of innovative banking solutions.

**Table 4:** Barriers limit the use of innovative banking solutions

	N	Mean	Standard deviation
additional costs	1171	3,51	1,11
risk of using new unverified services	1177	3,21	1,05
the reluctance to change	1171	3,02	1,06
not having the necessary equipment	1168	3,02	1,20
lack of information and knowledge about new banking services	1170	3,02	0,93
fear of the unknown	1170	2,91	1,09
lack of recommendation from friends or family	1171	2,82	1,06
no proposals from a bank employee	1169	2,70	1,05
the current offer is sufficient	1176	3,47	0,98

The respondents most often used innovative products that apply modern technology for current activities such as checking the balance in the Internet service of the bank and transferring money from the online bank account. They made money transfers through Internet services of the payU type (while doing online shopping), used proximity cards and checked the balance on the phone slightly less frequently.

Such results may be justified by the fact that these are activities conducted by bank customers from time to time. The respondents checked balance on display cards the least frequently (it is obvious because such innovation is offered by one bank only) as well as they used partner payment cards with loyalty functions.

**Table 5:** Frequency of using innovative solutions in the main bank

	N	Mean	Standard deviation
checking the balance in the Internet service of the bank	1184	1,68	1,14
transferring money from the online bank account	1172	1,81	1,16
money transfers through Internet services of the payU type	1175	2,37	1,34
proximity cards	1165	2,44	1,49
checked the balance on the phone	1177	2,77	1,60
Payments by cash deposit machines	1169	3,10	1,36
Chip card (with EMV processor)	1163	3,81	1,41
Payment by mobile phone	1168	3,90	1,23
Cash back system	1171	3,96	1,19
verification balance on display cards	1168	4,03	1,27
partner payment cards with loyalty functions	1161	4,05	1,17

These findings provide guidance for the maintenance and development of the current direction of the banking sector development and are an important managerial impulse for enhancing the value of all stakeholders, including improving consumer satisfaction

## 5 Conclusions

Dynamic development of information and communication technologies observed in recent years, and inherent in the assumptions of knowledge-based economy, is encompassing more and more areas of social and economic activity. Banks also started to be interested in the rapid development of the Internet and mobile telephony (both with respect to the number of users and technology advancement), while recognizing here the possibility to intensify the development of the very products, and their distribution with the use of innovative and prospective channels.

However, acceptance of technologically advanced products by a wide range of customers depends on creation of positive experiences of users and ensuring an effective level of security for concluded transaction. Organising appropriate educational campaigns by banks among their clients, including the area of application of information technologies and showing benefits offered by new products, as well as considering their habits or changing demands may be helpful. Activities of banks aiming at improvement of possessed systems and creation of customer-friendly and customer-oriented applications are also important aspects.

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## Research into the influence of parents' incomes on the purchasing of healthy foods for children in Croatia

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**Abstract:** The topic of this research is how an impact on family income influences the purchase of healthy foods for children in the family. In addition to income, other factors which influence parents' purchase and consumption of healthy foods for their family were taken into consideration. These factors are: school meals and the attitude of educational institutions towards healthy foods, television, physical activity of a child, a child's inclusion in the purchase process as a form of education, the parents' habits, how often food is cooked at home and whether parents are appropriate role models for their children regarding healthy foods. These are just some of the factors which have an impact on children's eating habits if income is put aside.

Two methods were used in this research: the quantitative method (questionnaire), with data obtained from 87 mothers, and the qualitative method (in-depth interview), where the examinees responded to the factors which influence the healthy foods consumption. The target group were mothers whose children attend primary school. The questionnaire was published on the most popular social network, where the mothers are most active. The in-depth interview included the mothers who live in Croatia's two largest cities, Zagreb and Split. In the Zagreb group the selected mothers had different incomes, whereas in Split a group with different incomes was observed. The results were compared and they showed that income does play an important role in the purchase of healthy foods for children, but that it is not the crucial factor. Healthy foods are in fact affordable if they don't include organic products, such as organic olive oil, free-range fish, etc., because most mothers can't afford them. Furthermore, the questionnaire highlighted that Croatian mothers feel dissatisfied with the healthy foods offer in Croatia, as well the attitude of the education system regarding healthy foods. The example of the measures which should be implemented can be found in the research conducted in Sweden by Johansson et al. 2013.

**Keywords:** Healthy foods, food for children, income, school meals, child-directed marketing

### 1 Introduction

Over the last few years a lot of research has been carried out concerning health and food. Parents are now faced with a choice of various foods to give to their children, which will in the end have an influence on their health and development. The aim of this study is to conduct research similar to that from 2013 (Johansson et al. 2013), which is connected with the

relationship between food and income. This type of research has already been carried out in Sweden and Germany on 12 families of low, middle and high socio-economic status. The aim of the research is to look into how parents' income affects the purchase of healthy foods for children. The results show that the structural factors and social differences have a significant role when it comes to income and food. Furthermore, this research reveals that, on the political and scientific side, specific groups have been categorised as less responsible and more problematic with regard to children's food, such as: the poorly educated people, people with low incomes, immigrants, single parents and people who live in specific areas of the country. The conclusion is that the issue of the relationship between food quality and the lower socio-economic status has to be dealt with on the state level in order to resolve the inadequacies in the education of the parents who belong to this lower socio-economic group on healthy foods.

It is important to start acquiring healthy food habits early in childhood. Children should be encouraged to eat healthy food and choose healthy products from an early age (Brown and Ogden 2004). There are several ways in which children can be motivated into healthy eating habits and products (Raju et al. 2010):

1. Start motivating them towards healthy eating habits early
2. Take into consideration a child's age
3. Include parents
4. Use various sources of influence
5. Constantly remind children about healthy foods
6. Improve school lunches
7. Work on school lunch menus
8. Use relatively long-term interventions instead of short-term programmes

When asked to define "food for children", children very often mention things such as fast food, sugary food, cereals (which can do more harm than good), food which comes in all shapes and colours, as well as fun packaging (Rodgers and Milewska 2007). Research into food and family meals in several Western European countries revealed a similar trend concerning the ideal family meal, which includes particular ingredients and social elements: a hot meal is cooked using raw foodstuffs, most often including meat, potatoes and vegetables, and is eaten together with the family. This means the whole family sits at the table together, enjoying the food and each other's company. Furthermore, Swedish parents think of potatoes, meat, fish, root vegetables, vegetables in general, and fruit as the concept of healthy food. They also mention dishes such as salads, meatballs, puddings and casseroles as "suitable food" and a part of a balanced diet (Johansson et al. 2013). The category of "children's food" is believed to have been developed entirely through advertising and marketing (Elliott 2011). Due to that, disagreement can occur between parents and their children on the subject of foods (Kumpel Norgaard and Brunso 2011). It is important to say, however, that the habits parents pass onto their children will have an influence on their future preferences (Kelly et al. 2008), but the influence children have on their parents with regard to purchasing food is not at all negligible. The concept of the child's power of persuasion is indisputably one of the most sensitive, most emotional and most controversial aspects in today's marketing practices (Laylor and Prothero 2011). Studies have identified three categories of products where children will attempt to make the largest influence on their families, and they are: clothes, toys and food products (Ogba and Johnson 2010).



Therefore, marketing messages are increasingly directed at children, and parental concerns about child-directed marketing has grown proportionally to that (Bakir and Vitell 2010). An additional point of concern is the fact that after the age of eight, children become aware of the fact that the intention of the advertiser is to sell the product and that advertisements contain an element of persuasion for the product to be purchased (Mason 2011). Special attention has been paid to the effects of TV food advertising on children. To marketing experts, television is the most powerful medium of influence on children, which led to an exponential growth of children's TV programmes. Recognising the differences between a TV programme and an advertisement enables a child to avoid TV adverts by changing the channel for the duration of the advertisement. In accordance to that, there are two components of a child's understanding of advertising on TV: their ability to differentiate between a TV programme and a TV advert, and their ability to understand the sales intent in the advert. The result of TV food adverts can often induce a conflict between parents and children because they may not approve of the desired food product the child has seen on a TV advert. Most adverts which used targeting methods to stimulate consumption specifically in children advertised food of low nutritive value, such as fast food, confectionery and snacks (Bridget et al. 2010). Therefore, companies are urged to act as ethically and as responsibly as possible (Baxter 2011). Each advertiser, as a responsible and decent entity, should use their advertisements to urge children to eat healthily.

Besides the advert itself, packaging plays a very important part in selling a product. It is what the consumer notices first when doing his or her shopping (Rifon et al. 2011). Approximately 85% of in-store purchases occur as a result of impulsive buys and here a product's packaging is crucially important (Mehta et al. 2012). Children pick food products based on visual information they get from the packaging and they also use it to label the quality of a product. Fast food and unhealthy foods' packaging is more attractive to children than healthy food products, which is why they sooner pick the unhealthy option. Unfortunately, studies have shown that 80% of food products intended for children hold very low nutritive values (Levin and Levin, 2010). This is why it is necessary for marketing experts to be aware of the impact they can have on children, so as not to take negative advantage of it but to use it in the right ways.

Besides the above mentioned, schools are more and more often the places where children become acquainted with various food products. Since the food and beverage industry has adapted its products and marketing practices to children, and is still continuously adapting to them, advertising in schools is seen as the path to a promising future growth and schools are places where the industry can win over their target group – children (Story and French 2004).

## **2 The research methodology and the sample**

A qualitative (exploratory) and quantitative research has been carried out for this study. A part of the qualitative research were in-depth interviews where the instrument of research was the guide or interview reminder. The quantitative research used the questionnaire as the research instrument. The research methods are based on the previous two studies: the (Johansson et al. 2013) research used the in-depth interview method and the (Sredl et al. 2012) research used the methods of observation and the in-depth interview. Both studies used a deliberately chosen convenient pattern.

Six mothers were interviewed for the purposes of this research. The in-depth interview, which was prepared especially for mothers, contained personal information and covered the following topics: the concept of healthy foods and basic information about healthy foods, a link between income and healthy foods, the relationship between the child and food at school, the inclusion of the child in the process of purchasing food, the child's physical activities and habits connected to watching TV. The quantitative research included 96 mothers who are Croatian residents, of which 87 answered all the questions in the questionnaire. While choosing which mothers would take part, the aim was to have different incomes (and households) in order to get a clearer picture of how income affects healthy foods for children. Only average monthly incomes were taken into account, and that at least one child attends primary school, meaning that a child is aged 7-14. The parents' (mothers') level of education was not taken into consideration, as well as the number of children in a household, the parents' (mothers') occupation, their age, etc. The questionnaire contained general questions about the child's sex, age of the mother, the income, the place of residence, the child's/children's age, etc. The questionnaire was available on the social networks the mothers were mostly using, such as Facebook.

### **3 The results of the research**

Since the research consisted of two parts, the in-depth interview (qualitative research) and the questionnaire (quantitative research), the results will here be shown or interpreted separately. The subtitle *Discussion* will connect both parts of the research, which will then be followed by the final conclusion.

#### **3.1 The in-depth interviews**

The questions for the in-depth interview were separated into several groups. Six mothers were asked about healthy eating, the relationship between income and healthy foods, about their children and the food which is or is not served at school, the inclusion of the child in the process of purchasing food, the child's physical activities, how much time they spend in front of TV, etc. The following are the sub-topics the mothers talked about and their personal opinions on them.

##### *About healthy eating*

When asked which food products were consumed in their household the week before, each mother said meat, milk, yoghurt, other dairy products, fruit and vegetables. Each of them felt it was important to look after the health and healthy eating habits of herself and her family.

All of the mothers consume healthy food or at least try to do so, depending on the time required for preparing the healthy foods. The stay-at-home mums have more time to spare for the preparation of healthy meals for their children, but for the ones who work solutions should be found so they don't have to resort to ready-made meals to save time. Therefore, nowadays there is a high demand for healthy ready-to-cook food or ready-made meals prepared with healthy ingredients, which have to be pre-ordered and which are affordably priced.

### *Healthy eating and income*

Regardless of their income, the mothers had different opinions concerning food. Interestingly, the mothers with a higher income find food too expensive but they still can (try to) afford it, while the mothers with a lower income think food is not too expensive and that if it is approached economically, each family and every child can eat healthily. This could be explained with the fact that when a person is able to spend more, when their income is higher, a change in attitudes and preferences occurs.

In this example, the mothers on a higher income buy olive oil for consumption, which is several times more expensive than sunflower oil. They also buy expensive fish, such as salmon and tuna, while the mothers on a more modest income opt for food which is more affordable to them but which they still consider as healthy (chicken, rice, cereals, fruit, etc.) Unfortunately, when the price gap between, for instance, olive and sunflower oil is too large, there is no possibility of reconciliation and price equalisation, so as to make the more expensive product more available for the low income parents.

### *Children and school lunches*

What can be concluded from the mothers' answers is that parents who teach their children about healthy food at home will not worry a lot about the food served at school. Besides, they know their children spend only a part of the day at school and only get a small portion of food there. They have to make sure they provide their children with a regular meal and everything else concerning their daily food requirements. The possible reasons why some mothers complain about school lunches:

- the child refuses to eat school food because he or she is not used to eating such food at home (where more fast food is consumed than fresh and healthy foods);
- the child refuses to eat school food because he or she does not like such food (which is not the parents' fault, this is just the way the child is);
- the child refuses to eat school food because of specific health issues due to which he or she cannot eat some foods;
- the mother buys higher quality products so the school food is regarded as low quality, and such opinion is then adopted by the child;
- the mother expects the school to feed her child appropriately while she is at work, so that she doesn't have to invest a lot of effort at home.

### *The child and the process of purchasing*

It can be concluded from the conversation with the mothers that parents who talk to their children about healthy foods get much better results with regard to healthy food consumption. Besides, buying food together with children and talking to them about what is good for them and what quantities helps educate them about healthy eating. Food chains are encouraged to introduce an interesting slogan, picture or a description next to fruit and vegetables in shops, which would be very educational for children and would help them understand why fruit and vegetables are important in their lives.

### *Children and physical activities*

The parents in the research are aware of the importance of physical activity and encourage their children's participation in them. Schools offer free sports several times a week as an

extracurricular activity, which is good both for the parents who cannot afford to pay for after-school activities and for those who want to save the money and use it on different things. If the children show interest in one such activity, or talent, the parents always do whatever they can to enable them to pursue it. Surely, there are children who are obviously talented but their parents cannot finance the activity or invest in the child, which is why various state-funded or private company grants could help the child develop his or her talent without being held back by their parents' income.

### *Children and TV*

Most children mentioned in the research spend up to three hours per day in front of TV, except one, whose mother allows him to watch TV only on weekends and under supervision. However, the length of time spent on TV watching does not concern the mothers as much as that they have to make additional efforts to explain to their children what some TV adverts mean and what message they carry. In general, the mothers don't like today's TV adverts because they believe they are too aggressive. But the good side is that, according to their opinion, these adverts do not influence the children's food preferences, meaning they have no effect on their eating habits. Nevertheless, parents should definitely restrict their child's TV watching or watching certain contents because it is the only way to effectively protect children from the damaging influence of TV and TV adverts.

### **3.2 The quantitative research**

The research included only mothers, and according to information, they were mostly women in their thirties, as shown on the graph below. More precisely, 60 examinees were in their thirties. Furthermore, 21 examinees stated they were under 30 years of age and 15 above 40 years of age. This definitely shows that the younger mothers are more active on social networks. 45 (47%) examinees finished secondary school or gymnasium, 25 (26%) have higher education, 12 (12.5%) have an MA, 7 (7.3%) went to vocational schools, 4 (4.17%) stated they have an MS, 2 (2.08%) have a PhD and one examinee (1.04%) finished only primary school. Taking into consideration their employment status, 70 (73%) examinees stated they are employed, 50 (52%) work 40 hours per week, and 20 (21%) over 40 hours per week. 11 (11.5%) examinees are unemployed and are actively looking for a job, 10 (10.5%) are unemployed and not looking for a job. 5 (5.2%) examinees are unable to work. 40 (41.67%) mothers stated they have one child, 34 (35.42%) said they have two children, 14 (14.58%) have three children, 3 (3.13%) have four children, and also 3 have five, while 2 (2.08%) examinees have six or more children. These results comply with the number of the household members. 32 (33%) examinees stated their household income is between 6,001 and 9,000 HRK. 22 (23%) stated their income amounts to between 9,001 and 12,000 HRK. Furthermore, 15 (15.63%) examinees said their average monthly income is between 12,000 and 15,000 HRK. 12 (12.5%) examinees stated their income is between 4,001 and 6,000 HRK. 6 (6.25%) examinees live on an income of between 15,001 and 18,000 HRK, and 5 (5.21%) over 18,001 HRK. Only 4 (4.17%) examinees live on incomes lower than 4,000 HRK. 50% of the examinees have at least an average Croatian salary. 81 (84.38%) examinees are married, 7 (7.29%) are unmarried, 6 (6.25%) are divorced and two (2.08%) are widows. Furthermore, the most examinees come from Rijeka, 46 of them (47.92%), which proves that mothers in Rijeka are the most active mothers on Facebook. 18 (18.75%) mothers are from Zagreb, 14 (14.58%) from Split, 3 (3.13%) from Zadar, one from Šibenik and one from Pula, and the remaining 13.54% come from other

parts of Croatia. These include the following towns: Trogir, Kaštela Matulji, Crikvenica, Dugo Selo, Trogir and Samobor.

Note: numbers 1-5 represent the level of (dis)agreement on the Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.

Table 1. Responses concerning income, healthy eating, children, parenting and food at school.

<b>28 responses concerning income, healthy eating, children, parenting, food at school, the state, etc.:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Income affects the purchase of healthy foods for children.	4.60%	3.45%	17.24%	33.33%	41.38%
Healthy foods fit my budget.	2.30%	6.90%	34.48%	29.89%	26.44%
50% or over 50% of the household income is spent on food.	3.45%	17.24%	18.39%	29.89%	31.03%
In my opinion healthy foods are luxury goods which many people cannot afford for their children.	12.64%	4.60%	21.84%	25.29%	35.63%
Healthy foods are available to everyone, regardless their income.	32.18%	27.59%	28.74%	3.45%	8.05%
I am happy with the food my child gets at school.	19.54%	11.49%	39.08%	16.09%	13.79%
I try to please my child when choosing which food to buy.	3.45%	5.75%	47.13%	33.33%	10.34%
I don't make my child eat what he or she refuses to eat, although it is something healthy and should be on their plate.	11.49%	31.03%	37.93%	12.64%	6.90%
I talk to my child about healthy foods.	4.60%	4.60%	8.05%	39.08%	43.68%
I believe that talking to my child and being persistent about healthy foods helps them to eat healthier.	2.30%	4.60%	14.94%	42.53%	35.63%
Confectionery is not necessarily bad, as long as it is consumed in moderation.	0.00%	5.75%	13.79%	47.13%	33.33%
The state is taking additional measures regarding school lunches.	33.33%	16.09%	26.44%	17.24%	6.90%
My child is subscribed to a hot meal at school.	41.38%	11.49%	11.49%	20.69%	14.94%
I include my child in the food preparation process at home.	4.60%	16.09%	29.89%	27.59%	21.84%
I give my child food allowance while he or she is at school, even though they are subscribed to a healthy school lunch.	42.53%	17.24%	22.99%	11.49%	5.75%
I can influence the choice of food my child gets at school (parents' meetings, etc.).	34.48%	14.94%	34.48%	13.79%	2.30%

<b>28 responses concerning income, healthy eating, children, parenting, food at school, the state, etc.:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
I prepare a lunch box for my child because he or she doesn't like the food served at the school lunch.	32.18%	18.39%	27.59%	11.49%	10.34%
My child actually eats the healthy lunch box I prepare for him or her.	11.49%	6.90%	39.08%	26.44%	16.09%
I am a role model for my children when it comes to healthy eating.	6.90%	2.30%	28.74%	41.38%	20.69%
I prepare healthy food at home every day.	1.15%	5.75%	39.08%	31.03%	22.99%
I am too busy and don't have time to cook at home so I prefer buying ready-made meals.	73.56%	16.09%	6.90%	3.45%	0.00%
Ready-made meals are cheaper than cooking fresh food.	45.98%	9.20%	28.74%	8.05%	8.05%
Parents are responsible for developing their children's healthy eating habits.	1.15%	0.00%	8.05%	26.44%	64.37%
The state (educational institutions) are responsible for developing children's healthy eating habits.	10.34%	4.60%	28.74%	35.63%	20.69%
In my opinion children in Croatia eat well.	18.39%	39.08%	32.18%	8.05%	2.30%
If my income was higher, I would buy organic food because it is a healthier option.	4.60%	5.75%	26.44%	20.69%	42.53%
I believe organic foods are really better than the regular supermarket foods.	6.90%	5.75%	31.03%	35.63%	20.69%
There is too much media attention on healthy foods and there is no need for that.	22.99%	21.84%	40.23%	9.20%	5.75%

Sources: the authors

The assumption that income impacts the purchase of food for children is correct, which is what all the interviewed mothers confirmed, as well as most mothers, that is 65 (75%) of them, who filled in the questionnaire. Swedish and German mothers have a similar opinion on the matter. However, regardless of the above stated, 59 (56%) mothers said that healthy foods do fit their household budget. Furthermore, 53 (60%) examinees stated that 50% or over 50% of the household income is spent on food. We need to take into account the fact that 56% households earn between 6,000 and 12,000 HRK per month, which means that on average a Croatian household spends between (and over) 3,000 and 6,000 HRK on food per month, having in mind that an average family has one or two children. However, if we consider the mother of five (who was interviewed), who spends 2,500 – 3,000 HRK on food per month, we can say that the monthly budget of 3,000 – 6,000 HRK and over is a guarantee that average Croatian families do eat healthily. If mothers claim they are role models to their children with regard to healthy eating, and if they talk to their children about healthy food, we can conclude

that children do eat healthily. However, 50 (59%) mothers do not agree that children in Croatia practice healthy eating.

Furthermore, 79 (90%) mothers think parents are responsible for instilling healthy eating habits in their children. Only 9 (10.5%) mothers think children in Croatia eat healthily. If, however, we take into consideration that over half of the examinees can afford healthy food for their children, then the question arises as to why Croatian children don't eat healthy food. Can we blame TV advertising, the consumer society, the child's peers or the food and beverages industry?

Finally, 50 (56%) mothers believe the state is responsible for developing children's healthy eating habits. However, 43 (50%) mothers disagree with the claim that the state is making additional efforts with regard to healthy food in schools, and the same number of mothers claim they cannot influence the choice of food served at school by attending parents' meetings. 55 (57%) mothers say they would buy organic products if their incomes would allow it.

### **3.3 The discussion**

The aim of the research conducted for this paper was to find out in which way the parents' income impacts purchasing food for children. However, besides income, the paper researches and reveals which other factors can influence and do influence the choice of food served to children by their parents. Since the base research was taken from the research conducted in Germany and Sweden, entitled "Proper food and a tight budget", the discussion will contrast and compare both studies, as well as the other two mentioned in the text which included children as the main topic. The difference is that this research took into account various incomes in the same cities in order to determine the influence of these incomes on purchasing healthy foods, while the base research covered only low incomes and low socio-economic status to define the impact of low incomes on purchasing healthy foods and preferences regarding healthy foods. Due to different criteria, the results in these two studies cannot be interpreted in the same way, but since the research also included other sub-topics, which were covered in this study, it is clear that some kind of similarity does exist. The base research used an excellent way to check data and a high quality system for collecting information about the families who agreed to take part in the research. In fact, the examiners visited the families up to three times and there were two of them, one was questioning parents and the other children. They used food flash cards, made collages and children were asked to make drawings. They also asked the family to take photographs of the food while eating together at home or when they were invited to eat somewhere else. The parents were urged to keep the receipts of the food they bought in the course of the entire week. Alongside in-depth interviews, methods such as these are a useful way of collecting information about different cultures. Furthermore, these methods were used to stimulate the examinees and encourage them to talk about things they would otherwise find irrelevant.

Looking at both of these studies, one thing they have in common is that the mothers do want to consume healthy food and they want the same for their children. Due to the lack of time they are sometimes forced to resort to instant solutions, especially the mothers who because of the nature of their jobs have to stay at work longer, or simply have no other choice. Furthermore, the mothers are often faced with the problem that when their partners and children are hungry they don't want to wait for food to be prepared, they have to eat immediately, even if it means eating something unhealthy. The issue with the Swedish and

German mothers (the low socio-economic status) is that they could only afford unhealthy food due to their low income, as opposed to the Croatian mothers with a low income and over six mouths to feed, who believe they practice healthy eating and can afford it. Furthermore, the Swedish and German mothers all generally believe organic food is better than ordinary food, while the Croatian mothers disagree on this subject. What all the mothers have in common is that they are the main decision-makers when shopping for food, organising meals and preparing them.

Also, the mothers in Sweden said they are satisfied with the Swedish education system and school lunches. Children in Sweden have a hot meal available at school, while the children who stay at school the whole day also get an additional smaller meal. In Croatia the smaller school lunch is a staple, while the children who stay at school longer get a proper hot meal. Furthermore, besides fruit, Swedish children are not allowed to bring any food to school because schools want to make sure children eat healthily. In Germany schools don't offer food and children have to bring their own lunch. They can buy hot and cold drinks at schools but food is not available. Once a month parents organise a healthy food day at school. Croatia is with regard to school food in a much better position than Germany but cannot yet reach the Swedish standards. The Swedish and German research brought to the conclusion that school food and the educational system per se is as developed as parents care about food and broach the subject of food at school meetings. Sweden and Germany are perfect examples of this; in Swedish schools parents always talk about improving school menus and in German schools food is not a topic of conversation at parents' meetings. Due to that, Sweden is an example of content parents and children at school, while Germany is the opposite. All studies equally show a classification into food for children and food for adults. Also, all the parents struggle to have their children eat at least a bite or two of cooked food per day and to decrease their intake of fat and sugar. Parents in general do not ban confectionery but there are limits and rules children have to follow, which depend on the parents individually. The examples of the rules are the following: "Saturday confectionery", "only when given as presents", "one piece of something sweet per day", "cosy Fridays" (when parents and children are relaxing together, watching TV and eating fast food), etc.

However, a percentage of parents said their children are free to take from the confectionery cupboard because they believe if they deny them access, the children will want them even more. Such attitudes were in Sweden publicly criticised, so as to reprimand the parents of low socio-economic status (with an accent on people on a low income, immigrants and single parents) as negligent, poorly educated and problematic with regard to food and raising children. The research results prove the opposite; the parents are educated and they do want to provide healthy food for their children but the low income and the lack of time does not allow for that. In Croatia the situation is different; families on a low income do not think they eat unhealthily. In fact, they believe they do eat relatively healthy food. The case with the low income families is that they get by with what they have, meaning they sometimes grow their own food or their relatives have a garden and give them fresh produce. This is where Croatia is seen as a positive role model and well done for those who help people in need.

The possible solutions to the problem (on the national level) published in the study by Johansson et al. (2013), to do with parents who have no time to cook and whose incomes do not allow for healthy food products, with the aim of preventing obesity in children, and similar disorders, are the following:



- parents should spend less hours a day at work so that they have time to prepare healthy meals for their children and spend quality time with them,
- the prices of healthy food products should decrease so that they become available to everyone
- additional tax should be introduced on confectionery and carbonated drinks
- schools should employ quality chefs
- schools should ban the selling of confectionery and carbonated drinks
- children should be consulted about what they would like to eat at school (and offer them only a choice of healthy foods)
- parents should advocate for healthy food at school meetings
- confectionery should not be sold close to the till in supermarkets

Sweden has already achieved some of these measures, such as the shorter working hours. In 2015 they started the process of reducing office hours from 8 to 6. What effect the research had on these changes has not been looked into but it is certainly the case now that parents have more time on their hands and there is no excuse for not preparing healthy food for their children. These measures can be implemented in all countries in the world, including Croatia. The question is, though, to what extent do governments want to tackle these issues and which obstacles lie ahead of them in doing so.

#### **4 Conclusion**

The in-depth interviews revealed that all mothers prepare healthy food regardless of the family's income. According to the interviewees, income does not drastically affect purchasing of healthy food for children, although most of them believe children in Croatia don't eat healthily. If the data collected from the questionnaire is taken into consideration, it is clear that most mothers feel it is parents who are mainly (and the state to an extent) responsible for developing healthy eating habits in their children and they say healthy food fits their budget. According to this information, if parents take good care of their children, talk to them about healthy food, if they can afford healthy food and can stand as role models for their children regarding healthy eating habits, then where does the dissatisfaction come from, as well as the claims that Croatian children don't eat healthy food? Since the children considered for this research go to primary school, does it mean the society they live in influences them by imposing some rules of behaviour and, therefore, food consumption? Still, this is invalidated by the fact that most mothers in the questionnaire do not give their children food allowance because they get a meal at school. The research has shown clear aversion towards the government and their inability to provide quality school lunches, education about healthy food, etc., but no action has been undertaken by the parents. If the state, that is, the educational institution is the only problem, as some parents may think, then Croatia should look for a role model in one of the countries who had the same issue and who resolved it successfully.

## 5 Limitations in the research and recommendations for future studies

The research offers a view on the perception of how parents' income affects the purchasing of healthy foods for children, and includes other factors which influence buying healthy food for children and making sure they lead a healthy lifestyle. The limitation of the carried out research is primarily the size and the representative value of the sample. For future research, it is advised to take into consideration more examinees (mothers in this case). Furthermore, parents and children should be asked to keep a food diary to see precisely how healthy is their diet. It is suggested that another research of this kind includes representatives of state and educational institutions with regard to the topic of healthy food at schools, with the aim of taking the most active measures possible concerning children and healthy eating.

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## Customer Citizenship Behaviour towards customers and enterprises operating in medium high-tech sector

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**Abstract:** The paper presents customer citizenship behaviour (CCB), i.e. discretionary, voluntary and supportive actions towards other customers and companies operating in the medium high-tech sector as an emerging trend in customers behaviour, characterises the medium high-tech sector, identifies types of CCB in the analysed sector, as well as points at possible determinants of customer citizenship behaviour. Theoretical deliberation based on literature studies was supplemented by secondary data analysis, scientific case studies, observations as well as individual deepened interviews were used to identify the forms of CCB performed by customers in medium high-tech sector. Further fields of study and research were also identified.

**Keywords:** Customer citizenship behaviour (CCB), medium high-tech goods

### 1. Introduction

Every company functions in a specific environment constituted by its stakeholders, like: customers, competitors, cooperating partners and other entities. They all influence the company's existence and development. What may be observed nowadays is the increasing meaning of a company's relationships that is reflected in the relationship marketing concept. According to this concept, the marketing effectiveness of a company is depended on its partnering, advantageous relationships with the stakeholders, with special regard to its customers, and shall be based on mutual trust and engagement (Mitręga 2005).

Simultaneously, a relationship evolution has taken place: from reactive customers' behaviours, which may be described as their positive or negative reactions to marketing actions undertaken by a company, towards proactive ones. Customers initiate these behaviours and address them both to companies or other customers (the companies' clients). The proactive behaviours may be defined as customers' citizenship behaviours (CCB) which are discretionary and voluntary in nature (Groth 2005).

Attention shall also be drawn to the fact, that CCB is a relatively new concept in the literature on relationship marketing and customer behaviour. Therefore the main objective of the paper is to present discretionary and voluntary acts of customers towards other customers and companies operating in the high-tech sector. The specific objectives will be to: present the general concept of customer citizenship behaviour based on the literature studies and indicate scientific theories elucidating customer citizenship behaviour, identify types of customer citizenship behaviour in medium high-tech sector, as well as indicate determinants of extra-role behaviours of customers in the market.

A method of critical analysis of the literature of the subject and documentation method based on secondary sources concerning high-tech goods and the entities offering them will be applied in the paper. Additionally, qualitative research based on the analysis of scientific case studies and individual deepened interviews were used as well as observation method that performs an auxiliary function.

The paper presents CCB as an emerging trend in customers behaviour, characterises the medium high-tech sector, identifies types of CCB in the analysed sector, as well as points at possible determinants of customer citizenship behaviour towards medium high-tech goods. The research findings are presented and future fields of studies are submitted.

## **2. Customer citizenship behaviour as an emerging trend in customer behaviour**

Customer citizenship behaviour (CCB) is defined as “voluntary and discretionary behaviour of individual customers that is not directly or explicitly expected or rewarded but that in the aggregate, leads to higher quality service and promotes the effective functioning of organizations” (Groth 2005). Other authors (Bettencourt 1997; Bove et al. 2009) present similar definition of CCB, describing it as “discretionary and pro-social actions displayed by customers, and bring benefits both to the companies and other customers”. Although these behaviours are not explicitly rewarded by a firm’s formal reward programs, they are considered critical to the success of a company (Yi, Gong, & Lee, 2013). Citizenship behaviours are extra-role initiatives beyond the requirements of the customer roles usually performed. Hsieh, Yen and Chin (2004) deem such helpful behaviours which are performed by customers as customer voluntary performance (CVP).

Customer citizenship behaviour derives from organizational citizenship behaviour (OCB). The author of the concept, Dennis Organ noticed that employees’ effectiveness may not be fully elucidated with such factors as competences or managerial methods, and there must be another explanation. The research findings showed that some employees spent more time helping others, creating a favourable organizational atmosphere etc., but these actions are not rewarded by employers, they are pro-social and voluntary in nature, so may be described as “organizational citizenship behaviours” (Organ, Podsakof, MacKenzie 2006). According to Lin, Lyau, Tsai, Chen and Chiu (2010) OCB creates a specific employer brand and makes employers perceived as fair and ethical workplace. Similar perception of citizenship behaviour was presented by Burmann and Zeplin (2005), who introduced a concept of brand citizenship behaviour (BCB), i.e. actions undertaken by employees to improve or sustain an employer brand.

According to Fowler (2013) customer citizenship behaviour derives from civic citizenship behaviour, as a subject of interest of various concepts, from ancient times, up till now. According to an ancient Greek philosopher, Aristotle, responsible citizens are obedient, loyal and eager to participate in social activities. In the modern-day concept, civic citizenship behaviour is revealed in information exchange and opinion sharing among individuals, which fosters the development of social autonomy and self-governance.

To summarise the idea of CCB, it may be assumed that customers citizenship behaviour is voluntary, discretionary, initiated by customers, who wish to support a company, its employees or other purchasers.

Second, CCB is not formally rewarded by companies in a form of mutual benefits system. Customer citizenship behaviours may be noticed and appreciated by enterprises, but not explicitly rewarded by a firm's formal reward programs.

Third, since the behaviour is voluntary, it should be driven by specific motives. A question may therefore arise: what may be the determinants of customer citizenship behaviours in general?

According to Fowler (2013), theory of motivation may bring the answer to the question, with special regard to intrinsic and extrinsic motivations. The intrinsic motivation refers to doing something because it is inherently interesting, enjoyable or in accordance with customer's values or attitudes. The extrinsic motivation however, refers to doing something because it leads to a separable outcome, for instance may be appreciated and rewarded by a reference group (Kotler 1994; Ryan and Deci 2000).

As far as the theory of motivation is concerned to explain customer citizenship behaviour, Abraham Maslow hierarchy of needs may be useful. What may be assumed is that customers present citizenship behaviour to fulfil their needs, mainly those described on higher levels (self-esteem needs, self-actualization needs or transcendence needs).

Other theories describing CCB's determinants are social capital theory in general, and the principle of reciprocity in particular. By helping others (i.e. other purchasers, companies), customers expect to be helped in future – not necessarily by the same beneficiaries, but they will become the recipients of other customers' citizenship behaviour (Falk and Fischbacher 2006).

**Table 1.** Five dimensions of customer citizenship behaviour

No.	Description of CCB dimensions	Author/s
1.	Customer behaviour that involves providing information and (positive or negative) opinions on companies, their goods and services, with the intention of improving the marketing activity <i>(providing feedback, voice, consultancy)</i>	Groth (2005) Soch, Aggarwal (2013) Balaji (2014)
2.	Customer behaviour that involves encouraging other customers (friends, family members internet users etc.) to use a company's goods or services, positive WOM and recommendations <i>(advocacy)</i>	Gruen (1995) Groth (2005) Garma, Bove (2009)
3.	Customer behaviour that displays commitment to a company, a favourable attitude towards its products, services and marketing activity by presenting a company's logotype (on clothes, bags etc.), presenting involvement in marketing events provided by a company <i>(displaying affiliation, social support)</i>	Groth (2005) Garma, Bove (2009) Soch, Aggarwal (2013)
4.	Customer behaviour consisting in helping other customers when product usage or company's proceedings may be troublesome and uneasy for other customers, benevolent acts of service facilitation towards other customers <i>(helping other customers)</i>	Groth (2005) Johnson, Rapp (2010) Soch, Aggarwal (2013)
5.	Customer behaviour that involves observing other customers to eliminate their inappropriate behaviour, e.g. not respecting the queue, misbehaving on company's fun page, being rude to other customers <i>(mitigating, policing)</i>	Gruen (1995) Bettencourt (1997) Soch, Aggarwal (2013)

Source: Soch, Aggarwal (2013); Garma and Bove (2009); Balaji (2014); Bettencourt (1997); Groth (2005); Johnson, Rapp (2010); Gruen (1995)

Literature studies prove that customer citizenship behaviour is multidimensional construct consisting of several dimensions. Researchers have mentioned conceptually distinct dimensions of CCB (Groth 2005; Keh and Teo 2001; Bove et al. 2009). These dimensions are presented in Table 1.

Customer citizenship behaviour seems to be a field of interest for both researchers and business practitioners. It is important to discover its dimensions and determinants to build the proactive relationship among companies and customers, who actively participate in the value creation process and act as promoters and innovators.

Attention shall be also drawn to the specific nature of CCB performed in different market sectors. The subject matter of interest of the authors in the paper is customer citizenship behaviour displayed in the medium high-tech sector.

### **3. Medium high-tech goods sector characteristics**

The category of medium-high-technology goods is one of the four categories of high-tech goods distinguished by OECD in the classification of products by the criterion of the degree of technological advancement. Other categories in this classification include the following: high-technology products, medium-low-technology products, low-technology products (Hatzichronoglou 1997). The OECD classification is most often used in research concerning high-tech sectors and goods, conducted on international scale.

The category of medium-high-technology goods encompasses a wide variety of product groups of highly diversified features, functions and destinations. These include electrical appliances, machinery and equipment, motor vehicles and other transport equipment, scientific and precision instruments, non-electrical machinery, etc. Household appliances (from the group of electrical appliances) and passenger cars (from the group of motor vehicles) offered on the market of individual buyers (B2C) were selected for the research in the paper). The selected products are significantly diversified in terms of features and the range of usability (even within a single category of goods), and consequently, the scope and ability to satisfy consumer needs. They also have a different degree of technological complexity, which means that their purchase and operation require specific knowledge and skills from the consumer (the skills need to be constantly developed because of successively implemented new technological solutions in the products). They also differ with respect to conditions of purchase and use by buyers.

Household appliances and cars are multifunctional products that enable satisfaction of groups of needs of buyers of diverse character (both basic and higher needs, including those related to their self-fulfilment), such as bundles of housing needs, those associated with education, communication, leisure, health care, professional career, etc. Table 2 shows the needs that can be satisfied (now and in the future) by selected medium-high-technology products.

**Table 2.** Current and potential needs satisfied by medium-high-technology products (refrigerator and passenger car)

Product type	Needs that can be now satisfied by the product / Benefits resulting from the product purchase	Needs that could be satisfied in the future / Future benefits of purchasing a product*
fridge	<ol style="list-style-type: none"> <li>1. optimum food storage conditions allowing to preserve its natural taste and nutritional value thanks to the system preventing moisture loss and helping to retain vitamins</li> <li>2. health, because of the possibility to keep food fresh thanks to the use of anti-bacterial coating that prevents development of mould</li> <li>3. comfort of food storage thanks to air circulation that enables to maintain the same temperature on all levels of the refrigerator, individual control of the temperature by the user, door-in-door system, etc.</li> <li>4. constant access to cold drinks thanks to built-in siphon</li> <li>5. order thanks to appropriate racks and shelves, for example for drinks in different packaging, eggs, cheese, etc.</li> <li>6. saving time because of rationalization of shopping time (e.g. less frequent shopping because of the possibility of freezing some products, no need of periodic defrosting (resulting from maintenance-free character of the device), possibility of fridge compartment express cooling</li> <li>7. savings associated with lower energy consumption (e.g. through choosing energy saving, or holiday working mode of the device), reduction of mechanical losses (for example because of the use of a suitable compressor)</li> <li>8. providing aesthetics and elegance to the kitchen thanks to specific design of the device, modern outer coating or the possibility to build in, in the way adjusted to individual needs (including those related to the kitchen design)</li> <li>9. comfort of use, e.g. the possibility to separate the space individually, easy access to products thanks to sliding shelves, additional interior lighting, trouble-free control of the refrigerator setting and control of functions without opening the fridge door set on the control panel</li> </ol>	<ol style="list-style-type: none"> <li>1. the need to watch TV programs, including news programs and films, while preparing meals (thanks to built-in TV set and / or movie player) - this need may arise for example if the consumer has a small kitchen and there is no room to place a TV set there.</li> <li>2. constant access to information, for example thanks to built-in LCD monitor, possibility of viewing web pages, or activating the e-mail, viewing cookbooks, own recipes and notes saved in the device memory, as well as information about the type of defects in the event of their occurrence (self-diagnosis function)</li> <li>3. reducing the time spent on shopping thanks to self-control of by the supplies and sending the order automatically to the store (this requires cooperation of the manufacturer with the traders)</li> <li>4. saving time resulting from the possibility to make automatic food orders online or identification of products in the kitchen (with the use of a special system)</li> <li>5. improvement of the quality of everyday life through implementation of more and more intelligent solutions</li> <li>6. health protection thanks to creating a therapeutic atmosphere, e.g. through equipping the device with the appropriate light signs</li> </ol>
passenger car	<ol style="list-style-type: none"> <li>1. mobility of the consumer and his family possibility to transport luggage, animals, etc.</li> <li>2. health and life safety thanks to various safety systems (including those allowing to minimize results of an accident, or even avoid accidents)</li> <li>3. convenience and comfort (health) of driving thanks to proper ergonomics of the interior, ventilation and massage function in the seats, possibility to control various functions with the driver's voice command, etc</li> </ol>	<ol style="list-style-type: none"> <li>1. a higher sense of health protection and safety, comfort thanks to new smart technology solutions, such as systems that recognize typical signs of driver fatigue on time and warn them about it, use of sensors that send a signal about reporting the vehicle for service in the event of a malfunction, increase in flexibility of the interior arrangement, etc.</li> </ol>



	<ol style="list-style-type: none"> <li>4. saving (because of the purchase of a more economical engine version, or a model with long-term warranty)</li> <li>5. the ability to pursue or continue a professional career (e.g. in connection with multimedia equipment in the vehicle)</li> <li>6. the possibility to relax or learn while driving thanks to appropriate hi-fi or DVD equipment, access to the Internet (this applies to passengers)</li> <li>7. specific prestige depending on brand</li> <li>8. better well-being, for example thanks to devices supporting the driver's skills (e.g. parking assistance systems, track control, brake assistants) that enable quick contact with roadside assistance, police, other services or family, and allow the owner to monitor and control the functions of the car with a smartphone (e.g. in the case of connected car)</li> <li>9. freedom thanks to independence from public transport</li> <li>10. better opportunities for pursuing own passions or hobbies (e.g. free access to places that may not be reached by public transport, easy transport of bigger sports equipment.)</li> <li>11. environment protection (when buying an eco-friendly vehicle)</li> </ol>	<ol style="list-style-type: none"> <li>2. environment protection resulting from the use of new alternative drives, modern plastics and varnishes, as well as reduction of the vehicle weight</li> <li>3. saving time thanks to self-cleaning of the car body brought by the application of nano-coating or antifreeze screens</li> <li>4. saving money and time, and the feeling of aesthetics thanks to self-elimination of scratches on the paint of the car body</li> <li>5. the will to be distinguished thanks to the coating of the car body that changes its colour depending on the weather</li> <li>6. enhancement of the scope of usability through introduction of new functions of various character, improvement in the usability of existing features, and implementation of new IT solutions and development of services provided online.</li> <li>7. greater comfort and security, and even relax in the case of autonomic vehicles (self-driving cars).</li> </ol>
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\* Products that can satisfy some of the aforementioned needs, such as a refrigerator with built-in TV set or computer with Internet access, cars with special paint coatings (nano-coating), which allows for self-elimination of small scratches, or with various modern technologies, including digital technologies among others, are already available on the market, but for the time being, these solutions are not mature enough to be fully applied in the mass market.

Source: Own case study based on source materials of the manufacturers

It can be predicted that future new discoveries and achievements in computer science, molecular and genetic engineering, nanotechnology and biotechnology, etc. will result in the fact that the number of needs satisfied with household appliances and cars will constantly be growing. New needs may also occur because of launching of next product innovations on market. Presumably, the degree of technological complexity of these products will grow, and the way they are sold (e.g. through cybershowroom in a larger degree) will change. Because of this, their purchase and efficient operation will demand from their users gaining new knowledge and skills.

A growing number of needs satisfied with the studied medium-high-technology products (especially higher rank) make them an increasingly more important element of consumer's life (whereas private life often permeates with business life). Their use is supposed to make their lives more comfortable, happier, healthier, safer, more exciting and even socially responsible. It can also contribute to their general personal development. It must be noticed that more and more consumers, especially those creative and highly creative, function in accordance with the rules of inverted pyramid of needs by A. Maslow. This means that the need of self-fulfilment (spiritual fulfilment, including moral and social spheres) is approached as a basic need (and not the highest need), therefore they are translated into material

fulfilment, which can be attained even as the last, for example as a reward for achievements (Zohar and Marshall 2004). Because of their increasing multifunctionality, the studied products can therefore play a significant role in consumers' pursuit of self-fulfilment, as well as in shaping of their world. They are looking not only for the products that will satisfy their needs, but also for the feelings and experiences that will affect their spiritual side (Kotler et al. 2010). The potential of medium-high-technology products is very large in this area. This particularly applies to buyers who are creatively and emotionally involved in various activities towards these products (sometimes they initiate them themselves), their producers and sellers, as well as other users, while showing diverse citizenship behaviours towards them.

Studied medium-high-technology goods are developing towards the so-called smart products that are characterised by built-in knowledge, artificial intelligence and communication capabilities (Jakki et al. 2009). Examples include smart household appliances (e.g. a smart refrigerator), autonomous (self-driving) cars and connected cars. This development trend is determined by the implementation of the concept of the Internet of Things (Miller 2015, Peppet 2015) concept. Therefore, the role of these products in everyday life of the consumer is likely to continue to grow in the future.

#### **4. Types of CCB in medium-high-tech goods sector – an empirical approach**

The degree of complexity of medium-high-technology products is constantly growing under the impact of technological innovations, including the marketing ones. Consequently, their purchase and operation are becoming increasingly more complex. Therefore, more and more consumers cease to be just passive consumers of these products, but are becoming prosumers. This results in their involvement (voluntary or intentional) in various activities, and therefore that they can influence both the behaviour of the manufacturers and sellers of those goods as well as the attitudes of other users.

Analysing CCB with reference to medium-high-technology products, four main types can be identified, including:

1. expressing opinions about the company, its products, customer service at the purchase and after-sales customer service, handling complaints, etc., as well as submitting suggestions and ideas concerning new products or improvement of current offerings,
2. word-of-mouth (WOM), providing recommendations, giving advice and clues to other buyers, sharing own experiences with them,
3. participation of consumers in open events, loyalty programs, contests, etc. that are organized or sponsored by manufacturers and/or sellers, as well as reporting such events by them,
4. helping other consumers if there are difficulties in the use the product or unclear procedures applied by the manufacturer or seller.

The aforementioned CCB types can complement and permeate each other. Consumers can, for example, simultaneously provide a company with the ideas on how to improve their offer, give various advice to other users of a product, and help them if there are any problems related to a given company or a specific good, as well as share experiences of participation in the ventures implemented by them. They are favoured, among others, by the same or similar tools of communication that most consumers use when assuming certain citizenship behaviours. They are primarily based on the Internet. They include, in particular, discussion

forums, blogs and microblogs, profiles and fanpages in social media, official websites of companies and internet platforms dedicated to an individual brand, specific products or ventures.

Considering CCB towards medium-high-technology products, their users most often express their opinion about companies, brands or specific products or models. They provide suggestions concerning improvements in product features, their functionality, sales methods and customer service, as well as promotions less frequently. Some of these consumer activities are undertaken individually by them, but their considerable part is also initiated by manufacturers and/or sellers.

Many manufacturers are trying to involve their current and potential customers in a variety of ventures initiated by them in many ways. In this case, cooperation takes diverse forms, but they require various levels of commitment and consumer knowledge. The easiest form, that does not demand great involvement and specific buyer knowledge, includes simple collection of opinions (including surveys), users' observations and recommendations of products, mainly through company website, brand fanpage in social media, and company blog. Furthermore, users of household appliances or vehicles of specific brands can set up a personal profile on the manufacturer's Web site (e.g. My Samsung, Moja Amica, My Audi, Mercedes me), thanks to which they not only gain information about a specific device, technical support or other interesting information or obtain mobile services, but they can also provide their opinions about the company and its offer.

Company interaction with current and potential customers with the use of for example social media (such as the expressive ones, i.e. external blogs, various social networking sites /Facebook, Instagram, YouTube, Pinterest, Twitter, Foursquare, Google+, Tumblr/ and cooperative, thematic portals, for example in the case of household equipment manufacturers, those associated with design of houses and flats, cooking, cleaning, etc. and in the case of car companies, those dedicated to motorization or motor sport). Noticing the growing level of consumer presence in social media, the manufacturers of studied goods approach them as one of the key channels of communication with consumers and between consumers. Company Internet forums (for example Electrolux community forum, Samsung community) and blogs (such as Samsung Village Blog, El Blog de Miele, LG Blog, Bosch History Blog, Das Daimler-Blog, Volkswagen Blog) are gaining special importance. Logged in users can present, among others, their ideas for product, sales process and customer service improvement in a specific company on a moderated forum or blog (this usually does not provide a reward). The manufacturer often indicates the areas concerning which, the forum members are requested to present their ideas. The ideas are usually visible to all forum members who can evaluate them and comment on them, and they can also form teams focussing on their further development. However, the decisions concerning implementation of the solution, are made independently by manufacturers.

Manufacturers also delegate specific tasks to the virtual community of consumers, e.g. by way of request for a proposal or a contest. This is done either through their own website or specially created web platform. The performance of the task by the participant may be rewarded. Such approach was applied by the FIAT car manufacturer in the process of designing of Fiat 500 model. In 2006, the company invited all potential users of the car to cooperation. They could express their expectations and wishes, as well as present their own ideas concerning solutions, through multimedia platform "500 wants you" platform

([www.fiat500.com](http://www.fiat500.com)). It was started 500 days before launching the product on market. Their own ideas of solutions. The involvement of participants in designing the features of the new model was enormous. As a result of this cooperation between the producer and the consumer, a model that has won numerous international awards, as well as recognition of the very buyers has been designed. Such automotive companies as BMW and Jeep, among others, as well as Philips and Samsung, the manufacturers of household appliances, similarly cooperate with buyers. The communities of these producers are centred around individual projects, and the participants typically need to have specific technical knowledge. Brand communities (or even specific products and models) and customer clubs (users and owners) are other examples of virtual communities (of successively growing number of participants) created by medium-high-technology manufacturers, including producers of household appliances such as Samsung, Bosch or Electrolux and automotive companies including Volkswagen and Toyota. Their members share their opinions and experiences, their own photos and videos, give each other advice, inform about interesting projects related to an individual brand or product model, sometimes they also create specific improvements (in cooperation with the producer or independently), etc. They also provide the producer with suggestions on how to use the product.

Producers gather consumer opinions also using crowdsourcing (closed, i.e. limited to people of a specific profile, or open). This is the most advanced form of company cooperation with many consumers. In this case, manufacturers try to use the knowledge (wisdom) of "crowd" to find the best solution to the problem. It should be mentioned that crowdsourcing is applied by medium-high-technology producers mainly to improve existing products (i.e. incremental innovations), modernize the method of sale and modify communication campaigns, as well as to search for valuable content (e.g. advertising) and innovative solutions to various problems. Sometimes consumers must have specific knowledge (e.g. technical, design and IT-related) and skills. This especially concerns designing the features of a new product. Among manufacturers of household appliances, crowdsourcing platform under the name Marblar is applied by Samsung company, among others. Marblar is a platform serving product development that enables generation of innovative ideas for commercial applications, including the development of previous patents or forgotten scientific discoveries. It uses, among others, a gamification model that is to encourage cooperation and lateral thinking of scientists, specialists and experts in various fields, as well as ordinary consumers in the process of creation of innovative solutions. The authors of ideas that will find application in new products launched on market receive a certain fee.

Crowdsourcing is applied by a growing number of automotive companies, including BMW, Mercedes, Fiat, Ford, Honda, Citroen and Volkswagen (eYeka 2017). In this sector, Toyota Motor Corporation is one of the forerunners in this field (as early as 1936, Toyota commissioned the design of its logo in the form of competition; 27 thousand proposals were submitted for the contest). It has applied the crowdsourcing platform many times to create advertising content (including the video type) the buyers will identify themselves with, to design memes promoting new models (for example Yaris /[yar.is/](http://yar.is/) developed in partnership with Cheezburger network, specializing in memes), as well as to collect personal stories of Toyota vehicle owners (e.g. "Auto-Biography" contest conducted on the Facebook portal). The company also applies crowdsourcing to develop new products and modernize previous models, search for advanced innovative solutions, as well as while planning CSR activities (the

company collected ideas concerning the use of automotive technology for social benefit in this way).

It can be noticed that the interest of consumers in participation in crowdsourcing-based projects is increasing. This is confirmed, among others, by "#SEATseekingName" project that has been implemented since June 2017 by SEAT car company. For the first time in its history, the company announced an international competition (consisting of several stages) for the name of SUV model (with 7 seats) that is going to be launched in 2018. It is interesting that the consumers themselves inspired the company management board to announce the contest. After gaining information about the launch of the new SEAT SUV in 2018 they started to propose their own names through social media. The aim of the "#SEATseekingName" project is to engage and encourage SEAT fans all over the world to propose and then to vote on the name of the new SUV. 133 thousand proposals from 106 countries entered the competition (submitted proposals will be pre-selected; it will be done by SEAT brand experts and its selected clients from various countries; during the focus studies, they will collectively select a minimum of three names). The consumers from all over the world will choose the name for the new model from these proposals. Apart from geographical criteria, the name should also reflect brand values (dynamics, design, and modern technology) and refer to the characteristics of SUV type vehicles. The final name of the new SEAT model will be chosen in global public voting, which will be held from 12th to 25th September 2017 (the contest finalists and their proposals will be announced on 12th September 2017 during the Motor Show in Frankfurt am Main), and the winning name will be announced on 15th October 2017.

Medium-high-technology buyers are also increasingly more involved in various activities in the sphere of civic behaviour on their own initiative. This is often caused by the complexity of operation of many devices, which results in searching for detailed instructions and advice related to their choice (purchase) and use by buyers. Consumers in particular give opinions and evaluate products (for example through independent reviewing services or review aggregators such as epinions.com, yelp.com, opineo.pl, wybierzagd.com.pl, mojeauto.pl), share their own experiences related to their purchase, use, or service by the company, they comment on posts on fanpages of companies or virtual communities centred around a particular brand (such as owners or brand fans) or specific products (such as a model of a particular car), they share photos and videos with the product, and they even initiate or voluntarily join projects based on open source approach in which they create products or specific solutions for other buyers.

Among the buyers of the surveyed products, Internet discussion forums, where they can share various information related to them with other consumers are increasingly more popular. This particularly concerns the forums dedicated to car users, fans and enthusiasts. Their number is constantly growing. Not only discussion forums dedicated to the brand (e.g. Ford Forums Online, Volkswagen Owners Club Forum, Toyota Forum), but also those dedicated to specific model or even the car version are very popular among them (such as Toyota Avensis Forum, Forum S-Klasse, BMW 3 Series Club, VW Golf MK7). Members of such virtual communities exchange opinions about a specific brand (they present reviews or recommendations for specific products and write about their advantages and disadvantages, i.e. faults and defects), hold discussions on a given topic, provide technical, operational and service-related advice to each other, as well as they help with purchase, complaint processing, etc. In addition, they post various instructions, test results, schemes, tuning-related information, and photos or

photo-reports (for example from car rallies, car trips, as well as events organized or sponsored by manufacturers, and dealers).

Discussion forums on household appliances or topics related to them, such as interior design and arrangement (kitchen, bathroom, etc.), construction and decoration, food preparation, cleaning, ironing and lifestyles issues have been less popular so far. However, it can be noticed that their number is growing, and consumers (especially women) are increasingly more willing to share their opinions and experiences. Depending on specific subject area of the forums (e.g. [whatsbestforum.com](http://whatsbestforum.com), [topix.com](http://topix.com), [appliance.net/forum](http://appliance.net/forum), [dekorcia.pl](http://dekorcia.pl), [kitchenplus.pl/spolecznosc/](http://kitchenplus.pl/spolecznosc/), [elektroda.pl](http://elektroda.pl), [netkobiety.pl](http://netkobiety.pl)), their users recommend (or dissuade) each other specific brands and devices as well as places of their purchase, explain the operation, provide advice on the best way to use them and share various experiences related to their use and servicing, etc.

Consumers also set up blogs focussing on either the very medium-high-technology products, or the areas where they find application. Blogs devoted to household appliances (e.g. Appliance Blog, Yale appliance, Olga's Laundry Blog), interior design of kitchen and other rooms (such as My Home Blog, Apdinteriors blog, House Loves, Fashionable), motorisation (e.g. Motor Trend Car & Driver, Auto Blog, MotorAuthority, Moto Soul) or a specific brand, regardless of the manufacturers (e.g. Amica Blog, VW Blog, BMW Blog, Mazda Blog) can be examples here. Bloggers present a lot of valuable information about models of a specific brand (e.g. new and/or used), places of sale and service locations, events devoted to brands, product test results, etc., and interesting texts and articles about specific models, technical solutions and trends in the interior design (for example kitchen), and trends of development of household appliances or automotive products, etc. They also provide operational advice and answer the questions of logged users. On the other hand, their users comment on posts presented on the blog and participate in discussions mostly initiated by bloggers. Furthermore, many bloggers also have their social networking profiles through which consumers also express their opinions and support other users.

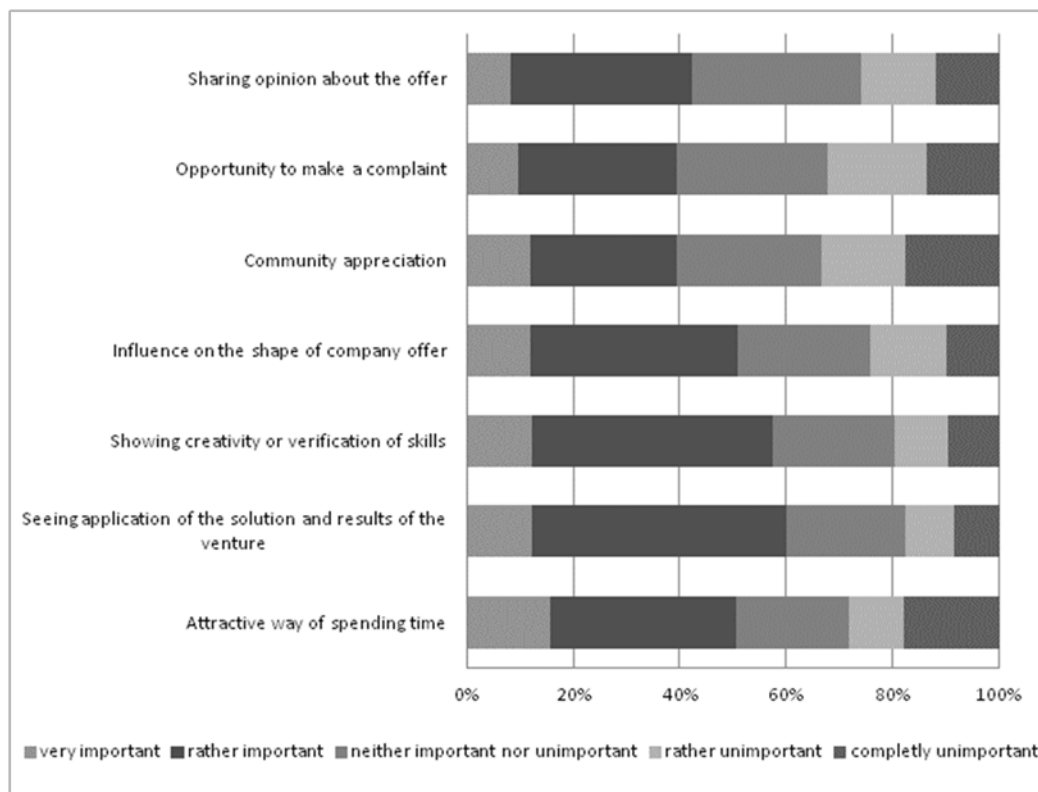
Ventures based on open source approach are an interesting example of activity initiated by consumers themselves. Such an approach is applied, among others, in the sphere of development of product innovation. For the purpose of creation of innovation, consumers form their own communities that have rules and principles different from those established by producers (Weber 2007). Within such communities, buyers can not only share their knowledge about product features, operational circumstances, etc. but also organize a comprehensive development process of an innovation, and manage it appropriately. The prototype of the eco-friendly small car "OScars" is an example of innovative, technologically advanced product developed at the initiative of the consumers themselves, mainly students and enthusiasts of automotive products (the OScar project was launched in 1999 and its second version was implemented in 2006; everyone who was interested could design their dream car or contact with people who were creating such a car). Manufacturers sometimes apply the solutions developed under this type of projects.

It is worth noticing that already nowadays most medium-high-technology products have far bigger number of functions than an average buyer needs. For example, if their operation is not intuitive, the growth of feature fatigue phenomenon is observed among the customers (Thompson and Hamilton 2005). This brings a decrease in their loyalty towards a specific brand

or product, or dissatisfaction and resentment, and consequently, expression of their unfavourable opinion among other consumers.

### 5. Determinants of CCB in medium high-tech goods sector

CCB determinants vary depending on customers (their age, previous experiences) as well as on the market sector. At the end of 2015 surveys were conducted among Polish respondents in order to identify the reasons why consumers engage in activities conducted in virtual space and related to companies, brands and products (Kieźel and Wiechoczek 2016). It proved that the opportunity to spend time in an attractive way, possibility to see the effects of using their own solutions in practice and the opportunity to demonstrate creativity or verify their skills would most encourage consumers to engage more in such activities (figure 1).



**Figure 1:** Reasons encouraging respondents to be more active in initiatives concerning brands and companies on the Internet as forms of customer citizenship behaviour

Source: (Kieźel and Wiechoczek 2016)

In order to discover determinants of customer citizenship behaviour, qualitative research was conducted in January and February 2017 based on individual deepened marketing interviews. Subjects of the research were customers from the Silesian region of Poland. 16 consumers participated in the study. Table 3 illustrates the sample characteristics.

Research has been conducted on a small and unrepresentative sample and thus does not entitle anybody to draw any general conclusions. However, the research in question allowed becoming familiar with the customers' opinions on the determinants of customer citizenship behaviour. Although the study lacks stochastic confirmation, the individual deepened

interview provides a qualitative method of data collection and thus does not require statistical confirmation.

**Table 3.** Sample characteristics

Specification	Sample (in %)
1. Gender:	
a. Male	62,50
b. Female	37,50
2. Age:	
a. 18 – 24	43,75
b. 25 – 34	31,25
c. 35 – 44	18,75
d. 45 and more	6,25
3. Internet usage:	
a. A few times a day	81,25
b. Once a day	12,50
c. A few times in a week	6,25
d. Once a week	-
e. A few times in a a month	-
f. Less frequently	-

Source: Based on own source

All those studied declared to provide customer citizenship behaviour. Research results show that customers are willing to provide citizenship behaviour when they are satisfied with a company service/goods or feel that they have received exceptional treatment beyond their level of expectation, they are more likely to reciprocate by engaging in voluntary behaviours that may benefit the employees and/or the organization. As such, customers develop feelings of trust, social bonding, and future obligations towards an organisation as a whole, rather than towards specific employees. When customers perceive support from the firm, they will return in the same way and exhibit behaviours that promote the development of the enterprise (making feedback on their own initiative). The quoted forms of citizenship behaviours may be classified as the reciprocity principle, within the social exchange theory (people involve in social exchanges with an expectation of getting some sort of social rewards).

As research results show, those who share their product/service information, knowledge and consumption experiences and help other customers have certain motivations to meet their own needs. Asked which needs (according to A. Maslow hierarchy of needs) citizenship behaviour satisfies, respondents gave rather diversified answers. Some of them display voluntary behaviours “to feel a member of a group”, “to be in relationships with others”, “to be noticed/ accepted by others” or to “be shown respect by others”. A few researched customers also pointed at “helping other people gratuitously” or “just being a good person”. It may be assumed that CCB satisfies mostly the esteem needs, self-actualization as well as transcendence needs.

The researched customers also declared engaging in citizenship behaviour for the pleasure of it or for altruistic motives, and are not reward-oriented. Should they expect any type of reward, they may act in ways that satisfy reference group members to gain first acceptance and then status, e.g., customers may behave as customer citizens to get positive feedback from other customers in their aspired groups (friends or other product users). These attitudes may be explained by integrated taxonomy of motivation, the intrinsic and extrinsic motivation to be specific.



## 6. Summary

Summarising both theoretical deliberation as well as the empirical research based on individual deepened interviews, observations and case studies, CCB may be perceived as an important trend in customer behaviour. So far, discretionary and voluntary behaviour towards other customers and companies operating in the medium high-tech sector was not the subject of interest of researchers, so the paper fills in the gap to some extent.

Although the paper presents findings which may be interesting for both researchers and business practitioners, some limitations are worth addressing. First, the present research utilized a cross sectional study in a single industry. This single-sector study raises some concerns about the generalizability of the findings. Second, the data collection methods (deepened interview, observation and case studies) allowed analyzing only several cases. However thorough the analysis of a certain phenomenon, case, system or process would be, the qualitative nature of the data collected makes it impossible to draw general conclusions. Additional research could be conducted using a quantitative method (a survey with a random probability sample). This leaves place for a future study which will allow for statistical verification of the CCB towards other consumers and companies operating in the medium high-tech goods.

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## Knowledge about Customer Behaviour as the Basis for Development of Loyalty Programmes of Retail Chains

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**Abstract:** In recent years we have observed an increase in the importance of marketing activities based on knowledge about the client. This results in significant changes in the behaviour of retail chains, which are beginning to treat it as a new source of capital accumulation. Using knowledge about the client in the process of development of marketing strategies in which loyalty programmes play significant role helps to maximize the satisfaction of the buyer and the creation of market value. In the paper implementation of the following goals is assumed:

- 1) identification of the main sources of knowledge about the client in processes of developing loyalty programmes,
- 2) description of different segments of various retail chains operating in Poland as well as showing marketing practices in sphere of loyalty programmes focused on this segments
- 3) present action of the importance and possibilities of using knowledge about customers in the process of developing retail chains loyalty programmes as the part of their marketing strategies.

In the paper the method of case study will be used based on the example of selected retail chains operating in Poland. The authors present the results of research conducted on the market retail chains in Poland in the years 2010 - 2016

**Keywords:** knowledge about the client, retail chains, marketing loyalty programs

### 1 Introduction

Retail chains develop the so-called Retail Centric Marketing based on segmentation processes in collecting knowledge about customers. Approaching knowledge about the client as one of the bases of marketing strategies for retail chains, there is a need of appropriate acquisition of knowledge, its collection, and then appropriate management of its potential. This knowledge is also an important source for development of loyalty programs dedicated to defined segments of customers of retail chains (Dorotic et al. 2012). These activities should complement the marketing strategies of these entities because this can help to obtain the desired customer loyalty, and thus -to maintain the desired competitive position.

## **2 Features and buying behaviours of retail chain customers**

Retail chains are more and more actively looking for the ways that could allow to increase sales and acquisition of customers. Recognition of their needs and behaviours is necessary to make the instruments of influence on customers effective. Furthermore, customers increasingly more often become an active party for retail chains in established relations. This situation is caused by the occurrence of global determinants that affect changes in their behaviours, and imply specific strategic behaviours of these market entities.

Nowadays, the customer profile is completely different from the customer profile of the "past", therefore retail chains also must adapt to the new challenges associated with the new qualities of customers. Characteristics of contemporary consumers based on observation of their market behaviour forces the necessity to gather knowledge about them by traders. This knowledge serves the needs of formation of specific commercial offers, including loyalty programs, and determination of strategies of cooperation with suppliers who are an integral part of the value chain. It must be mentioned that retailers apply in practice specific measures allowing for better identification of target customers (Bilińska-Reformat and Reformat, 2016).

Retailers apply in practice, the activities aiming at better recognition of their target customers. Apart from such concepts as CSR (Customer Relationship Management), Corporate Social Responsibility (CSR), or KCMR, the concept of CCR (Customer Centric Retailing) is gaining importance (Bilińska-Reformat, 2014a). It represents a very strong focus on customer needs (Peppers and Rogers, 2016)

Four levels of retailer involvement in creation of customer-focused orientation can be distinguished. Firstly, retailers create databases of customers (the initial phase - retailers start to notice the importance of possessed information and apply it in the process of sale and offer creation). Information structuring is the next step in acquisition of information about customers. Retail chains use a number of criteria that structure possessed knowledge, while taking into consideration specific criteria, related for example to transactions (the channel that was used for sale, whether the payment was made in cash or by card), demographic criteria (the age of customers who buy specific assortments, how they find information about promotional offers), or criteria related to the customers' approach to purchase (what customers value most in the offer of a particular retailer). At the next stage of the discussed process, data about customers is approached as an important indication for future sales, and thereby integration of knowledge about customers with the strategic profile of the retail chain takes place. On the basis of possessed information, decisions regarding applied distribution channels, sold brands, CM policies (Category Management, Smith 2009), and loyalty programs are made.

In the case of CCR approach, changes occur in the perception of customer recognition (on the basis of segmentation according to behaviour patterns), assortment decisions (based on quantitative data about customers and their behaviour patterns), the sphere related to pricing policy (based on the basket of needs typical of distinguished segments), promotion management (actions targeted at specific market segments) and management (targets concerning customers are defined in the whole value chain and patterns of customer behaviours are continuously evaluated) (Reformat 2014, pp. 451-469).

Nowadays retail chains are making efforts to recognise customers through application of segmentation procedures (Bilińska-Reformat 2015; Baran 2016). It ought to be mentioned that they are very closely related to the approach typical of CCR (Customer Centric Retailing). There is no doubt that identifying market segments they serve, increase their chance to create adequate offers (promotional offers associated with loyalty programs), and consequently growth in sale.

On the basis of collected knowledge about customer behaviours, retail chains can create an attractive offer of possibly competitive and unique loyalty programs that meet the needs and expectations of the market in the highest degree. According to research by Henkel and GfK Austria there are now three types of consumer attitudes across Europe (Report on How the new generation of Poles buy, 2013, pp. 6-7). They include the consumer in search of value, the worry-free consumer and economical consumer. "Consumers in search of values" constitute the most numerous group in Poland (45%). Product quality is the basic criterion for them while choosing an offer. "Worry-free customers" are the second largest group of consumers (29%). The price is of little importance for them. "Economical consumers" are other people; they look for bargains and promotions as well as market, etc. opportunities. Their behaviours and purchasing attitudes are an important source of information for promotional activities of retail chains.

The fact of generation change is a very important issue related to acquiring knowledge about customer behaviours. Generation "Y" is the generation of people born in Poland between 1986 and 2010, and in other countries, such as the United States. They are the baby boom generation of the 1980's and 1990's. They are also called the "Millennial Generation", "next generation", "digital generation" and "generation of smartphones and iPods" (Freudenberg 2016). Unlike the previous generation – referred to as the "X" generation, representatives of the "Y" generation are open to new challenges. They easily "get used to" technological innovations and actively apply new digital media and technologies (Bilińska-Reformat 2014c, p. 184-186).

On the other hand, we can also talk about the "Z" generation, i.e. people born after 1990, or - according to some experts - even after 1995. The fact that new technologies are something common to them and that they use them every day as they have been present in their lives since the very birth is their most distinctive feature. They are also often referred to as the "C" generation from the English word "Connected", which means they are connected to the Internet (Hardey 2011, Tapscott 2010). It is typical of the people forming the generation that they are open and eager to changes and continuous experimenting, because it allows them to develop while offering a lot of experience (Reformat 2015, p. 6).

Consumers representing the generation in question are more and more eager to seek knowledge, opinions and online shopping recommendations. Therefore, it is extremely important for retailers to reasonably monitor the subjective content of the customers presented on the websites. These actions are a real challenge for retail chains, in the context of growth of importance of the segment of young consumers in the process of market service (Grudecka 2015). They are also an essential element in shaping relations with the target market with the use of information technology (Öztayşi et al. 2017, Stefańska 2016).

### **3 Possibilities and ways of gaining knowledge about consumer behaviours for the need of creation of effective loyalty programs by commercial chains**

Skilfully acquired and then applied knowledge about the behaviours of contemporary customers, contributes to creation of market value for both the consumer and the company itself (Verharen 2014; Leavy and Ramaswamy 2014; Majchrzak 2015). Approaching knowledge about consumer as one of the cornerstones for formation of loyalty programs by retail chains, there is a need for adequate acquisition of the knowledge, its gathering and then proper management of its potential (Reformat 2014a Reformat 2013).

Implementation of these assumptions is supported by the concept of Knowledge-Based Marketing, which focuses on knowledge exploitation (knowledge sharing and use) on the one hand, and on the other hand the exploration of marketing knowledge (creation and sharing of knowledge) through relations and interactions for the purpose of gaining and maintaining the competitive advantage (Kohlbacher 2007, pp. 103).

There is no doubt that nowadays in retail trade there are customers who are increasingly more demanding, aware of their rights and educated (MacKenzie et al., 2013). They have new possibilities to compare and verify the offers of manufacturers and service providers, and to comment on them in virtual space on discussion forums, social networking sites, etc. (Fura 2014, pp. 22). The analysis of this consumer knowledge allows to identify the level of confidence of retail chain customers, the level of product and service acceptance and the target needs, including loyalty programs. This results in a growing role of consumers in marketing actions of chain stores (Frost 2013, pp. 231).

Consumer attitudes and behaviours affect their preferred buying model, i.e. what they buy, where and when they buy, as well as the method of payment and expectations towards retail chains. Therefore, for retail chains, operating in the highly volatile and uncertain conditions of contemporary environment, development of loyalty programs based on knowledge about customer behaviour is one of the cornerstones of their market functioning, but it is also a new, important challenge.

The use of the valuable collection of information about consumer largely depends on the skills and ability to acquire this knowledge, and then applying it in the marketing activities of the retail chains. New information technologies help to achieve the goal. They allow for processing, structuring and classifying information that is acquired. This is very useful in the process of creation of loyalty programs that generate new value for consumers (Magatef and Tomalieh 2015).

Information tool infrastructure enabled, among others, development of the so-called crowdsourcing, i.e. the way in which collective knowledge, skills and experience (crowd resources) are used to solve problems, including, among others, construction of marketing programs (Estellés-Arolas and González-Ladrón-de-Guevara 2012, pp. 1-14.). With regard to retail trade, the idea behind this solution is based on the assumption that a large, diverse consumer community has larger capability to create surprising, unconventional ideas, and suggestions for retail chains than a narrow, specialized team employed in their marketing departments (Howe 2008).

Therefore, the use of the crowdsourcing method consists in acquiring a large number of most diversified consumers' opinions that emerge on the basis of knowledge, skills, creativity and

purchasing experience of each member of the community. In this way, knowledge about customers is provided to retail chains by the very customers, and the information can be collected in various ways, for example through optimisation of websites for search engines, sponsored links and recommendations in search engines, or social networking sites (e.g. Facebook, You Tube, Twitter, Google+, etc.).

Gaining ideas on how marketing activities can be improved, including relationships with consumers, is a direct benefit for retail chains that apply crowdsourcing. Indirect benefits include gaining valuable knowledge about customers' needs, expectations and buying behaviours. (Boyd et al. 2010). Therefore, crowdsourcing is now one of the most popular methods of acquisition of interesting, original solutions and establishment of relationships between retail outlets and their customers. Thorough analysis of information about customers collected on its basis is an important condition of attractive loyalty programs.

Building loyalty programs based on knowledge about consumers is more tailored to the real needs and preferences of consumers. The very customers are the source of knowledge, therefore retailers also gain knowledge directly from them using segmentation procedures, also including Customer Centric Retailing that needs information technology support in a more advanced form (Bhattacharjee et al., 2016). Application of crowdsourcing proves that using the knowledge that comes directly from the retailers themselves is a good idea, as this has a direct impact on marketing activities and their success in retailing.

#### **4 Examples of loyalty programs offered by retail chains in Poland, in which knowledge about customers and their buying behaviours is used**

Research of Monitor Loyalty Program conducted by ARC Rynek i Opinia [*ARC Market and Opinion*] in 2016 shows that almost half of Poles (47%) benefit from loyalty programs. At the same time, in comparison to last year, the rate of people participating in more than one loyalty program, and people who are active in those programs has increased (Loyalty Programs Monitor, 2017).

It results from the data, that Polish consumers are increasingly more willing to participate in loyalty programs offered by retail chains, especially if they are combined with discount schemes. The analysis of the largest retail chains in Poland shows that they apply different approaches in the sphere of offering customer loyalty cards, the regularity of conducted promotional campaigns, and the discounts offered to customers when they do shopping.

Loyalty programs available in retail chains can be divided into three major groups: customer loyalty cards, sticker collection and mobile applications - table1.

Loyalty programs that are also combined with discount options are most distinguished among retail chains in Poland. Such programs are offered, among others, by Biedronka and Tesco chains. These entities arrange them so frequently that their regular customers can practically every week count on offers directly addressed (personalized) to them.

**Table 1:** Types, essence and examples of loyalty programs combined with promotions and discounts offered by the largest retail chains in Poland

Type of loyalty program	Essence of the program	Example of action
Customer loyalty card	<ul style="list-style-type: none"> <li>- one of the first forms of establishment of customers loyalty towards a particular retail chain;</li> <li>- it is offered by most of retail chains in Poland;</li> <li>- its primary function is to collect points that can be exchanged for prizes or vouchers for the next shopping;</li> <li>- benefiting from discounts on selected products, so the customers can immediately buy a selected product cheaper by showing their loyalty card;</li> <li>- depositing funds that can be used when doing the next shopping;</li> </ul>	<ul style="list-style-type: none"> <li>- Clubcard of Tesco retail chain;</li> <li>- "Po2jamy Rabaty" ["Discounts doubled"] of Piotr and Paweł retail chain;</li> <li>- Biedronka and Polo market discount store cards;</li> <li>- „Skarbonka” [“Money-box”] Auchan hypermarket card</li> </ul>
Awards for stickers	<ul style="list-style-type: none"> <li>- each customer of the chain receives a sticker for a certain amount spent on shopping;</li> <li>- for a determined number of stickers, the customer of the retail chain receives a gift or a significant discount on the product selected from its assortment;</li> </ul>	<ul style="list-style-type: none"> <li>- Carrefour retail chain offers discounts on purchase of Karl Lagerfeld towels;</li> <li>- Kaufland chain offers customers 50% discount on a set of pots or knives for 10 stickers (each for the PLN 10 purchase);</li> <li>- Intermarche retail chain offers a gold-plated Yes brand necklace for 5 stickers (each for the PLN 100 purchase);</li> </ul>
Mobile applications	<ul style="list-style-type: none"> <li>- they are not a typical loyalty program, because they are not always associated with material benefits;</li> <li>- retail chains that have their mobile applications mainly focus on the ease in searching for the current offer or address of a commercial network;</li> </ul>	<ul style="list-style-type: none"> <li>- in the case of the E. Leclerc hypermarket, its regular customers have a mobile application with recipes that is available only for them;</li> <li>- Carrefour, Kaufland and Żabka chains offer discounts and promotions, available exclusively through dedicated mobile applications on smartphones of the chain customers;</li> </ul>

These actions are accompanied by an increased integration of new communication and media tools, thanks to which retail chains try to create better loyalty programs more effectively, and thereby establish valuable relationships with consumers, meet their need of interaction and the sense of individuality, as well as win their loyalty (Spyra 2014) – table 2.

It is important to emphasize that introduction of loyalty programs that use the knowledge about behaviours and the needs of customers of retail chains facilitates the dynamic development of information technologies that provide advanced systems for managing these programs. This enables full automation of all processes, including registration, segmentation, communication with participants, selection of awards, and analysis of effects. Consequently, loyalty programs nowadays become the centres of gathering and analysing data about customers rather than the way of rewarding them for frequent purchases (Sławińska, 2015).



**Table 2:** Examples of loyalty programs based on innovative solutions in selected retail chains in Poland

Name of retail chain	Loyalty program operation
Piotr i Paweł	- applies a special loyalty card, based on Scaneo modern communication system, which allows customers to make quick shopping according to their needs. Therefore, when doing shopping in a store, customers can scan the bar codes put in the basket of products themselves. Scanned products are added to the shopping list displayed on the scanner screen. The scanner can also serve as a price reader. When the scanner is used for the first time, verification of products put into the basket by the customer is obligatory. Next shopping, customers are randomly selected for such verification;
Tesco	- since August 2015, Tesco Club Card holders may create an Internet Clubcard account and also use a new mobile application. Thanks to these changes, customers can check the offers prepared for them, print their vouchers and coupons at any time, and use them when shopping by displaying them on their smartphone. The application is available for telephones with Android, Windows, iOS systems, and it allows to manage the Clubcard account easily. Thanks to this solution, Tesco customers have access to their Clubcard loyalty program at any time and place. This is the largest loyalty program of retail chains in Poland. Over 6 million Poles keep the Clubcard in their wallets. Customers participating in the program, collect points that are then converted into Tesco shopping vouchers and they also receive discounts on their favourite products. .

Multi-task mobile application called Navisper, that is an after-sales marketing communication tool is an interesting innovation associated with the development of loyalty programs in retail chains. Its key functionalities allow for combining a loyalty program with the module of digital vouchers to shops and restaurants, and with precise personal navigation on a smartphone cooperating with the infrastructure of micro-devices called beacons.

Beacons are micro-devices that are increasingly more popular around the world. They communicate with smartphones via radio waves. They emit a constant, unique signal using the energy-efficient Bluetooth Low Energy technology (serving wireless communication). In cooperation with relevant applications, they provide detailed data about consumer behaviour to retail chains, and for customers they become a mobile assistant when they do shopping.

In conclusion, it must be stated that more and more retail chains recognize the need and the importance of the benefits resulting from introduction of loyalty programs based on knowledge about consumers. Interactive systems of communication that are becoming a feature of a modern store and a way to reach the customer more effectively are applied for this purpose increasingly more frequently. Modern digital technologies with appropriate software that enable interaction with consumers (e.g. interactive advertising billboards, networks of advertising monitors, touch screens, etc.) provide support here. Thanks to these solutions, retail chains can acquire marketing information that is important for their market activity. This knowledge contributes to creation of effective loyalty programs and more efficient management of relationships with customers.

## 5 Conclusions from the research

Analysing the activities of retail chains in Poland, it can easily be noticed that increasingly more of them offer loyalty programs that take into consideration the trends occurring in consumer behaviours. Consumers expect loyalty programs tailored to their specific needs, that should be combined with promotional actions and access to mobile applications. Therefore, nowadays a growth of importance of knowledge about customers that is applied in marketing practices of retail chains is observed.

The results of the analysis show that knowledge about consumer behaviours constitutes a valuable collection of information for creation of loyalty programs of retail chains. It should be perceived as an important basis for the development of their marketing activities. However, its use largely depends on the skill and ability to acquire this knowledge, and then its use in the process of establishment of relationships with customers in retail trade. Acquired knowledge about customers provides a lot of inspirations and ideas on how to be attractive and distinctive on the market of particular products or services in conditions of strong market competition.

The content presented in this article only shows some possibilities that retail chains have in the sphere of gaining knowledge about customer behaviours for the needs of creation of effective loyalty programs, including relationships with customers. The subject matter discussed in the paper is undoubtedly an interesting area for further research concerning the ways of acquiring knowledge by retail outlets from various entities, and the scope of its implementation in the process of creation of offers for customers.

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# Overview of Radio Frequency Identification Technology Implementations in Retail Industry

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**Abstract:** Over the past decade there have been many different applications of Radio frequency identification (RFID) technology that affected the organisation of retailing operations, its efficiency as well as customer satisfaction. Main advantage of RFID technology is that through improved information flow control most queuing times within supply chains can potentially be eliminated, increasing the efficiency of logistics operations. In order to evaluate the realisation of this potential, a literature overview and analysis was performed. The goal of this paper is to establish a framework for the classification of RFID applications in the area of retailing and define the main characteristics of each group of possible applications, main advantages they provide to the application areas and main challenges that need to be taken into account. Classification of RFID applications derived and proposed in this paper can be used as a guideline of best practices in planning, developing and implementing future RFID incentives in various settings in the area of Retailing.

**Keywords:** Radio Frequency Identification (RFID), Retailing, Technology adoption, Supply chain management

## 1 Introduction

Elimination of queuing times and queues is one of the main challenges of efficient logistics operations. In retailing the importance of eliminating queuing times can be observed in several different phases of retailing processes where waiting times directly influence level of customer satisfaction to the point that expedient delivery of goods to customers has become a source of competitive advantage. Firstly, the efficiency of back office operations influences the level of shelf replenishment rates, increasing the visibility of products, availability and flexibility of response to immediate demand. Secondly, eliminating the waiting times in floor management directly influence the perceived customer satisfaction. With the development of RFID technologies automation of logistics process has reached viable levels providing the most efficient approach to the delivery of goods and new level of service for final customers. New options such as forecasting of customer needs and similar functionalities become available. This convenient technology has been recently combined with other types of information and communication technologies that receive high attention from businesses such as big data technologies and decision support technologies. Over the past decade various attempts at innovating business models using RFID in retailing have been tested with various

levels of success. Nevertheless, the acquired experience with this technology has revealed its potential benefits and possible uses that provide additional value to businesses and improvements of customer experience.

In this paper, we will review various models of implementing RFID technology in retailing in an effort to determine whether the full potential of this technology has been activated and used in practice. The goal of this paper is to establish a classification of currently available RFID implementations in retailing. The induction of this classification framework will be based on the overview of most important test cases, concepts and implementations described in the available literature over the past two decades since first implementations of RFID in retailing began. This will include currently available case studies, research papers and partial reviews of RFID implementations in recent years.

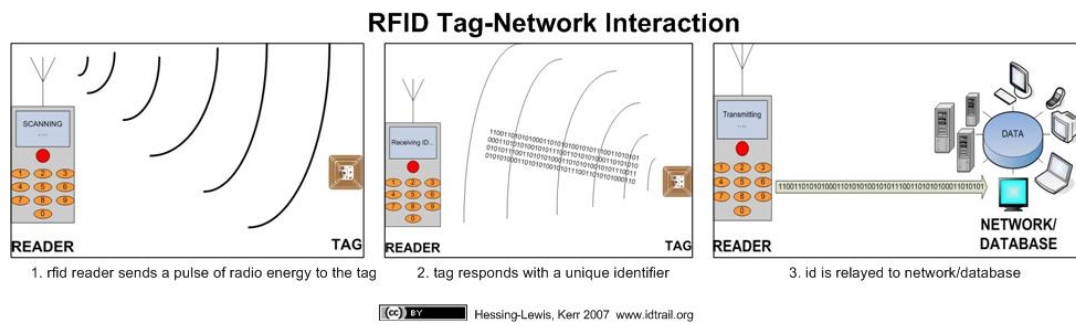
Structure of the rest of the paper is as follows. In Section 2 we will introduce and describe main properties of RFID technologies and its current state-of-practice. In Section 3 we will describe specific constraints that are imposed on the RFID technology by the scope and requirements of retailing legalistic operations. Also, we will discuss the specific issues in retailing that may be addresses by the RFID technology. In Section 4 we will describe a literature overview of currently available implementations of RFID technology in retailing. In Section 5 Classification of possible implementations will be given. Finally, in Section 6 we will conclude this work and outline future research questions.

## **2 Background on Radio Frequency Identification Technology**

Radio Frequency Identification (RFID) Technology refers to a set of wireless automatic identification technologies, which perform simple tasks of remote data storage and remote data retrieval using tags and readers (Zhou & Shi 2009). Readers act as peripheral units of the enterprise information system that provide data interchange between tagged objects and information system software (Reyes et al. 2007; Vlahovic et al. 2015). Tags are specialized components that are capable of storing limited amounts of data that can be transmitted on demand by the reader component of the system. In order to achieve data transfer, different methods of manipulating electromagnetic fields of RFID tags and readers are used.

The first application of RFID technology can be traced back to 1940s in military applications during the Second World War. Commercial applications were first initiated some time later from 1980s onwards. Steady implementations lead to increasingly wide employment of RFID technology especially in highway and bridge tolls (primarily in USA and Europe), tracing livestock movements, air freight, but also production processes in car manufacturing assembly lines (Sellitto et al. 2007).

In Figure 1 we can see the most general overview of basic principles of RFID technologies. RFID reader, also referred to as an interrogator, is equipped with a coiled antenna that can transmit a signal using particular radio frequency. As this signal propagates, it creates an electromagnetic field. Once the signal reaches the antenna of the RFID tag electromagnetic field of the reader antenna is coupled with the electromagnetic field of the coiled antenna of



**Figure 1:** Schematics of a simple RFID system

the tag. This in turn will induce electromagnetic energy drawn from the magnetic field that will be just enough to power the microchip's circuits allowing the transmission of its fixed unique identifier information. Reader will pick up this information and relay it to the enterprise information system database. The main concern with the development of RFID technology is to create readers and tags that have the lowest possible power consumption while preserving the functionality of correct transition of data.

For the retail industry applications, it is important to observe that the wireless transition of information is a critical step in the process as it is subject to interferences. Factors that influence the occurrence and gravity of interferences depend on the location of the RFID tag placement, type of product that is tagged and even how many items are being interrogated by the signal at the same time. If the RFID tag is positioned behind metal surfaces the reader signal will be reflected away from the tag antenna and the transition of data will not occur. If the tagged item is a liquid good the signal may be absorbed by the liquid thus weakened so that it does not induce enough energy for the transmission of data from tag to reader.

As we mentioned the term RFID technology actually refers to a set of different technologies that provide common functionality of the overall system. Two most distinct variants of technical solutions implemented in RFID are types of tags that are used for storing identification data.

Firstly, there are passive RFID tags that do not have an internal power source. They are very simple and compact entities that contain only two parts: an antenna and a microchip (or integrated circuit). As the name of the tag implies passive tags wait for the reader signal to reach them. When the signal is picked up by the tag's antenna, it absorbs the energy of the electromagnetic wave inducing enough power for the connected microchip to create its own signal and transmit the stored data back to the reader. This process is called backscatter, since the original signal of the readers is distorted by the microchip's own response signal. This distortion of electromagnetic wave length is registered by the reader and the deviations in wave length are interpreted as received data. The interpretation of the data received by the reader is further processed by the RFID middleware software and then sent to the information system. Due to their simple structure passive tags generally belong to either RFID inlays or RFID hard tags.

RFID inlays are the cheaper variant where the antenna and integrated circuit are attached in a single sheet within a particular material. There are two basic types of RFID inlays: (1) dry inlays and (2) wet inlays. Dry inlays contain an RFID tag attached to a material (referred to as the web) and appear as laminated without any adhesive. Wet inlays contain an RFID tag attached on a sheet of PVC, PET or paper usually with the adhesive on the back side of the tag.

These tags are usually used as RFID labels and they come connected on a roll, where individual tags can be peeled off and immediately stuck on an item. Sometimes wet inlays that use paper as the material for the face side of the tag are grouped separately as paper face tags. The placement of RFID inlay for this type of wet inlays is specifically designed in order to provide convenient and precise printing while at the same time minimizing the chance of damaging the RFID inlay during the printing process.

The frequency of the electromagnetic signal for passive RFID tags can vary as it will determine the distance at which the transition of data may occur. There are three typical frequency ranges: (1) low frequency (LF); (2) high frequency (HF) and (3) ultra-high frequency (UHF).

LF is characterized by an extremely long wavelength with the shortest reading distance of all the frequency groups, as short as 1 to 10 centimetres. Typically, LF tags are used for livestock tracking and access control as data transmission is slowest but it is also least likely to be affected by water and metals.

HF tags have medium signal wavelength and the reading range from 1 centimetre to 1 meter. These wavelengths are mostly used for ticketing, payments and data transfer. As such there are some established standards such as the ISO 15693 standard for tracking items, and the ECMA-340 and ISO/IEC 18092 standards for Near Field Communication (NFC) that has seen increase implementations in consumer electronic products and mobile computing as a short-range technology commonly used for data exchange between devices. There are also other HF standards that are concerned with technologies used in smart cards and proximity cards (i.e. ISO/IEC 14443 A and ISO/IEC 14443 standards) and other smart card systems.

UHF tags have the shortest signal wavelength allowing for the longest reading range up to 12 meters and provide the fastest data transfer, but they are the most sensitive to interferences out of all the frequency ranges. As this type of passive tags is also the cheapest for production there are considerable efforts in the development of highly robust tags that can overcome signal interferences. One of the most important types of UHF tags is RAIN RFID that uses UHF Gen2 Standard. There is a wide variety of applications of this type of tags ranging from retail inventory management to anti-counterfeiting or wireless device configuration.

Active tags have internal power source that powers its operation. This means that along with the antenna and microchip, these tags also have an internal battery that can (1) increase the range at which the tag can be read, (2) increase memory and data storage and (3) provide constant data transmission for up to 3 or 5 years before the battery fails. Due to its long utility lifespan, all of the components of an active RFID tags are usually protected by placing them in a plastic casing. This allows the use of active RFID tags in harsh environments such as extreme temperatures or high moisture. The casing can also be used to furnish the tag with environmental sensors that can collect and transmit this data dynamically (depending on the type of applications). Inevitably this means that active RFID tags are considerably larger and bulkier than passive RFID tags (Figure 2).

All active RFID tags fall in one of two categories: (1) transponders or (2) beacons. Transponders operate similarly to passive RFID tags as they conserve battery in idle state until they receive the signal sent by the reader antenna. The transponder will then send a signal back with corresponding information and again enter the idle state. Active RFID transponders are most typically used in electronic wireless toll booth payment systems.



Beacons are different from transponders in that they will not wait for the reader signal to arrive, but will transmit their information in regular time periods of 3 to 5 seconds. This is why energy consumption is higher in beacons compared to transponders. Beacon signal can be read from as far as couple of hundred of meters, but it will usually be limited to hundred meters in order to preserve battery life. Beacon tags are usually used in oil and gas industry, but are also relevant in logistics for cargo tracking applications.



Source: RFID Insider Blog available at: <http://blog.atlasrfidstore.com/>

**Figure 2:** Comparison of size between a passive and active RFID tags

All of the described properties of Active RFID tags increase the cost of production that can be several hundred times larger than the productions of passive tags. For instance, cost of producing a passive UHF tag is 0,10 USD while a cost for active beacon tag can reach over 100 USD.

In the past, the main reason for limited implementation of this technology was the high cost of RFID tags and components as well as the limitations of technologies used. From 2000s the price of RFID tags but also middleware equipment started falling down significantly which rendered implementations in wider range of application areas economically feasible. Currently microchips measuring less than a third of a millimetre in width can store a wide range of unique product information while a reader from a range of up to 100 meters can read this information (Sellitto et al. 2007).

Most important advantage of RFID over barcodes typically used in retailing is that the objects that need to be identified do not have to be in line of sight for the reader to access identification data. Some RFID tags allow for the storage of additional data and change of data contained within the RFID chip. Finally, RFID tags can provide the system with acceptably accurate localization data which also enables additional features and functionality of the inventory management system (Vlahovic et al. 2015).

However, there are some limitations of RFID that need to be taken into account. Communication between the reader and tag antennae is subject to interferences that may affect the accuracy of data transition or in some cases even prevent the reading of the information stored in the tag microchip. Another issue is the problem of available standards that limit the data capture capabilities as well as the ability of business integration software to inexpensively capture and store RFID-derived data (Rappold 2003). Even with the generally accepted Gen 2 standard for RFID tags still unresolved issues limiting the interoperability of all of the different types of RFID tags and readers. High diversity of middleware integration applications that have been developed around closed proprietary standards cannot achieve

feasible level of interoperability for integration with existing information systems. Even if any of existing standards are used there is a high level of risk that the resultant data will be in non-standard format and will require further adjustment of middleware for integration with corporate databases (Prater et al. 2005; Smith 2005).

### **3 Efficiency and organisation of logistic operations in retailing**

Most common use of RFID tags in logistics is the identification of work units. These units may be organized as bundle units like palettes, packages, container or intermodal freight containers or each item can be considered a working unit. Therefore, we can differentiate between two levels of RFID implementations – bulk level (also known as palette level or container level) and item level implementations.

Regardless of the organisational unit level, information on the identification of an object (including other possible information that can be monitored by sensors, such as temperature, pressure, etc.) are registered on RFID tags. These tags are attached to items (boxes, pallets, containers, vehicles, people, assets or machines) that move or are positioned along the supply chain. Information on the tags is read by a set of sensors that are customarily distributed at different stages and various positions in the supply chain (receiving docks, shipping docks and control points in distribution centres and warehouses, control points in manufacturing processes and assembly lines, control points on highways, railroads, receptions, weighing stations, etc). The large volume of information distributed along the supply chain is managed through a set of systems known as RFID middleware. RFID middleware (1) manages the information flow between different components of RFID hardware (that along with RFID tags and RFID readers include also RFID printers), (2) identifies the events linked to this information (for instance, a pallet that went through the receiving docks may trigger an updating activity of the stocks) and (3) integrates flow of related information with the company's managerial systems (Pedroso et al. 2009). This flow of information is bidirectional: it takes place from the managerial systems to the tags (recording flow) and from tags to the managerial systems (reading flow) enabling the integration between electronic information and management systems. Main functionalities of the coupled system include the management of the information flow about objects distributed along the supply chain, management of events related to these objects and updating of relevant information in the management systems (Pedroso et al. 2009).

Companies adopting RFID at the bundle level have indicated several benefits. 79 percent of the retailers reported increased operational efficiency through reduced or eliminated manual inventory (Klein and Permenter 2010). Further research also confirmed that RFID retailers have a higher labour to gross income elasticity than their non-RFID counterpart, indicating that RFID retailers have higher labour productivity (Shin and Eksioglu 2015). Next benefit reported by 53 percent of retailers reported increased visibility through improving on-shelf availability of products by enabling timely shelf replenishment with backroom monitoring capabilities (Condea et al. 2012). Finally, improvements in store security such as detecting fraudulent activities and reduction of theft and improvements in profit margins through higher sales of products at full price and dynamic pricing policies are also some of the benefits noted by the RFID retailers. These benefits and lower costs of the technology motivated growth of RFID adoption in retail industry in 2010s. (Klein and Permenter, 2010).

Further reduction in costs of RFID tags encouraged some of the retailers to take a more proactive approach to item-level RFID adoption. The value of dynamic real-time inventory information provided potential for additional competitive advantage over their competitors while offering a potential to optimize pricing policies of their products (Gaukler, 2010). Some of the retailers especially in fashion and clothing industry recognized the value of collected data and initiated services with additional value for their customers with the intention of improving and innovating customers' shopping experience (Swedberg, 2012). Customer response in some cases exposed substantial security and privacy concerns. Some of these concerns were too elaborate and intrusive for some of the innovative processes that some of the business models failed discouraging further interest in item-level RFID implementations. Recently security and privacy issues are a topic of a number of academic papers trying to resolve and establish frameworks and standards of security and privacy policies in RFID implementations to prevent the intrusiveness of data collection and improve customer trustworthiness in privacy preserving practices of RFID implementations (Rahman et al. 2017a; Rahman et al. 2017b; Sundaresa et al. 2017).

Finally, the efficiency of RFID implementation is highly dependent on the content of data transfers i.e. information quality. Angeles (2005) states that RFID technology may reduce some information gaps in the supply chain, by providing real time visibility of the supply chain (Pedroso et al. 2009). In order to improve the quality of information that is used to identify and manage various tasks within the retailing processes Sellitto et al. (2007) identified attributes associated with RFID along the respective supply chain that affect the information quality. Clear definition of these attributes leads to better configuration of the RFID based system that has the potential to enhance organisational responsiveness through improved decision-making capabilities. One example of the information quality improvement used in decision-making are inventory inaccuracies that may be caused by human factor, product misplacement etc. The magnitude of under optimal management of the process is enhanced during several decision-making iterations that rely on these inaccuracies. There are several studies available that aim to quantify the potential for improvement of process management through elimination of data inaccuracies RFID may provide to the organisation Heese (2007), Rekik et al. (2008) and Thiese et al (2009).

#### **4 Review of RFID implementations in Retailing**

In this section, we will report on RFID implementation efforts in retailing industry present in current literature. RFID systems already support diverse business processes in various companies. There are several areas of successful implementation of RFID technologies in logistic and supply chain management. Among these areas, the RFID technology has been used in various parts and extent in supply chain management and integration (Singh, 2003), supply chain event management (Jankowska et al., 2007), for the efficient management of short shelf life goods (Karkkainen, 2003), container transport (Hengst and Sol, 2002), automated delivery tracking system (Song et al., 2005), asset management (Lampe et al., 2005), luggage tracking (DeVries, 2008), material handling processes in a distribution centre (Delen et al. 2007), identification of animals (Alu et al., 2006), consumer marketing and services after sales (Curtin et al., 2007) just to name a few.

Before examining the RFID implementations in retailing we should note that there is a number of complex and valuable feasible implementations in general logistics problems. Here we will

name a few of those. In Brazil, a typical example of access control considers use of RFID tags in vehicles for automated toll payments and control of access to parking lots. (Pedroso et al. 2009) The most successful application of RFID in China is in the rail industry. The goal of this implementation is twofold: First goal was to improve the railway train scheduling and the second one was to establish a reliable and accurate long-distance identification systems. According to (Lai et al. 2005) over 0.6 million railway wagons and locomotives are equipped with RFID tags. Automatic Equipment Identification (AEI) devices, an RFID reader product from Transcore, are installed at all strategic points, such as railway junction points, yards, segment stations, super cargo stations, and boundary stations. When the train passes these strategic points, AEI collects train's information, such as locomotive, wagon, and containers, which is stored in an RFID tag. This information is then relayed to the Central Processing System (CPS). The CPS works as a usual RFID system middleware processing collected information and managing AEI devices. The processed information is then sent to a back-end system of Chinese railways.

As we can see from these examples most of implementations in logistics relied on more expensive RFID technologies but the value of the systems they support can fully justify the investment into the system. We can also conclude that their implementations are based on bundle level implementation of RFID tags. Retailing and store management do not allow for the implementation of expensive RFID technologies. The main concern of these implementations is to achieve higher level of efficiency or provide consumers with additional value and innovative services. Another parallel goal of these implementations is to better connect partners in a supply chain.

#### **4.1. RFID implementations for efficiency**

In the retail industry, the evolution of RFID technology was initiated in 2003 when Wal-Mart demanded that its top 100 suppliers adopt the RFID tag system in the following 2 years (Romanow and Lundstrom 2003; Juban and Wyld, 2004). Other retailers and outlet stores followed this example so that the list of users now include Deloitte Global Technology Innovation Centers, Target Corporation, The Boeing Company, US Navy, Michelin, Americas R&D Corporation, Delta Airlines, United Postal Service, Sonic Software, Tyco Safety Products, and DHL Worldwide Networks to mention some (Mehrerjedi 2011).

In Germany, Metro uses pallet- and case-level tags on all outgoing dry goods shipments from their Essen distribution center to the Rheinberg store (Gaukler et al. 2007).

Most of these examples concentrated on the back-office implementations in form of bundle-level or more appropriately palette-level implementations. Some of the companies even evolved new approaches to storeroom management through monitoring capabilities and real-time replenishment processes that reduced or even eliminated stock-outs (Condea et al. 2012).

The biggest potential of RFID technology in retail is the organisation of RFID based system on the item level where individual products are assigned with a relatively cheap passive RFID tag that is primarily used for identification of the product.

Gap Inc. was one of the first to use RFID in a retail supply chain using item-level tagging. The pilot project tested on one of their fashion lines, achieving a 99.9% inventory accuracy rate

(Sliwa 2002). Analysts also claimed that Gap saw a 2 to 7% increase in sales by using item-level RFID due to higher availability of products (Abell 2003). This example was followed by numerous pilot projects by retailers that previously used bundle level RFID such as Walmart, Marks & Spencer and retailer who joined the adoption of RFID in their retailing processes. Retailers have taken a proactive approach to item-level RFID adoption for its compelling benefits such as real-time inventory information that responds to consumer purchases (Garf and Scott, 2005; Klein and Permenter, 2010).

Wal-Mart (together with Procter & Gamble) has conducted trials of smart shelves and item-level RFID for cosmetics (Wolfe et al. 2003). Marks and Spencer reported that RFID technology allowed them to implement a faster and more cost-effective SCM system for their refrigerated foods. They track 3.5 million reusable trays, dollies and cages within the store's refrigerated food supply chain. Time required to read a stack of multiple trays was reduced by 80% with improved accuracy and reliability compared to conventional barcoding. Also, reusability allows for the spread of the fixed costs of tags over time.

Loebbecke et al. (2007) and Loebbecke & Huyskens (2008) investigate a 5-month trial by Kaufhof and Gerry Weber, a fashion goods manufacturer, and describe the observed operational benefits.

Gillette and Tesco have been cooperating on item-level RFID in the United Kingdom. Gillette tagged razor blade cartridges and Tesco used a smart shelf system to monitor stock in retail stores. This system was primarily designed to prevent theft, and it was combined with an extensive camera surveillance system that was triggered by removal of product from the smart shelf. Consumer privacy concerns have prompted the trial to be ended in 2003 (Wolfe et al. 2003).

Metro AG in Germany has launched what is likely the most ambitious real-world trial of item-level RFID to date (Roberti 2003). In their Future Store in Rheinberg/Dusseldorf, item-level tags are used on Gillette razor blades, P&G shampoo, Kraft cream cheese, and DVDs. The item-level RFID data are used to drive both in-store and outside stock replenishment. In addition, several consumer benefits such as shopping carts with automatically updated shopping lists and a self-checkout system have been implemented (Loebbecke 2007).

Item-level adoption of RFID technology is expected to expand further in the near future. For example, Macy's, one of the biggest US retailers, and American Apparel, a global clothing retailer-manufacturer, have engaged in item-level RFID tagging beginning in 2012 (Swedberg, 2012).

Karkkainen (2003) researched an application of RFID to monitor perishable items in the retail chain and concluded that utilization of RFID in recyclable containers may bring operational benefits and quickly pay off investments.

Implementation cases in the agrifood sector demonstrate how RFID may meet the requirements for better food quality monitoring by coupling radio frequency communication and traceability. The implementation of RFID tags and sensors may lead to a better detection of food degradation markers and thus to a reduction in food loss which is one of the world's major issue (Bibi et al 2017).

This expansion of RFID adoption comes despite some noteworthy RFID-adoption failures (e.g. Prada and Benetton). One of the main reasons for those failures was the concern over the

tracking ability of the technology (Eckfeldt, 2005). Global retailers Benetton and Prada failed in their adoption of item-level RFID due to customers' concerns with tracking capabilities that potentially may lead to privacy-invasion. In addition to the high price of RFID tags (25 to 75 US cents each in 2005), the unsuccessful adoption was attributable to the firms' lack of understanding about consumers' responses toward RFID-based shopping experiences (Eckfeldt, 2005). Serious concerns even provoked consumer associations such as Consumers Against Supermarket Privacy Invasion and Numbering (CASPIAN) to oppose retail surveillance and thus oppose retailers' adoption of RFID (Gilbert, 2004). Similarly, Benetton case of washable tags embedded in Benetton garments (supplied by Philips) caused CASPIAN to call for the boycott of Benetton forcing the company to revoke their tagging policy (Jones et al 2004).

These concerns and consumer movements have resulted in a slowdown of RFID adoption at item-levels by retailers. Given the tremendous investment required for companies' adoption of item-level RFID, understanding consumers' willingness to use or shop with innovative RFID-based services is critical for companies' successful adoption of these intelligent sensor-based services (Jang, 2011).

#### **4.2 RFID implementations for innovations**

Most of the aforementioned implementations of RFID are aimed at improving the existing business processes in retailing that may require more or less reengineering and adjustment of traditional business processes. There are several examples of implementations that were concerned with introducing new services that RFID technology would enable. The main goal of these implementation efforts was to enhance customer experience.

A good example for innovation of customer experience is the Japanese department store Mitsukoshi that offered in-store radio frequency identification (RFID)-based services in conjunction with a global cosmetic brand, Shiseido. Using a touchscreen terminal equipped with an RFID reader, consumers were given instant access to product information including other consumers' feedback on Shiseido products at the store. Identification of particular cosmetic product allowed for the visualization of the look with products through the real-time simulation of personalized make-up (Swedberg, 2009). Additional examples are being tested and used in other countries as well. One example is apparel retail store in Barcelona described in Melia-Segui et al. (2013).

In 2011, Macy's announced that their Macy's and Bloomingdales' stores would adopt item-level RFID. American Apparel announced a plan to equip all of its 280 stores with RFID for inventory-management purposes and to enhance consumers' shopping experiences (Swedberg, 2012). The French retail chain E. Leclerc is piloting RFID-enabled promotions by tapping near field communication (NFC) technology that is based on RFID (Swedberg, 2011). An NFC-enabled sticker attached to consumers' mobile phones enable them to recognize promotional offers and take advantage of it. These examples demonstrate that retailers have invested in intelligent sensor-based services like RFID.

In Fast moving consumer goods (FMCG) market there is an even more sophisticated application of RFID technology. An RFID-equipped shopping cart is expected to enhance consumers' health by showing them the total number of calories in the food items added to

their shopping cart and offering advice as to whether or not those products are good for their health (Jang, 2011).

These innovative services indeed have affected consumers' shopping experiences. Five major retail chains in Greece, have determined a list of ideas for services with added value based on RFID. These ideas are: self-checkout, traceability information, trolley reader, shelf tags, dynamic promotion, and dynamic pricing (Theotokis et al. 2008)

Traditional stores generally cannot fully satisfy customer needs because of difficulties in locating target products, out-of-stocks, a lack of professional assistance for product selection, and long waiting for payments. Therefore, an item-level RFID-enabled retail store can provide customers with more leisure, interaction for product information, and automatic apparel collocation to promote sales during shopping. RFID readers are installed to capture customer shopping behaviour and preferences, which are useful for business decision-making and proactive individual marketing to enhance retail business. One example described in Choi et al. (2015) proposes the use of intelligent fuzzy screening algorithms for analysing collected data and promoting apparel collocation based on the customer preferences, design features of products and sales history accumulated in the database.

Another example of employing the collected data to enhance both customer experience and business performance is dynamical pricing of products in store. In this way company may better manage customer loyalty while increasing their profits from recognizing and mobilizing customer reservation prices. Retailing with dynamic item-level pricing RFID and data mining techniques, it is relatively easier to track consumer's shopping behaviour and analyse their preferences and reservation prices. Zhou et al 2009 proposed a framework that can target retailer's pricing structure based just on the customers present on the retail shop floor since the item-level pricing decision is able to focus on a specific point in time.

The potential benefits to RFID technology in the food industry are enormous (Mehrerjerdi 2011). If a manufacturer recalls a batch of products, the RFID tags for the containers affected can be flagged electronically. In this scenario grocery retailers will not be able to sell recalled products because the register will not allow it (Hall and Hampl, 2004). In this way food safety becomes higher and provide end customers with additional value from companies that may be much along the supply chain. Furthermore, the service may pertain after the purchase phase. For example, homes – equipped with “smart appliances” may be connected to the store information system and create connection to ubiquitous network that enables seamlessness interactions of customers with companies and companies' supply chains (Pramatari and Theotokis, 2009).

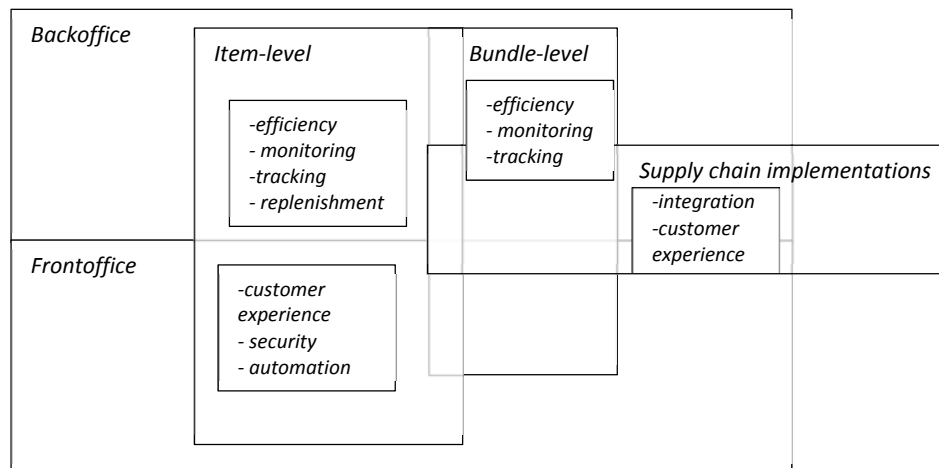
In this scenario, refrigerators will inform homeowners that the milk is expired or the microwave will alert the consumer that the product about to be warmed was recalled 6 hours earlier by the manufacturer. Even the pantry, if equipped, could print a grocery list based on current inventory (Hall and Hampl, 2004). Another concern that may be addresses by RFID technology is trackability of food products. Wentworth (2003) conducted a study aimed at inexpensive, disposable RFID biosensor tags used on food products for history checking and contamination and inventory control.

Some of the trends in future retail store may include transceivers equipped to read multiple products simultaneously, allowing for shopping carts to be pushed through a device that seamlessly recognizes all items being purchased. Self-check-out will be commonplace, and

cashless transactions will become regular practice. In the retail context, service innovation has evolved from the ATM and online retailing to mobile retailing and ubiquitous shopping environments using RFID. RFID services, an example of intelligent sensor-based services, has created a revolutionary impact on business environments in retailing industry.

### 5 Classification of RFID implementations in Retailing

Based on the described examples of implementations we can organize the classification of possible implementations of RFID technologies in retailing as shown in Figure 3.



**Figure 3:** Classification framework for RFID implementations in retail industry

There are significant differences between back office and front office implementations. Even though in both cases bundle-level and item-level implementations can be used, bundle-level implementations are more commonly associated with back office implementations. Also, a specific type of implementation is concerned on supply chain management capabilities since it requires additional coordination with business partners. Back office implementation improve efficiency in terms of more dynamic and responsive organisation and reduction in operations costs while providing monitoring capabilities and even feedback through tracking capabilities. At item-level implementations additionally store shelf replenishment can be drastically improved. In terms of supply chain management implementations common approach is to use bundle-level RFID tags and promote better coordination between business partners, but some innovative approaches that break the back-office operations also exist. In this case the complete supply chain is dedicated to providing additional services to customers of the whole product supply chain. Finally, front office implementations in recent years embrace mostly item-level implementations in order to resolve and reinforce security aspects in retailing, and even more importantly for competitive advantage to improve customer experience by engaging customers with different options, interactivity, additional purchase services and even more importantly post-purchase services.

### 5 Conclusion

In this paper we have presented an overview of Radio Frequency identification technologies (RFID) in retailing industry. Over the past few decades we noted an expansion of various types of implementation areas and processes that are being supported by this type of technology.



A number of large companies provide RFID technology solutions, such as SAP, Oracle, IBM, Microsoft, Hewlett Packard, and Sun Microsystems capable of customizing the RFID middleware for any of these types of implementations. Based on the presented cases we have established a framework for general classification of possible uses of RFID technologies in retailing. This classification can provide better basis for creation of metrics for assessment of RFID impact on business processes and measure maturity level of operations in terms of using potential of RFID. Classification can be used to further improve the development of quantitative models of inventory control models based on RFID technology.

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## Concentration Level of the Largest World Retailers Based on Various Concentration Measures as Knowledge Needed by Decision Makers

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**Abstract:** The achieved retail concentration level is very important for both, the competition level of an economy and for customers. If the retail concentration is high, customers can expect to have higher products prices and lower products quality and supply. A high retail concentration is one of indicators of problematic market structures, such as monopoly and oligopoly, in which the leading company or companies can misuse their position. Therefore, many stakeholders are interested in observing changes of retail concentration measures over time: retailers, suppliers, the state and the public in the relevant market. In this research, various concentration measures are applied and explained based on secondary data published at relevant Internet sources. Afterwards, the retail sales concentration levels for the top 250 world retailers in 2010 and 2014 are compared. The emphasis is given to standardized concentration measures, i.e., concentration ratio, Gini's coefficient, Herfindahl-Hirschman's index, Rosenbluth's index and Hall-Tideman's index. The analysis has shown that the retail sales concentration level, measured through retail sales values, is low in the both observed years. The analysis results have indicated that the retail concentration level increased in 2014 in comparison to 2010.

**Keywords:** retail sales, concentration measures, top world retailers

### 1 Introduction

Retail concentration process is manifested with the decreasing number of leading retailers with simultaneous increase in their market share and their market influence. In the paper, the various measures applied to assess retail concentration level are explained, and then retail sales concentration levels among the top 250 world retailers in 2010 and 2014 are studied and compared based on secondary data published at the relevant Internet sources. Descriptive statistics methods are used to present the retail sales data of the top 250 world retailers. In the analysis, several concentration measures are used. The emphasize is given to standardized concentration measures: standardized concentration ratio, standardized Gini's concentration coefficient, standardized Herfindahl-Hirschman's concentration index, standardized Rosenbluth's concentration index and standardized Hall-Tideman's concentration index.

As a contemporary trend, retail concentration is bringing new challenges to all market participants: suppliers, existing retailers and customers. In this paper, we will discuss concentrations in retail industry, particularly in grocery retailing. Various measures can be

applied in order to assess the reached level of retail concentration. In this paper, the research question is if concentration level of the top 250 world retailers has risen in recent period. In the analysis, the most recent data from 2014 are going to be used. For the comparison, the year 2010 year was selected. Consequently, the research hypothesis states that the concentration level of the top 250 world retailers has risen in 2014 in compare to achieved concentration level in 2010.

After the introduction, in the second chapter brief literature review is given. In the third chapter, the used data and applied concentration measures are presented. In the fourth chapter the retail sales of the top 250 world retailers in 2010 and in 2014 are analysed by using descriptive statistics approach whereas in the fifth chapter achieved concentration level is determined by using selected concentration measures. The sixth chapter concludes the paper and brings some recommendations for further research.

## **2 Literature review**

In last decades, leading companies in the retail trade grow above average (Dawson 2006) and market concentration is observed as a one of key concepts and trends within the European retail industry.

Majority of authors focus on explanation of retail concentration as a process together with its consequences, there are various studies calculating concentration ratios for various markets. Some of them are explaining how concentration influences investments in retail innovation and improving consumer service.

However, there is a scarcity of papers, which are applying and comparing various measures of concentration at once. Both positive and negative effects of retail concentration are explained in literature. As positive effects we can outline (Battezzati and Magnani 2000; Hollingsworth 2004; Evans 2005; Dawson 2006; Amato and Amato, 2009; Knezevic et al. 2011): (1) productivity grows measured per employee or per square meter of retail space in leading companies, (2) investment ability of leading companies is increased so they can implement the newest ICT or logistic technology faster and easier than small companies, (3) ability to expand assortments and to adjust them to consumers also grows which have a positive effect on consumers' life quality in the given market, (4) potential to develop additional, value adding services is also improved, (5) ability to internationalize is increased, etc.

On the other hand, as negative effects authors emphasize (Marjanen 2000; Dawson 2006; Haines 2007; Amato and Amato 2009; Knezevic and Jagic, 2012): (1) large retailers have increased bargaining power which allows them to determine and set the price and other contractual conditions towards their suppliers, (2) wealth is accumulated in a limited number of companies and concentration decreases the level of competition, (3) the market entrance for new players becomes very though or impossible, (3) as dominant company controls all market processes towards supplier and consumer market, at some point of time improvements in technology, service and processes become obsolete, (4) as there is a lack of competition, the customers pays higher prices for the same quality of products or services.

There are two basic ways of acquiring a leading market position (Segetlija et al. 2011): (1) rapid organic growth of one or several companies in the market, and (2) concentrations throughout: mergers and acquisitions. While in the first case, a legal regulation is introduced to prevent

misuse of the acquired leading position in the market, in the second case, legal regulations are set to control the concentration process as well. The latter mentioned concentrations (those via mergers and acquisition) are regulated by the state in order to avoid substantial lessening of competition at a certain market (Knezevic and Jagic 2012).

Mešić (2015) observed concentration in food retail sector in 2012. The conclusion about achieved concentration level he had brought only by calculating market shares. The author had remarked that the concentration level of the top 10 food retailers is higher in the developed countries of the European Union than in the other observed countries. In the same paper author had observed the concentration level of the top 250 companies with the highest retail sales in 2012 observing it by different aspects like by countries or regions. However, Mešić (2015) did not use any of specialized concentration measures in its analysis.

Martens et al. (2006) emphasize that the retail grocery concentration, measured by concentration ratio where the share of the four largest companies in the total retail companies is observed (concentration ratio 4), rose from 17.8 in 1982 to 43.0 in 1999. In the in-depth analysis, authors observe effect of Wal-Mart's development on market concentration. Despite Martens et al. (2006) conducted panel analysis to determine effects of Wal-Mart on concentration level they actually made conclusions about concentration levels by observing concentration ratio 4 values in different years and U.S. states.

Burt, Sparks and Telle (2010) focused on inspecting retailing in the United Kingdom. They concluded that in the United Kingdom, as in other European retail markets, the increase in concentration level is present. It has to be emphasized that this conclusion was made only by observing concentration ratio values based on market shares of retail sellers. Burt, Sparks and Telle (2010) had not used additional concentration measures, which would support the conclusions about concentration levels.

Konig (2009) observes concentration trends among food suppliers and retailers in selected OECD countries, with special focus on Hungary as a transition country. Konig (2009) emphasizes foreign direct investments in some cases could have significant impact on concentration levels of food suppliers and retail sellers. In the paper, again, the concentration level was observed by using concentration ratios only.

Knezevic et al. (2014) calculated concentration ratios based on top 4, 5 and 10 leading grocery retailers' market shares in the EU grocery retail market. They conclude that all calculated ratios on EU level grew from 2000 to 2011 and that the concentration of grocery retail is one of the obvious ongoing economic trends in EU meaning that large retailers are taking larger part of grocery retail market each year in analysed period.

According to the brief literature review, it can be concluded that retail sales concentration was analysed by other authors. Unfortunately, they have based their conclusion about achieved concentration level at retail sales by using concentration ratios only. On that way other concentration measures, which would help to understand achieved concentration level and its trends better, were unjustly neglected.

### 3 Data and methods

In the paper, 250 companies with the highest retail sales in 2010 and in 2014 are observed. The data about the retail sales are taken from the National Retail Federation (2012; 2016). It has to be emphasized that the National Retail Federation consulted a large number of different sources to develop the list of 250 companies with the highest retail sales. Consequently, because of different methodologies used by the sources, some differences in retail sales values between the real ones and the used ones may be present. However, it is assumed that those differences are negligible and that used retail sales values are very accurate.

In order to measure concentration level among 250 companies with the highest retail sales in the chosen years, five concentration measures will be applied: the concentration ratio, the Gini's concentration coefficient, the Herfindahl-Hirschman's concentration index, the Rosenbluth's concentration index and the Hall-Tideman's concentration index. In the analysis both, unstandardized and standardized, versions of the chosen concentration measures will be observed. However, in order to make conclusions about achieved concentration levels, the standardized concentration measures are going to be preferred. The reason for such decision lies in the fact that standardized concentration measured can take a value from the 0 to 1 interval whereas unstandardized concentration measures are not set to get a value from that interval. On that way, unstandardized concentration measures could lead to wrong conclusions about achieved concentration level. Still, because the number of observed companies is quite large, very large differences between unstandardized and standardized values of the selected concentration measures are not expected.

Concentration ratio is very simple and the most used concentration measure that was developed at the beginning of the 19th century (Barbezat 2003). Concentration ratio shows the share of the certain number of units with the highest value of the observed variable in the total value of the observed variable when all units are taken into account. Concentration ratio is defined by equation (1) whereas standardized concentration ratio is given by equation (2) as follows:

$$CR_r = \frac{\sum_{i=1}^r x_i}{\sum_{i=1}^N x_i}, \quad r = 1, 2, \dots, N, \quad (1)$$

$$CR_r^* = (CR_r - 1/N) / (1 - 1/N), \quad r = 1, 2, \dots, N, \quad (2)$$

where  $CR_r$  is concentration ratio for first  $r$  units with the highest value of the observed variable,  $\sum_{i=1}^r x_i$  is sum of values of the observed variable for first  $r$  units,  $\sum_{i=1}^N x_i$  is sum of values of the observed variable for all  $N$  units,  $CR_r^*$  is standardized concentration ratio for first  $r$  units with the highest value of the variable considered,  $N$  is the total number of observed units.

Gini's concentration coefficient is based on the Lorenz concentration curve (Needleman 1978; Podder 1995). Whilst the Lorenz concentration curve is focused on graphical presentation of concentration, Gini's concentration coefficient uses area under the Lorenz concentration curve to estimate concentration level. Gini's concentration coefficient and standardized Gini's concentration coefficient are calculated as follows:

$$G = \left[ 2 \cdot \sum_{i=1}^N ix_i - (N+1) \sum_{i=1}^N x_i \right] / \left( N \cdot \sum_{i=1}^N x_i \right), \quad (3)$$

$$G^* = G \cdot N / (N-1), \quad (4)$$

where  $G$  is Gini's concentration coefficient,  $N$  is the total number of observed units,  $i$  is rank of an unit,  $i = 1, 2, \dots, N$ ,  $x_i$  is the value of the observed variable for unit  $i$ ,  $G^*$  is standardized Gini's concentration coefficient. It has to be emphasized that units with lower values of the observed variable have lower ranks in compare to units with higher variable values. On that way, the unit with the smallest variable value has rank 1, the next unit by variable value has rank 2 and so on.

The Herfindahl-Hirschman's concentration index, which is one of the most used concentration measure in economy, is used as a monopoly level indicator on the market (Bikker and Haaf 2002). The Herfindahl-Hirschman's concentration index is defined as squared proportions of market shares of enterprises in an industry branch (Herfindhal 1950; Hirschman 1980). Consequently, the Herfindahl-Hirschman's concentration index and the standardized Herfindahl-Hirschman's concentration index are equal to:

$$HHI = \sum_{i=1}^N p_i^2, \quad (5)$$

$$HHI^* = (HHI - 1/N) / (1 - 1/N), \quad (6)$$

where  $HHI$  is the Herfindahl-Hirschman's concentration index,  $p_i$  is proportion or share of the  $i$ -th unit in the total value of the observed variable,  $HHI^*$  is the standardized Herfindahl-Hirschman's concentration index,  $N$  is the total number of observed units.

The Rosenbluth's concentration index emphasizes importance of units with lower variable values (Rosenbluth 1955). Furthermore, Rosenbluth's concentration index is in relation with Gini's concentration coefficient. Consequently, the Rosenbluth's concentration index and the standardized Rosenbluth's concentration index are calculated by using following equations:

$$RI = 1 / \left( 2 \cdot \sum_{i=1}^N jp_i - 1 \right) = 1 / [N \cdot (1 - G)], \quad (7)$$

$$RI^* = (RI - 1/N) / (1 - 1/N), \quad (8)$$

where  $RI$  is the Rosenbluth's concentration index,  $j$  is rank of an unit,  $j = N, N-1, N-2, \dots, 2, 1$ ,  $p_i$  is proportion or share of the  $i$ -th unit in the total value of the observed variable,  $RI^*$  is the standardized Rosenbluth's concentration index,  $N$  is the total number of observed units. In opposite to the Gini's concentration coefficient, here units with higher values of the observed variable have lower ranks in compare to units with lower variable values. In other words, the unit with the largest variable value has rank 1, the following unit by variable value has rank 2 and so on.

Very similar concentration measure to the Rosenbluth's concentration index is the Hall-Tideman's concentration index (Hall and Tideman 1967; Bikker and Haaf 2002). The main difference can be found in the fact that the Hall-Tideman's concentration index, as opposite



to the Rosenbluth's concentration index, more importance gives to units with larger values. Therefore, higher ranks are given to the units with higher variable values. The Hall-Tideman's concentration index and the standardized Hall-Tideman's concentration index can be calculated as follows:

$$HTI = 1 / \left( 2 \cdot \sum_{i=1}^N i p_i - 1 \right), \quad (9)$$

$$HTI^* = [HTI - 1 / (2N - 1)] / \{ (N - 1) / [N \cdot (2N - 1)] \}, \quad (10)$$

where  $HTI$  is the Hall-Tideman's concentration index,  $i$  is rank of an unit,  $i = 1, 2, \dots, N - 2, N - 1, N$ ,  $p_i$  is proportion or share of the  $i$ -th unit in the total value of the observed variable,  $HTI^*$  is the standardized Hall-Tideman's concentration index,  $N$  is the total number of observed units.

Depending on the concentration limits definition, the conclusion about achieved concentration level can be made on different ways. Here five concentration levels are recognized and the limits for making conclusions about achieved concentration levels are shown in Table 1. However, because behind the Herfindahl-Hirschman's concentration index different approach to concentration evaluation can be found, this concentration measure has different defined limits to make conclusions about achieved concentration levels. So, in the case when the Herfindahl-Hirschman's concentration index is lower than 0.01, a perfect equality is reached, if it is between 0.01 and 0.15, a low concentration level is achieved, if it is between 0.15 and 0.25, a moderate concentration level is present and if the Herfindahl-Hirschman's concentration index is equal to 0.25 or higher, the conclusion about high concentration level presence follows.

**Table 1:** Concentration measures values and corresponding concentration level, except for the Herfindahl-Hirschman's concentration index

Concentration measure value	Concentration level
0.00	Perfect equality
0.00 – 0.25	Low
0.25 – 0.40	Low to moderate
0.40 – 0.60	Moderate
0.60 – 0.75	Moderate to high
0.75 – 1.00	High
1.00	Perfect inequality

After the selected concentration measures calculation and making conclusion at each concentration measures, the general conclusion about achieved concentration level in 2010 and in 2014 will be made. Finally, the achieved concentration levels in the observed years are going to be compared.

It has to be emphasized that before concentration analysis, retail sales of the top 250 world retailers in 2010 and 2014 will be examined by using descriptive statistics approach.

#### 4 Descriptive statistics analysis of retail sales in 2010 and in 2014

In the paper, top 250 world retailers according to their retail sales value in 2010 and in 2014 are observed. Despite the same number of companies is observed in the selected years, it does not necessary means that the same companies are included in the analysis. In dependence of it retail sales value a company could be included in the top 250 in 2010 but not in 2014 and vice versa. This situation can be illustrated if only top 20 world retailers in 2010 and in 2014 are observed. The list of top 20 world retailers in 2014 and comparison to their rank in 2010 is given in Table 2.

**Table 2:** Top 20 World retailers in 2014, according to retail sales values, and comparison to their rank in 2010, in millions of US \$

Retail sales rank, 2014	Retail sales rank, 2010	Company	Country of origin	2014 retail sales (US\$m)	2010 retail sales (US\$m)	Index, 2010 = 100
1	1	Wal-Mart Stores, Inc.	USA	482,130	418,952	115
2	7	Costco Wholesale Corporation	USA	116,199	76,255	152
3	5	The Kroger Co.	USA	109,830	82,189	134
4	6	Schwarz Unternehmenstreuhand KG	Germ.	94,448	79,119	119
5	9	Walgreens Boots Alliance, Inc.	USA	89,631	67,420	133
6	8	The Home Depot, Inc.	USA	88,519	67,997	130
7	2	Carrefour S.A.	France	84,856	119,642	71
8	10	Aldi Einkauf GmbH & Co. oHG	Germ.	82,164	67,112	122
9	3	Tesco PLC	Un. Kin.	81,019	92,171	88
10	28	Amazon.com, Inc.	USA	79,268	33,251	238
11	11	Target Corporation	USA	73,785	65,786	112
12	13	CVS Health Corporation	USA	72,007	57,345	126
13	4	Metro Ag	Germ.	68,066	88,931	77
14	17	Aeon Co., Ltd.	Japan	63,635	53,458	119
15	20	Lowe's Companies, Inc.	USA	59,074	48,815	121
16	15	Auchan Holding SA	France	59,050	55,212	107
17	210	Albertsons Companies, Inc.	USA	58,734	4,000	1,468
18	16	Edeka Group	Germ.	52,477	54,072	97
19	26	Casino Guichard-Perrachon S.A.	France	51,257	37,875	135
20	14	Seven & i Holdings Co., Ltd.	Japan	47,795	57,055	84

According to Table 2 Wal-Mart Stores, Inc. convincingly has the highest retail sale in 2014. Costco Wholesale Corporation on the second place had retail sale more than four times lower than Wal-Mart Stores, Inc. in 2014. Very similar relation between Wal-Mart Stores, Inc., the first one in 2010, and Carrefour S.A., that was second in 2010, was in 2010 also. The most companies in top 20 increased their retail sales in 2014 in compare to 2010. The huge increase in retail sales value of Albertsons Companies, Inc. has to be emphasized. Albertsons Companies, Inc. increased its retail sales for 1,368% in 2014 in compare to 2010. On that way, Albertsons Companies, Inc. managed to jump from place 210 in 2010 to place 17 in 2014. On the other side, some companies had decrease in their retail sales and, consequently, they did not enter the top 20 World retailers list in 2014 again.

**Table 3:** Basic descriptive statistics results for variable retail sales of the top 250 world retailers in 2010 and 2014, in millions of US \$

Statistics	2010 retail sales (US\$m)	2014 retail sales (US\$m)
Count	250	250
Sum	3,940,748	4,308,416
Mean	15,763	17,234
Standard deviation	31,321	35,564
Coefficient of variation (%)	198.70	206.36
Kurtosis	111.13	118.06
Skewness	9.13	9.48
Mode	6,020	7,894
Minimum	3,292	3,508
1st quartile	4,531	4,832
Median	7,665	7,430
3rd quartile	14,058	15,354
Maximum	418,952	482,130
Range	415,660	478,622
Interquartile range	9,527	10,522

According to Table 3, the total retail sales value of the top 250 World retailers was 3,940,748 million of US \$ in 2010 and 4,308,416 millions of US \$ in 2014. Therefore, the retail sales value increase for 9.33% in 2014 in compare to 2010. The mean retail sales value of the top 250 World retailers increased for the same rate also.

Measures of data variability, standard deviation and coefficient of variation also increased in 2014 in compare to 2010. Standard deviation increased for 13.55% and coefficient of variation for 3.86%. On that way, the both measures indicated that the data variability is increased in 2014 in compare to 2010 meaning that the differences in retail sales values between the top 250 World retailers became larger. So, standard deviation and coefficient of variation are suggesting that the concentration level of the top 250 World retailers, according to variable total retail sales, increased in 2014 in compare to 2010.

According to the skewness indicator values, in both observed years the distributions of the total retail sales values of the top 250 World retailers are very positively skewed. The reason for such situation can be found in the fact that there are some retailers with significant higher retail sales value than the other retailers. On that way, the skewness indicators are pointing out that some concentration level is present here. Furthermore, the skewness indicator is 3.81% higher in 2014 than in 2010. That could be a sign that the concentration level in 2014 is higher than in 2010.

Measures of data spread, range and interquartile range, increased 15.15% and 10.44%, respectively, in 2014 in compare to 2010. Those are signs that the differences in retail sales values between the top 250 World retailers are becoming larger. Therefore, the both observed measures of data spread are suggesting concentration level increase in 2014 in compare to 2010.

## 5 Concentration level analysis

The conducted descriptive statistics analysis suggested that concentration level is higher in 2014 than in 2010. However, the exact concentration level will be measured by the selected concentration measures. In Table 4 the values of unstandardized concentration measures in 2010 and in 2014 are provided.

**Table 4:** Concentration measures values, 250 companies with the highest retail sales, 2010 and 2014

Concentration measure	2010		2014		Index, 2010 = 100
	Value	Concentration level conclusion	Value	Concentration level conclusion	
Concentration ratio 1	0.1063	Low	0.1119	Low	105.26
Concentration ratio 2	0.1367	Low	0.1389	Low	101.61
Concentration ratio 4	0.1826	Low	0.1863	Low	102.00
Concentration ratio 10	0.2943	Low to moderate	0.3036	Low to moderate	103.16
Gini's concentration coefficient	0.5682	Moderate	0.5771	Moderate	101.57
Herfindahl-Hirschman's concent. index	0.0197	Low	0.0210	Low	106.27
Rosenbluth's concentration index	0.0093	Low	0.0095	Low	102.11
Hall-Tideman's concentration index	0.0026	Low	0.0025	Low	99.43

For the purpose for determining concentration level, four concentration ratios have been developed. The first concentration ratio or concentration ratio 1 measures concentration level by taking into account only company with the highest retail sales value. On the other hand, concentration ratio 2 takes into account two companies with the highest retail sales values, concentration ratio 4 takes four companies into account and concentration ratio 10 includes 10 companies. According to Table 4 concentration rates 1, 2 and 4 show that concentration level might be considered to be low whereas concentration ratio 10 points out that concentration rate was low to moderate in 2010. The same conclusions about concentration level, based on the concentration ratios, can be made for 2014 also. However, all four concentration ratios show that concentration level is higher in 2014 than in 2010. The increase in concentration level ranges from 1.61%, according to concentration ratio 2, to 5.26%, according to concentration level 1.

Gini's concentration coefficient is the only concentration measure that shows moderate concentration levels in both observed years. Again, the value of Gini's concentration coefficient increased from 0.5682 in 2010 to 0.5771 in 2014. The 1.57% increase in Gini's concentration coefficient between these two years confirmed that concentration level in 2014 is somewhat higher in 2014 than in 2010.

Herfindahl-Hirschman's concentration index, Rosenbluth's concentration index and Hall-Tideman's concentration index show that concentration levels in 2010 and in 2014 can be considered low. Herfindahl-Hirschman's concentration index showed that concentration level increased for 6.27% in 2014 than in 2010 whereas Rosenbluth's concentration index has shown concentration level increase of 2.11%. However, Hall-Tideman's concentration index is the only observed concentration measure that has shown concentration level decrease in 2014 in compare to 2010.

**Table 5:** Standardized concentration measures values, 250 companies with the highest retail sales, 2010 and 2014

Concentration measure	2010		2014		Index, 2010 = 100
	Value	Concentration level conclusion	Value	Concentration level conclusion	
Standardized concentration ratio 1	0.1027	Low	0.1083	Low	105.47
Standardized concentration ratio 2	0.1332	Low	0.1354	Low	101.66
Standardized concentration ratio 4	0.1793	Low	0.1830	Low	102.05
Standardized concentration ratio 10	0.2915	Low to moderate	0.3008	Low to moderate	103.20
Standardized Gini's concen. coefficient	0.5705	Moderate	0.5794	Moderate	101.57
Stan. Herfindahl-Hirschman's con. ind.	0.0158	Low	0.0170	Low	107.86
Stan. Rosenbluth's concen. index	0.0053	Low	0.0055	Low	103.72
Stan. Hall-Tideman's concen. index	0.2739	Low to moderate	0.2667	Low to moderate	97.36

In Table 5 values of standardized versions of the observed concentration measures are shown. The standardized concentration measures take into account number of observed values and on that way the values of unstandardized concentration measures are corrected and reduced to interval [0,1]. Consequently, more accurate conclusions about achieved concentration level by using Table 5 can be brought. If the conclusions about achieved concentration level between unstandardized and standardized concentration measures are compared it can be concluded that the difference is present only if Hall-Tideman's concentration indices are observed. According to Hall-Tideman's concentration index low concentration level was in 2010 and in 2014. However, according to the standardized Hall-Tideman's concentration index low to moderate concentration level was present in 2010 and in 2014.

Because the observed number of units is quite large, the differences between unstandardized and standardized concentration measures values are not very large when concentration ratios and Gini's concentration coefficients are observed. Consequently, the estimated increase in concentration levels at standardized versions of concentration ratios and the Gini's coefficient are very similar to those, which have been estimated by their unstandardized versions. Larger differences in estimated change of concentration level between 2014 and 2010 are present if the Herfindahl-Hirschman's concentration indices, the Rosenbluth's concentration indices and the Hall-Tideman's concentration indices are observed. According to the standardized Herfindahl-Hirschman's concentration index concentration level increased for 7.86% in 2014 in compare to 2010 whereas the standardized Rosenbluth's concentration index shows increase of 3.72%. On the other hand, the standardized Hall-Tideman's concentration index indicated that concentration level decreased for 2.64% in 2014 in compare to 2010.

Taking everything into account, especially if standardized concentration measures are observed, it can be concluded that the most of the observed concentration measures show that concentration level of the top 250 World retailers according to their retail sales is low in both years, 2010 and in 2014. However, all standardized concentration measures, except the standardized Hall-Tideman's concentration index, have shown that concentration level increased in 2014 as compared to 2010.

## 6 Conclusions

The analysis has shown that the retail sales concentration level, measured through retail sales values, is low in the both observed years, i.e. 2010 and 2014. However, the vast majority of applied concentration measures have shown that the retail concentration level increased slightly in 2014 in comparison to the 2010 level.

In the further research, changes in the retail concentration level should be monitored continuously to enable a timely reaction if the concentration level becomes too high. Now, the retail concentration level seems to be quite low for analysed units, but it has to be taken into account that only retailers at the world level were observed. In some countries, the retail concentration level still could be very high, and this might be a subject of the further research.

The results shown here, which describe an increased concentration level of the biggest world retailers in 2010 and 2014, should not be considered separately, but combined with other development level indicators, and in such a combination, they may be useful to managers. The information on an increased concentration level of retail sales may influence their overall knowledge, necessary for decision making of those who would like to invest in the retail sales companies or units in the countries all over the world. Maybe some innovations should be introduced to change the way of offering and buying goods, to create not only more profit, but also more satisfied customers, saving the environment and improving the sustainable development at the same time.

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# Doctoral Workshop

Eduardo Tomé



## Innovation Novelty and International Linkages of SME in the new and potential EU member states of Central and South Eastern Europe

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**Abstract:** The European Commission proudly calls small and medium enterprises (SME) the backbone of the European economy, accounting for 99% of all businesses and 67% of all jobs in the private sector in the European Union (EU) and promotes internationalization of SME which “can result in competitiveness gains at firm level, which may eventually translate into improved economic performance at national and European level” (European Commission 2014, 9). Also, the European Commission (2010, 8) emphasizes the strong link between internationalization of SME and innovation and reports that 26% of internationally active SMEs introduced innovations new to their sector in their country.

Yet, SME in the new and potential EU member countries in Central and South Eastern Europe (CSEE) face the overlapping challenges of transition from centrally-planned to market-based systems and EU accession (cf Smallbone and Rogut 2005, Hashi and Krasniqi 2010) or accession preparations. Furthermore, innovation productivity is low in the region (cf Krammer 2009, 851; Radosevic and Auriol 1999). The SME’s innovativeness is however directly linked to whether their countries are “a liability or an asset to the EU’s becoming ‘the most competitive and dynamic knowledge-based economy in the world’” (Piech and Radosevic 2006, xix) as stated in the European Council’s Lisbon agenda.

Knowledge networks have been identified as crucial element in SME performance in less competitive regions (Huggins and Johnston 2009). However, which linkages foster innovativeness remains subject to debate (see section c) theoretical base). In this context, the paper analyses the international linkages of innovative SME in CSEE and how they impact the novelty of their innovations: Do international linkages foster innovations new to the international or local market? Which role for different linkage types? Is there a difference between SME in the new and the potential EU member states in CSEE?

**Keywords:** Innovation, SME, Internationalization, Knowledge Networks, Innovation Novelty

### Purpose

To shed light on these questions, the international linkages of innovative SME are analysed using recent enterprise-level data from the fifth round of the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the World Bank and the EBRD in 2011-2014. For the first time, the survey queried detailed innovation specific information, including

the most important linkage used and innovation novelty. Hypotheses are tested using a logit model specification.

This cross-country and cross-sector analysis extends the current understanding of the influence of international linkages on the novelty of SME's innovations. It is based on the analysis of a recent enterprise-level dataset covering new and potential EU member states. The main contribution is that the paper differentiates the influence of international linkages on different levels of innovation novelty.

### **Theoretical basis**

The question of diffusion of innovation and knowledge in networks, collective processes or cooperations is discussed extensively in the literature (for an overview see Tödtling et al. 2009, 59, Phelps et al. 2012, Ozman 2009). Innovative activities of an enterprise are influenced by its links to information, knowledge, technologies, practices and human and financial resources (OECD /Eurostat 2005, 76). By giving access to these, an enterprise's international, national and local linkages may facilitate different levels of innovation novelty (Amara et al. 2008, 451-453, OECD /Eurostat 2005, 57-59). For example, type and number of partners, as well as active or passive, short or long linkages can be analysed. However, no consensus has yet been reached on which characteristics of the linkages are beneficial for innovation (see f.e. Boschma and Frenken 2010, Landry and Amara 2005, Freel and Jong 2009, Mention 2011, Lasagni 2012, Nieto and Santamaría 2007, Zeng et al. 2010, Becker and Dietz 2004, Radas and Bozic 2009, Barbosa et al. 2013).

### **Results**

Preliminary results indicate that different linkages are beneficial at different levels of novelty. For example, while cooperation with foreign clients increases the probability that an enterprise introduced a product innovation new to the national level, it does not seem to matter in product innovation new to the international level.

The results have implications for policy makers and managers in SME in the region alike: different international linkages facilitate different levels of innovation novelty. Policies aiming at technology and knowledge transfer as well as management strategies in firm networking can be refined accordingly. Policies or management strategies aimed at cooperative linkages to foreign partners might be a promising way to foster firm level innovation and competitiveness in transition economies and other catching-up economies.

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## What is the relation of mental time travelling and life goals? Proposing a field experiment.

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**Abstract:** The purpose of this paper is to find out how mental time travelling into a perfect and desired future as used in participatory workshops within sustainability studies and case studies from organizational learning impact life-goals and thus need satisfaction and subjective well-being.

Recent research in knowledge management and organizational learning focuses on the future and visions about the future in order to guide strategy development and organizational learning processes (Boyatzis, 2006; A. Kaiser & Kragulj, 2016; A Kaiser & Fordinal, 2010; Alexander Kaiser, Fordinal, & Kragulj, 2014; Luria & Berson, 2013; Nonaka, Kodama, Hirose, & Kohlbacher, 2014; Nonaka, Toyama, & Konno, 2000; Nonaka & Toyama, 2007).

One way to think about the future is “Mental time travelling”, which “can be described as a method of guiding the participants of a workshop into a picture or a whole series of pictures of the future” (Cuhls, 2016). Its cognitive foundations lie in concepts such as episodic future thought (Atance & O’Neill, 2001; Szpunar, 2010) or prospection (Szpunar, Spreng, & Schacter, 2014).

It has been recently stated that thinking about the future in vivid terms increases subjective perception of meaning in life (Vess, Hoeldtke, Leal, Sanders, & Hicks, 2017) and thus, wellbeing. Furthermore, “mental time travel also helps people address significant psychological needs” (Vess et al., 2017).

“Mental time travelling” is prominently used as an intervention on an individual or group level (Kaiser & Kragulj, 2016; Kragulj, 2014) in order to foster organizational learning processes. It is also used facilitate policy making (Quist & Vergragt, 2006; Vergragt & Quist, 2011) within sustainability studies. Furthermore, it serves as a tool for strategic planning in domains such as electric mobility (Zimmermann, Darkow, & von der Gracht, 2012), sustainable energy systems (Wächter, Ornetzeder, Rohrer, Schreuer, & Knoflacher, 2012), the future of biomass (Breukers, Hisschemöller, Cuppen, & Suurs, 2014) or urban development (Neuvonen & Ache, 2016). Mental time traveling and “interacting with an envisioned future”, a method in the future is imagined as if it is already present and in a very desirable and even perfect way, is used within such participatory workshops (Kragulj, 2014) to collect data about wishes, dreams, desires or needs.

The Self-determination theory postulates that humans have to satisfy three basic needs (the need for autonomy, competence and relatedness) which motivate our acting. Thus, their fulfillment is necessary to flourish and thrive (Ryan & Deci, 2000). Kasser and Ryan (1996) draw a connection between needs and life goals and state that only certain life goals lead to the satisfaction of three basic needs. Needs are reflected in intrinsic life goals such as meaningful relationships, personal growth, and community contributions whereas having extrinsic life

goals such as wealth, fame, and image does not lead to basic need satisfaction (with the exception of competence) (Klusmann, Trautwein, & Lüdtke, 2005). The aspiration index measures whether a person's life goals are more intrinsically or extrinsically motivated (Kasser and Ryan, 1996; Klusmann et al., 2005). Furthermore, following extrinsic life goals is positively related to a decreased psychological well-being (T. I. M. Kasser & Ahuvia, 2002).

Even though the relation of mental time travelling and wellbeing has been object of psychological studies (Vess et al., 2017), the relation of mental time travelling and how intrinsically or extrinsically people are motivated to achieve life goals remain unclear.

To find out whether mental time travelling and imagining a perfect future is connected to how we set life goals and thus satisfy our basic needs does not only could point at possible new forms of interventions on an individual but also collective level.

Does imagining a perfect future while mental time travelling lead to a change in life goals? It has been stated that such interventions are effective in decreasing materialistic (and thus, extrinsic) goals while they activate and encourage intrinsic and self-transcendent values/goals (Kasser, 2016).

The following directed hypothesis are established:

- 1) Mental time travel into a desired and perfect future changes the subjective importance of intrinsic life goals.
  - Mental time travel into a desired future leads to an increase of subjective importance of intrinsic life goals.
  - Mental time travel into a desired future leads to a decrease of the subjective importance of extrinsic goals.
- 2) Mental time travel into a desired and perfect future changes the subjective evaluation whether life goals can attained.
  - Mental time travel into a desired future leads to an increase in assuming intrinsic life goals can be attained.

Mental time travel into a desired future leads to no change in assuming the extrinsic goals can be attained.

To test our hypothesis, we will conduct a field experiment using a mental time travelling exercise. At least 50 undergraduate students with an economics background will be tested in their classroom and receive a mental time travel intervention into a desired personal future. In the control-group, also 50 undergraduate students with economics background will listen to a short story for the same time of the mental time travel exercise, unrelated to the topic of vision and future. Afterwards, we will ask students about their long term goals and assess intrinsic and extrinsic motivation using the German version of the "Aspiration index" (Kasser & Ryan, 1996; Klusmann et al., 2005) as well as their wellbeing using the German version of the EUROHIS-QOL (Brähler, Mühlhan, Albani, & Schmidt, 2007).

It will be important to relate the findings to earlier literature about materialistic values and well-being in business students, as the populations seems to differ from the general population regarding intrinsic and extrinsic life-goals (T. I. M. Kasser & Ahuvia, 2002).

**Keywords:** mental time travelling, hypothesis testing, field experiment, organizational learning, life-goals

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# The Impact of Political Election on Exchange Rate – the Case of Croatia

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**Abstract:** This empirical research is testing the impact of political election on exchange rate policy, i.e. appreciation/depreciation by regression model in Croatia. This research tried to find political monetary cycles in exchange rate Under Mundell-Fleming limitation. The exchange rate is researched in line with theoretical overview which suggests that political authority in pre-election times tries to make better economic conditions like increase economic growth or decrease unemployment in order to be reelected. Additionally, the connection between elections and exchange policy in pre-election and postelection period is analysed in the theoretical part, as well as the reason for this kind of connectivity. The exchange rate policy in Croatia and the economic fundament which determined the exchange rate is analysed too. Empirical research is based on example of Croatia from 2000 until 2016 on quarterly data. The results of the empirical research reject the hypothesis that is set regarding the election cycles influence on the fluctuations of real exchange rate. In Croatia under the limitations of central bank independency, managed floating exchange rate and the endogeneity of political election date political business cycles of real exchange rate have not been found.

**Keywords:** real exchange rate, political monetary cycles, Croatia

## 1. Introduction

Theory development that connects political elections with macroeconomic variables, monetary and fiscal policies begins with the Political Business Cycle (PBC) definition written by Nordhaus (1975). In his claims, Nordhaus states political representatives only have interest in political success in terms of reelections and in line with that they processing various short term realizations of economical pinpoints, such as, pre-election promises of increasing employment rate and gross domestic product (GDP). Nordhaus describes this as conducting of economical policies through as an opportunistic PBC with the exploitation Phillips curve. That same model has found strength in monetary policies. From those claims further development is gained in political monetary cycles (PMC) as changes in monetary instrumentation, aggregations and monetary measures.

Hibbs (1977) upgrades the PBC theory by introducing additional ideological characteristics in establishing and achieving economical objectives. In his theory, Hibbs defines the means of the bi-partisan system and splits the political parties by the ideological views defining left and right oriented parties. Left oriented parties are similar to those who during their mandates



have the biggest concern on achieving higher employment rates and GDP. Right oriented parties, on the other hand, put efforts in price stability and various entrepreneurs investments. Political cycles and their interaction with the exchange rate goes hand in hand with the PBC theory, in the narrow sense under the opportunistic political monetary cycles. PMC analyzes all changes in monetary and credit aggregates, instruments and monetary political measures during election times.

Theory which considers exchange rate connection with political elections takes as starting point that exchange rate serves as instrumental variable which is subject and liable to the political interventions with political authority. Economical expansion with fiscal and monetary policies enforces influence on exchange rate changes during pre-election times.

Two main exchange rate regimes are known as fixed and fluctuated. Each one has their own characteristic and specific strengths and weaknesses in the protection of short terms political election iterations.

Fixed exchange rate regimes guarantee financial and economical stability and can be perceived as a version of the central bank independence in the manner of prevention political election interventions (Dincer, Eichengreen,2012). However, the countries which used fixed regimes are more exposed to speculative attacks and financial crisis. They are also more exposed to rate devaluation and they do not provide effective short term protection from political opportunism. In conclusion, there is an increased use of fixed exchange rates in smaller and open countries, as well as, countries with higher dolarization (euroization).

Fluctuated exchange rate regimes have more variation. Free fluctuated rate system is recommended for larger and more competitive countries, as well as, states with high economical development and capital mobility. Flexible exchange rates allow market fluctuations of rates which is very important for the election period. Its role during election time can be visualized in post election times representing one of the instruments of corrections on expansive pre-elections economical policies (Grier, 2003:1).

In this research work, empirical analysis is conducted on political elections influence on exchange rate in Republic of Croatia from 2000 until 2016. Conducted inquiry directs on non-existence of such cycles, however those are indicative proofs which require a further detailed analysis of political monetary cycles to form a final conclusion. According to author cognitions, no investigations concerning the PMC in Croatia have been conducted. Only empirical researches about political fiscal cycles in Croatia have been conducted and confirmed (Vučković, 2010, Mačkić, 2014).

## **2. Theory of exchange rate and political business cycles**

In the theory which observes connectivity between exchange rate and political cycles as a starting point takes the exchange rate as an instrument of monetary policy liable to political influence. Expansive economical policy driven by political authority during pre-election period has influence on exchange rate changes during election period. Short term fluctuations in exchange rates can be viewed as political opportunism.

Smaller and open countries, like Croatia, have chosen pegged exchange rates which are not fully fixed, while leaving the monetary government enough space for active leading of monetary policy. Political representatives during pre-election times are prone to avoid inflation and rate devaluation independently of their political ideology. However, expansive fiscal policy with tools of political authority effects the inflation rate and depreciation appearance during post election times. In some rudimentary form the need for devaluation can occur if there is justification in the market for it.

Depreciation of rates bring in certain signals to the electorate about incompetence of political establishment. Those signals are directly connected with the electorate and they can be observed through the weakening of the population purchasing power, prices instability, adverse influence on domestic debt etc. As such, depreciation represents an unattractive political election strategy which at all costs government absolutely seeks to avoid or postpone instead. Actual political government during pre-election times are opportunistically motivated for the conduction of price stability using the anchorage of exchange rate with real appreciation rate. The expansive political approach results in balancing of exchange rates during post election period, respectively its depreciation after parliamentary election or government shift (Gamez, 2013).

Although direction of conducting monetary policies stays within the frames of nominal exchange rates, nominal exchange rates do not show significant cyclicity. Real exchange rates at the same time can reflect short term electional changes. Economical factors have incentive for finding real movements and relative prices. In general, political economy gives two competing answers about impact of election on exchange rate. First is based on rational expectation of trade makers who fully know and understand this kind of impact and adapted their behaviour to that condition. According to these views conducting of democracy is not source market disequilibrium because of the transparency of political election (Shepsele, 1979, Richards, 1999, according Freeman et.al., 1999). Second approach is based on these claims "a competing line of arguments holds that politics in general and democracy particular are inherently ill-conditioned and, by implication, that political disequilibrium is a source of swiches in currency market equilibria" (Freeman et.al., 1999). And also that other aspect of democracy, like regulatory based producing unregular and chaotic policy.

According Cermeno, et. al. (2010) reasons for exploring connectivity between real exchange rate and political elections are found in:

- Direct connection between real exchange rate and economic outcome
- Inside fixed exchange rate regime real exchange rate reflects changes during political elections
- Inflation in which additionally obstructs nominal exchange rate analysis
- A growing trend of researching real exchange rate with election cycles, respectively empirical shift from nominal to real exchange rate

Restrictions of political monetary cycles can be found under Mundell-Fleming model which states that the government can encourage only two of the next three goals:

- Capital mobility
- Fixed exchange rate
- Central bank independence

According to Clark and Hallerberg (1998) “an independent central bank may be able to prevent opportunistic business cycles when it has autonomy over monetary policy, which will be the case so long as capital is immobile, or so long as flexible exchange rates are present. When both capital is mobile and exchange rates are fixed, however, monetary policy is ineffective, and a central bank, independent or not, cannot prevent fiscal expansions”. They found that central bank independence is important to prevented opportunistic monetary cycles under capital immobility and fixed exchange rate, as well as, under capital mobility and flexible exchange rate. However, Berger and Woitek (2001) found and empirical confirmed political monetary cycles in Deutschland. Deutsche Bundesbank was often used as a synonym for the one of the most independent central bank.

### **3. Literature review**

Many theoretical and empirical studies about connection real exchange rate with election cycles unanimously conclude that pre-election time characterizes rate appreciation while post election times depreciate the real exchange rate.

Bonomo and Terra (1999) emphasize the increasing probability of real change rate during the political election period. In their research, they show that political monetary cycles give warning on the rate appreciation during pre-election times, as well as, the occurrence rate of depreciation during post election times. Short term appreciation/depreciation cycles, the authors argue, are the cause of asymmetric information of political preferences between politics and the electoral. If political preferences are known to the electoral during elections, the politician who gives priority to price stability is always victorious. However, if political preferences are not familiar to the electorate, the politician who gives priority to the equilibrium balance of payment will create the post election depreciation rate.

Frieden and Stein(2000) find a correlation in their research of election cycle and exchange rate and implicate that pre-election times are characterized with real rate appreciation, while post election times are characterized with RER depreciation. The authors suggest that real appreciation acts positively on desired political price stability and increasing population purchasing power. This also states that the actual government chooses its own political opportunistic approach, directly providing appreciation during pre-election times. After the election, the exchange rate receives invert directions, such as the occurring of significant real depreciations.

Ogura (2000) in his research of the political economy cycles in Brazil, uses the econometric autoregression model. Ogura found and confirmed that in Brazil political parties conduct political real exchange rate cycles. The exchange rate follows the electoral behaviour and cyclical movement RER which are significant during the pre-election period, the election year, (appreciation real exchange rate) and the post election period (depreciation).

Grier, Hernández-Trillo (2003) in their research use the GARCH-M model and test the political pressures on real exchange rate in Mexico and the USA. In Mexico they confirmed a short run cyclical movement in the RER, i.e. that elections significantly affect the evolution of the RER. In contrast, in testing this influence in the USA authors did not find the effect of political influence on the RER.

Cermeno, et.al. (2010) in their research focused on the interactions of exchange rate depreciation and political election. They found proof of postponed depreciation until after the elections. They also tested the influence of the central bank's independence on political exchange rate cycles. They found and concluded that the central bank's independence completely eliminates an election effect on the RER. Frieden, et.al. (2000) in their empirical research confirm that political elections and government shifts lead to devaluation of exchange rate in post election periods.

Gamez (2012) in his research of connectivity real exchange rates and political pressures in Mexico uses the econometrics Vector Autoregression (VAR) model. Gamez also confirmed a theory confirming a significant pre-election appreciation and post election depreciation. Gamez highlights advances of political economic cycles in its predictability, for example, a business sector in the acknowledgments about exchange rate changes on the base of predictable political opportunism which can adjust the market's behavior and protect itself.

Ryou (2014) tested the changes of the real exchange rate under the influence of political elections in Korea. In contrast to the research gained in Latin America, he reveals the invert direction of the real exchange rate, such as, the real exchange rate in pre-election times in Korea is characterized by depreciation. Political representatives in Korea use the depreciation exchange rate as an approach to prove their own competence.

#### **4. Political cycle and exchange rate policy in republic of Croatia**

##### **4.1. Political cycle in Croatia**

The Republic of Croatia is a parliamentary democracy. Elections in Croatia generally take place every four years, however in Croatia the election date is not exactly defined. Endogeneity defined date of election allows political representatives strategic dismiss of government in terms of the seasonal decreasing unemployment rate or economic growth.

The election system is characterized by two main parties. These two parties mainly consisted of the first parliamentary elections which were held on August 2, 1992. They either served individually or in coalition with other smaller parties, in which they alternated on the government scene.

For this research, only the needs of the parliamentary elections were observed because presidential power is mostly restricted and is assumed that it has no influence on fiscal and monetary policy.

Parliamentary elections in Croatia were held eight times. Seven times parliamentary elections were held officially, while one early parliamentary election took place in 2016. Political mandate in Croatia is legally defined and last four years.

Analysis on this research which was taken into consideration include parliamentary elections held in 2000, 2003, 2007, 2011 and 2015. During this period, the left center coalition won two times and the right center government won three times.

Table 1. Parliamentary elections in Croatia

Date of election	Results
August 2, 1992	Victory of Croatian Democratic Union (CDU)
October 29, 1995	Victory of (CDU)
January 3, 2000	Victory of <u>Social Democratic Party of Croatia (SDP)</u> with his coalition partners
November 23, 2003	Victory of CDU with his coalition partners
November 25, 2007	Victory of CDU
December 4, 2011	Victory of SDP with his coalition partners
November 8, 2015	Victory of CDU with his coalition partners
October 11, 2016	Victory of CDU

Source: State Electoral Commission of the Republic of Croatia, <http://www.izbori.hr/ws/index.html>.

#### 4.2. Exchange rate policy in Croatia

Exchange rate in the Republic of Croatia is one of the most important macroeconomic variables and instrument that provide the main goal of the Croatian National Bank (CNB) price stability. In Croatia the accepted regime is the pegged exchange rate or managed floating. In a pegged exchange rate, the rate is freely formed on the market and the CNB is actively included on the market with its intervention which provides economic stability. Officially in the Republic of Croatia boundaries of exchange rate are not determined, however, according to the interview which was given by the ex-governor of the CNB, he stated that CNB will protect the Croatian monetary unit, known as the kuna, in a span which is less than 5% (Rohatinski, 2004).

Exchange interventions represents the most active instrument regarding monetary policy which regulates price stability and rate policy in Croatia. Exchange rate is narrowly tied to long run price stability. In engaging rate auctions the CNB protects the market rate variations by holding rates in a determined frame.

To suppress appreciation/depreciation, the CNB uses foreign auction as an instrument. Exchange rate policy in Croatia is marked with a high rate of international capital inflow which is constantly pressing appreciation on the kuna. The increased demand for the kuna is usually neutralized with the creation monetary base at the CNB, using additionally administrative or non-market measures to maintain price stability.

To encourage depreciation, Croatia demands a high level of maintenance of foreign currency. This is virtually impossible to achieve in Croatia because of the high international capital inflow, as well as the high debt rate of government sectors, companies and population. In

engaging monetary policy instruments, the open market operation combined with active state support it is partially achievable. Conducting an open market operation scenario consist of the sales of the government securities the commercial banks on secondary market by a central bank.

A commercial bank with obtained cash flow from primary emission can further buy up new government securities. The government sector is able to prolong exchange demandings, while the task of central bank is to manage the depreciation rate engaging international reserve of the Croatian central bank. Open market operations were actively conducted from 2004 until 2009.

Furthermore, conducting restrictive or expansive monetary policy bears certain advantages and disadvantages. To the expert, as well as, the common population in Croatia it is believed that the monetary policy is extremely restrictive. One of the indicators of a restrictive monetary policy is long run economic recession (Vujčić, 1999). By using the exchange rate anchorage, restrictive monetary policy is enabled in high international capital inflows which in long term as theory said can lead to economy recession. Croatia's economy, until the global financial crisis, did not adopt recession features. Moreover, abroad investments in Croatia were above possible absorption of the domestic economy which partially demanded engaging non-market monetary instruments to protect price stability. Accepted regime of pegged exchange rate in Croatia allowed moderate periods of appreciation/depreciation, but was directed more so to prevent excessively appreciation, for example, an exchange rate fluctuating to 7% (Koški, 2008). In Croatia, it cannot be determined for certainty that the conducted monetary policy was truly restrictive, that the market never felt an absence of liquidity currency, that an interest rate on the money market was relatively stabilized and/or an applied monetary restriction was directed on price stability and credit activity which did not interrupt the economic growth.

Also, the official view of the International Monetary Fund regarding the kuna is that the real appreciation of the kuna is approximately 10%. Despite that, the practice of maintaining the rate has a market foundation in Croatia. Depreciation of the kuna would negatively influence the population's purchasing power, as well as, all sectors in term of increased inflation (CNB, 2014c, according Ivanov, 2014). Official data shows that the exchange value in 12/1995 was EUR 1= HRK 6.81, while in 12/1999 the exchange was EUR 1= HRK 7.67 which implies that the exchange for some time reflected a depreciation character (Bulletin of CNB, [www.hnb.hr](http://www.hnb.hr))

The central bank role which is defined by law to keep price stability, is greatly contributed by its own independency. The Croatian central bank independency is defined by law to lead towards instrumental independency. CNB is independent in its conducting of monetary policy and is independent of political pressures. Also, according to research regarding the CBI there is a noticed high level of de iure independency (Ćorić, Cvrilje, 2010).

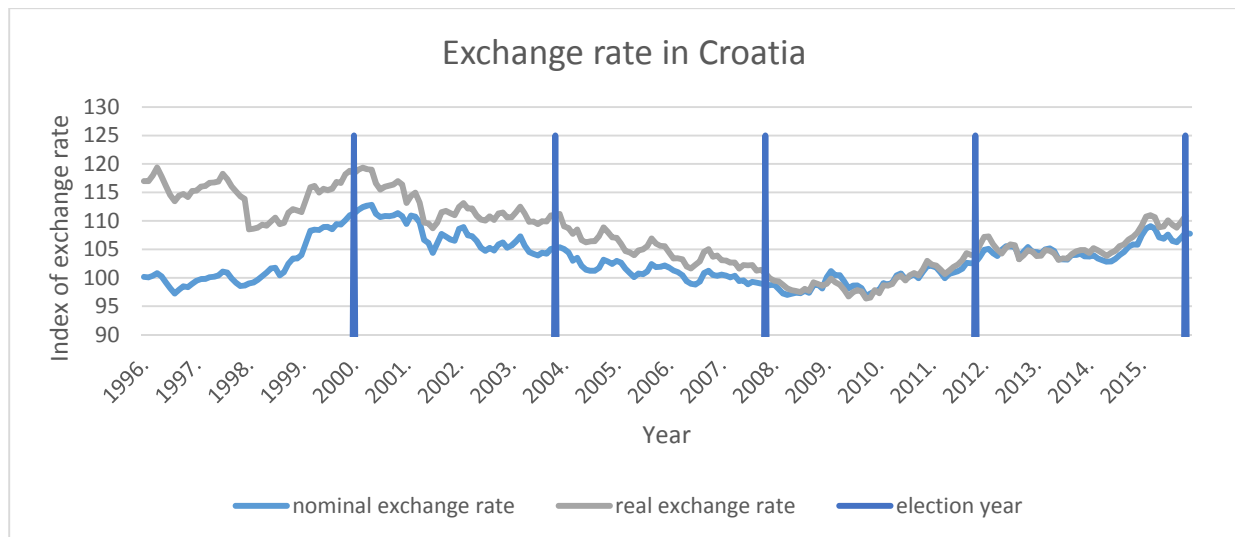


Figure 1. Index of real and nominal effective exchange rate based on consumption price index in Croatia between 1996 and 2015.

Source: Croatian National Bank / Remark: decrease of index means appreciation exchange rate

On the chart is presented the movement of the exchange rate in Croatia. Nominal and real exchange rates are positively correlated and relatively stable. On the chart it is clearly visible that the exchange rate has cyclic features in the long run. From the period between 1996 and 2000, the conducted anti-inflation stabilization program can generally be evaluated as a period characterized by slow depreciation of the real exchange rate. In 2000, the occurrence of a governmental shift took place, as well as, a shift in the central bank government and in turn the real exchange rate. In 2000 periods of relatively appreciated exchange rates began which continued even after the parliamentary elections and government shift in 2003. It lasted until the financial crisis in Croatia in 2009. Since 2009 the real exchange rate has adopted slow depreciation features.

## 5. Empirical model and results

### 5.1. Methodology

This work is conducted on the empirical research of the existence of political business cycles in a real exchange rate from the period of 2000 till 2016 using Croatia as the example. This is the tested assumption that government during the election period had an influence on the real exchange rate.

In the frames of specified theory, regarding the exchange rate and election cycle, the connectivity assumption is that government in the period prior to the elections has an influence on the appreciation exchange rate, while in the period after the elections the government has a depreciation influence on the exchange rate.

Limits of empirical research represent law central bank independence. At the central bank independence the monetary political cycles are minor or completely limited. However, in Deutsche Bundesbank, which is often used as an example of a high level central bank independence, political monetary cycle is founded and empirical confirmed. Central bank independency is sort of a substitute of the fixed exchange rate. Further, potential research limits represent a date of parliamentary election which is not exogenously determined in Croatia. Endogeneity of the date means that political sectors can summon elections when improved economic conditions occurs (increased GDP), and when the date of parliamentary elections positively correlate with economic indicators.

For the purpose of this empirical research the regression model will be used, as in testing cycle in countries such as, Latin America and Korea (Cermeno et. al. (2010), Ryou (2014)).

$$\Delta \ln(RER_t) = c + \alpha_{1-n} \Delta X_{1-n,t} + \beta_{1-n} \Delta Y_{1-n,t} + \varepsilon_t \quad (1)$$

Where RER marks a represented real exchange rate,  $X_{1-n}$  is the vector of economic variable,  $Y_{1-n}$  is the vector of political variable, and  $\varepsilon_t$  is a standard error.

According to Goldfajn and Valdes (1999) fundamental variables which influence the RER and its depreciation are known as its terms of trade (TOT), size of government (GS), openness (OPEN) and international interest rate. In harmony with the defining key factors of the RER, this research will be using all specified variables as economical variables.

Variable size of government is measured by the ratio of government expenditure to GDP. Government size can have an influence on the RER in case of major deviations of state spending. This is especially expressed during the pre-election periods of increased government spending. The corresponsive spending of non-tradable goods leads to the appreciation of the RER. In another case, increased government spending, like increased import, leads to depreciation pressure on the exchange rate.

Variable openness is measured by the ratio of the sum import and export to GDP. This variable is a proxy for trade liberalization and represents how much is the country connects with rest of the world. Reduction of import tariffs would lead the labor market into equilibrium and the decreasing price of non-tradable goods.

Variable terms of trade are measured by the ratio of export prices to import prices. Variable TOT influences the price of non-tradable goods in small and open countries. According to an income effect a rise in the price of import can correlate with reduction in a country's permanent income, which furthermore leads to a reduction in peoples demand for non-tradable goods, which results in depreciation (Diaz-Alejandro, 1982, according to Cermeno et. al., 2010). Otherwise, a substitution effect occurs in the case when production moves from a non-tradable sector to the tradable sector resulting in increased prices of non-tradable which furthermore leads to appreciation pressures (Edwards, 1989, according to Cermeno et.al., 2010).

A variable international interest rate refers to a recommendation by Goldfajn and Valdes (1999). This research takes a quarterly interest rate of the EURIBOR. An international interest rate can have a short and long run effect on the RER. If the international interest rate decrease faster than the domestic interest rate they cause increased capital inflows and appreciation



pressure. Depending on the elasticity of the saving change in international interest rate can be twofold. If saving are inelastic in the short run decrease of interest rates leads to increased capital inflows. If saving are elastic in the long run decrease of interest rates would lead to a drop in net foreign assets.

A vector of the political variable in the model, represents a pre-election dummy (PRE\_ELE) and a post election dummy (POST\_ELE). The pre-election dummy variable represents a pre-election period, i.e. a period of three months before parliamentary elections and takes (1) in that period, and value (0) in all other periods. The post election dummy represent a period after the election date and takes (1) in the period of three months after the elections and (0) in all other periods.

In the case of empirical analysis for Croatia, a model needs to include the influence of a financial crisis (CRIS) on the real exchange rate. Variable CRIS is the dummy variable with value (1) from 2009 (year of crisis occurred in Croatia) till 2012. Impact of the financial crisis on real exchange rate emphasizes on the decreased international capital inflows and depreciation exchange rate.

Equation (1) is in a next form:

$$\Delta \ln(RER_t) = c + \alpha_1 \Delta(GS_t) + \alpha_2 \Delta(OPEN_t) + \alpha_3 \Delta \ln(TOT_t) + \alpha_4 \Delta(EURIBOR) + \alpha_5 CRIS_t + \beta_1 PRE\_ELE_t + \beta_2 POST\_ELE_t + \varepsilon_t \quad (2)$$

In the model we used quarterly dates for a period from the first quarter from 2000 (2000:Q1) till the fourth quarter of 2015 (2015:4). To remove the seasonal role which is present at the quarterly dates, all variable are deseasonalized. Unit root testing is conducted to avoid the possibility of apparent spurious regression and to test the stationery. Testing was implemented by Augment Dickey Fuller test (ADF) and Phillip Peron test. The model is subjected to the White test of heteroskedasticity and Breusch-Godfrej test for serial correlation. In harmony with the testing, the results all expressed their first differences in the series.

## 5.2. Empirical results

Econometrics analysis begins with conducting an unit root test of Stationarity, Augmented Dickey-Fullers, Phillip-Perron, heteroskedasticity, White test and serial correlation Breusch-Godfrey test.

On the base of the conducted stationarity test, it can be concluded that all of the time series are stationary and integrated in the first order I(1). In further empirical analyses, applied data will be in value of their first differences.

Econometric results of model testing are shown in Table 2. Results show significant influence of government spending and crisis on real exchange rate in Croatia. Variable size of government have to a positive sign, meaning that government spending has an impact on the depreciation of the real exchange rate. In Croatia, increased state spending and state preferences to import goods as well as investment project has a strong influence on the

depreciation real exchange rate, stimulation and production tradable goods according this results.

Crisis leads to decreased international capital inflows and depreciation of exchange rate. Variable crisis are significant and has to a positive sign which is coherent with assumptions that impact of the financial crisis in Croatia affect the real exchange rate which leads to its depreciation.

Three fundamental variables which show as insignificant are terms of trade, international interest rate and openness. Prognostic of the TOT variable is negative, which means that TOT acts appreciation on the RER and that effect in Croatia leads to substitution which is stronger than the income effect. Prognostics of international interest rate is also negative, which means that the interest rate acts appreciation on exchange rate. Variable openness has a positive prognostic sign and acts in direction of RER depreciation.

Coefficients along the election dummy variable (PRE\_ELE and POST\_ELE) shows as insignificant and statistically are not important in determining short run movement of the RER. According to empirical research in the Republic of Croatia monetary political cycles in the real exchange rate are not confirmed.

Table 2. Empirical results.

Dependent variable: **Real exchange rate** (quarter data from Q1-2000 to Q4-2015, OLS estimation)

Independent variable	
Constant	** -0,0030 (,0017)
$\Delta GS$	** 0,1000 (,0296)
$\Delta OPEN$	0,0082 (,0100)
$\Delta \ln TOT$	-0,19525 (,3119)
$\Delta EURIBOR$	-0,00217 (,0028)
CRIS	* 0,0073 (,0037)
PRE_ELE	0,0054 (,0062)
POST_ELE	0,0027 (,0062)
$R^2$	0,28
DW	1,9
White test (p value)	0,02
Breusch-Godfrey (p value)	0,3
Number of observation	63

Remark: \* $p < 0,1$ , \*\* $p < 0,05$

It is used Newey-West method for correction heteroskedasticity. Source: author calculation.

## 6. Conclusion

This research paper analyzed the influence of political elections on the real exchange rate of the Republic of Croatia. The results of this empirical research reject the hypothesis of political influence. In this paper, real exchange rate is remarked as the depended variable, with terms of trade, government size, international interest rate and openness as explanatory economic variables and two dummy variables, as the proxy of election time. The regression results suggest that variable government size (GS) and crisis (CRIS) have a significant impact on the RER and its depreciation in Croatia. The election variable, however, shows as insignificant and it does not have an effect on the real exchange rate. Limits of this research are mostly found in the Croatian central bank independence and in the endogeneity of political election dates in Croatia. In harmony with the Mundell-Fleming model of central bank independence, capital mobility and fixed exchange rate, traces of political monetary cycles can be found in countries with lower level of central bank independence and flexible exchange rate. This research indirectly confirms that theory. The Republic of Croatia uses managed floating exchange rate regime and the level of the Croatian central bank independency is on a high degree. Under this limitation political monetary cycles disappear but the fiscal policy emerges as the main initiator of the cycle generating fiscal political cycles. However, Berger and Woitek (2001) found the political monetary cycle in one of the most independent central bank, Deutsche Bundesbank.

For additional confirmation of political monetary cycles in Croatia, it would be interesting to examine and inquire testing measures and the instruments of monetary policy, for example, the international reserve behavior or foreign exchange auctions, as well as the level of inflation movement during the election period. Also, it would be useful to expand the coverage of pre-election and postelection period in this kind of research.

This research paper represents only the indicative approach to political monetary cycles and can not be taken as definitive proof.

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**APPENDIX 1**

## Variable and data sources

<b>Variable</b>	<b>Description and source</b>
GDP	The total value of all goods and services produced over a specific time period. Source: Croatian bureau of statistic.
Government expenditures	The amount of government spending over a specific period. Source: Croatian bureau of statistic.
Exports	Sale of goods to a foreign country. Source: Croatian bureau of statistic.
Imports	A good or service brought into one country from another. Source: Croatian bureau of statistic.
Real effective exchange rate (RER)	RER compares the relative price of two countries consumption baskets. Source: Croatian national bank.
Term of trade	Represents the value of the <a href="#">exports</a> of a country, relative to the value of its <a href="#">imports</a> . Source: The World bank, <a href="http://data.worldbank.org/">http://data.worldbank.org/</a> .
Interest rate EURIBOR	The EURIBOR rates are based on the average interest rates at which a large panel of European banks borrow funds from one another. Source: Global Rates, <a href="http://www.global-rates.com/">http://www.global-rates.com/</a> .
OPEN	Measured as the sum of exports and imports as a percentage of GDP. Source: Croatian bureau of statistic.
Government spending, GS	Measured as the government spending as a percentage of GDP. Source: Croatian bureau of statistic.
Pre-election period (PRE_ELE)	Dummy variable remarked by 1 in quarter before election, other case 0 Source: State Electoral Commission of the Republic of Croatia.
Post election period (POST_ELE)	Dummy variable remarked by 1 in quarter after election, other case 0. Source: State Electoral Commission of the Republic of Croatia.

**APPENDIX 2**

## Results of ADF test for time series

Variable	Component	t statistic (ADF)	p value
In RER	Constant	-2,4660	0,1285
In RER	Trend and constant	-0,9616	0,9417
<b><math>\Delta \ln RER</math></b>	Constant	-6,4610	0,0000
<b><math>\Delta \ln RER</math></b>	Trend and constant	-7,3838	0,0000

Variable	Component	t statistic (ADF)	p value
In TOT	Constant	-1,8030	0,3754
In TOT	Trend and constant	-2,3274	0,4132
<b><math>\Delta \ln TOT</math></b>	Constant	-7,7461	0,0000
<b><math>\Delta \ln TOT</math></b>	Trend and constant	-7,7649	0,0000

Variable	Component	t statistic (ADF)	p value
EURIBIR	Constant	-1,0517	0,7294
EURIBOR	Trend and constant	-2,1175	0,5216
<b><math>\Delta EURIBOR</math></b>	Constant	-7,2697	0,0000
<b><math>\Delta EURIBOR</math></b>	Trend and constant	-7,2020	0,0000

Variable	Component	t statistic (ADF)	p value
OPEN	Constant	-2,3914	0,1485
OPEN	Trend and constant	-2,3599	0,3962
<b><math>\Delta OPEN</math></b>	Constant	-2,9800	0,0427
<b><math>\Delta OPEN</math></b>	Trend and constant	-3,9030	0,0180

Variable	Component	t statistic (ADF)	p value
GS	Constant	-2,9041	0,0509
GS	Trend and constant	-3,4221	0,0581
<b><math>\Delta GS</math></b>	Constant	-3,2944	0,0196
<b><math>\Delta GS</math></b>	Trend and constant	-10,420	0,0000

Remark: it is used Akaikeov info criteria. (Source: author calculation.)

## What is the relationship between tax literacy and intellectual capital of the certified accountant in Portuguese SMEs tax performance?

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**Abstract:** This paper represents the first steps of an investigation aimed at ascertaining the relationship between fiscal literacy and intellectual capital of certified accountants in the performance of small and medium sized Portuguese companies. This research analyzes whether an increase in literacy positively influences the performance of not only the certified accountant but also of taxpayers' performance.

The literature on tax education is very vague, therefore the development of a theoretical perspective on the subject is fundamental. In Portugal, the studies developed in this scope cover young age groups which are usually out of the labor market; hence the current research aims at filling this gap by focusing on SMEs. It is equally important to analyze tax system behaviors of both certified accountants and corporate managers so that a better tax education system can be designed. Finally, the study is also expected to help understand the impact of certified accountants on SME's performance. We expect to carry out a research model after literature review. The findings will verify how the accountant can contribute to the creation of a tax education system and consequently to the performance of SMEs

Regarding practical implications, the design of tax education systems is the main practical implication of the current research. The practical implications result in the development of tax education systems at an SME level which shall aid companies in improving tax efficiency and therefore contribute to their performance and success. Although the Tax and Customs Authority is the main entity responsible for the development of education and training programs, it is argued in this text that tax education could be extended to other entities, such as schools and universities, and the Order of Certified Accountants.

**Keywords:** tax literacy, tax education, intellectual capital, taxes, certified accountant

### 1 Introduction

The Portuguese tax system "aims to meet the financial needs of the State and other public entities, and to secure a fair distribution of income and wealth". Meeting these needs through taxes. Taxes are created by law and are essentially based on the citizens' ability to contribute. Tax rates are applied to individual and collective incomes, as well as to consumption and assets of taxable persons. According to the General Tax Law (Decree-Law no. 398/98 - 12/12 - DR no. 290/98), a taxable person is the "*individual or collective person, fact or right, who*

*under the terms of the law, is bound to comply with the tax benefit, whether as a direct taxpayer, substitute or responsible",* that is, all citizens and incorporated companies.

In Portugal, micro, small and medium-sized companies accounted for 99.7% of non-financial companies in 2008, with micro-enterprises predominating, representing roughly 6% of all SMEs, according to the Study on Structural Statistics of Companies, developed by the National Statistics Institute in Portugal.

The bridge between companies and the tax system is usually crossed over by certified accountants. Accountants are obliged by the Statute of the Order of Certified Accountants, which instructs how to plan, organize and coordinate the accounting procedures of public and private entities, as well as the legal norms, accounting principles in force, and the guidelines of entities with competencies in accounting standardization. Accountants also perform advisory functions in the areas of accounting and taxation, and as such they are one of the pillars of the organization's intellectual capital.

## **2 Review of Literature Background**

According to Yara Rezende (2002), intellectual capital is *"the existing knowledge in an organization that can be used to create a differentiated advantage"*. It is assumed that the more intelligent, improved and adapted to the new challenges, i.e., the higher the *"degree of diversification, speed and complexity, the more opportunities the company will have to survive and grow."* As such, the knowledge that a certified accountant can convey to an SME's tax scope can be central to its excellence in the area.

Some authors (e.g. Delgado, 2013, Grzybovski and Hahn, 2016), have argued for the development of a tax culture, meaning an implicit understanding of the tax system and its purpose. According to Tojal (2011), fiscal literacy is associated with the ability to understand tax information, in order to have such an understanding, the existence of tax education is necessary.

Literacy is understood as the ability to perceive and interpret what is read (Priberam: 2017). According to Tojal (2011), a low level of literacy will be responsible for both social inequalities and opportunities for individuals to benefit from stable jobs and high wages. According to a study by Coulombe and Tremblay cited in "The Economic Dimension of Literacy in Portugal" (Office of Education Statistics and Planning, 2009: 55), it has been proven that a 1% increase in literacy, will have an impact of 1.5% on GDP per capita, as well as a 2.5% increase in worker's productivity. An increase in literacy will have future economic benefits, in which it is stated that *"an improvement in the literacy values of the adult population should bring significant economic benefits to Portugal, noting that their success will depend on active measures to stimulate demand of literacy in society"*, hence the importance of tax education in society. As Palma and Pita (2015) highlight, education has a preponderant weight in interposing to close fiscal illiteracy, namely to call for citizens' understanding of their impact on public revenues and expenditures.



Grzybovski and Hahn (2016) define tax education as the passage of information to taxpayers, about their rights and duties so that they can fulfill their fiscal obligations. In the study developed by the above mentioned authors, the majority of respondents understood the terminology "*fiscal education*"; however, they had no knowledge about the application of the revenues collected through taxes.

Various measures have been developed in Portugal to address this gap. The Tax and Customs Authority plays a key role in taxpayer literacy. Pereira and Cruz (2016) identified five crucial aspects in the role of the Tax Authority:

- *"Educate taxpayers through tax education programs;*
- *Ensure tax compliance;*
- *Increase the transparency of public finances in order to foster trust between the Tax Authority and the taxpayer;*
- *Prepare, transmit and adapt tax information according to the taxpayer's literacy and fiscal knowledge;*
- *Clarify any doubts about tax matters;*
- *Making tax compliance easier and more comfortable. "*

In Portugal, some studies have been published with the objective of promoting civic and fiscal awareness, regarding the fulfillment of fiscal obligations. According to the report of the "*Education for Citizenship Forum*" (2008) the Directorate - General for Contributions and Taxes, presented the following works:

- "*Tax well! - The game of tax education*", is a didactic game, for children over 12 years.
- "*Once upon a planet of respect for all*", it is a children's story.
- "*The fiscal nightmares of Porfirio Zap*", a band designed for secondary education.

This type of program is fundamentally targeted at younger generation, and according to Palma and Pita (2015), it is considered to be a long-term investment. In our view, as well, other generations should be covered by this type of initiative.

### **3 Results**

The expected outcome is that the results of the regression analysis show that there is a positive relationship between increasing tax literacy and tax ratios through knowledge management as a way of improving company's fiscal performance.

According to Tojal (2011), the decrease in fiscal illiteracy will allow taxpayers to make better tax decisions, which will allow in obtaining more benefits and incur in fewer errors. Moreover, "*it will enable the taxpayer to gain more confidence in social participation, more opportunities for learning and to obtain more stable jobs.*"

The findings should support the hypotheses that intellectual capital and tax literacy have a positive influence on fiscal performance.

The practical implications result in the development of tax education systems at an SME level, predicted to help such companies to improve tax efficiency, and therefore contribute to their performance and success. Although the Tax and Customs Authority is the main entity responsible for the development of education and training programs, it is argued in this text that tax education could be extended to other entities, such as schools and universities, and the Order of Certified Accountants.

#### 4 Conclusions

In the introduction of this paper, we begin by understanding what the tax system consists of, what its purpose is and who it will influence. From the understanding of the tax system, the importance of fiscal education is raised in order to overcome the fiscal illiteracy that taxpayers can present. That being, fiscal literacy as the capacity of the individual to understand the general operation of taxes

Some studies have been developed by the Tax Authority, being the main entity responsible for the development of programs in the area of tax education by which fiscal illiteracy can be fought. This type of initiative can and should be joined by schools and universities.

The existence of a civic culture is crucial for a beneficial relationship between the citizen and the Tax Authority, and even more crucial for the creation of fiscal equality.

In future studies, it would be pertinent to understand whether fiscal education programs are effectively combating fiscal illiteracy, not only with younger taxpayers, but mainly the active population.

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# Education and Human Resource Development

Gary McLean

This stream addresses topics covering a wide variety of aspects in current research and application that are relevant to education and human resource development: Relevance of HRD Theories to Practice; Transfer of Training; Corporate Social Responsibility and HRD; National HRD Research, Theory, and Practice; Values and Ethics in HRD; Quality of Work Life; HRD's Role in Community Development; HRD's Role in Social Development; HRD's Role in Economic Development; Information & Communication Technology and HRD; Workplace Learning; Social Networks in HRD; Innovative Practices of HRD; Performance and Career Development; Gender/Diversity and HRD; Global/Cross-Cultural HRD; Emerging Issues in HRD; HRD's Role in Mergers and Acquisitions; Evaluation of HRD Activities; Relationship between HRD and HRM; Preparation of Expatriates for International Assignments.

## Organizational Culture and Leadership's Impact on a Safety Program Change Model

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**Abstract:** The relationship between organizational culture and leadership is especially important for industry due to its impact on both change and safety. How can leadership impact an organization's culture in such a way as to create positive change towards a safer workplace? By exploring how organizational culture and relational leadership can affect change and change readiness. Organization that have successful safety program implementation due to the use of a specific change model and the support of relational leadership will inevitably have organizational cultures that provide safer and better workplaces.

### 1 Introduction

Organizational culture as well as leadership are familiar constructs for those of us who work or have worked in industry. With our industry experience comes an understanding that somehow, both of these constructs effect our day to day work experience. Many of us have been in organizations that seem to have adisconnect between the leadership and organizational culture yet, when leadership is relational in nature the gap disappears. It is for this reason that the authors chose to look at how change can be implemented in order to create a culture that is focused on the safety of its employees. Creating a "safety culture" is important from both an ethical and a business perspective.

### 2 Methodology

#### 2.1 Overview

The following large databases were searched: Jstor and ProQuest. The search was not delimited by a timeframe. Articles were retrieved with search terms "organizational culture and leadership" combined with terms: safety, change models, human resources, workplace, employee, job.

In addition, in this study, a correlational design was used to examine if there is a predictive relationship between leadership, organizational culture, safety and change. A correlational design measures the degree of linearity between the variables used in the statistical procedure of a partial and bivariate analysis. The research design supports the research question as to how accurately can leadership and safety in the workplace be predicted from organizational culture and change. Since previous studies have indicated the intimacy of an organization's environment as a reflection of its interaction with change, leadership, and safety this quantitative study provides current research concerning the predictive relationship between leadership and organizational culture change (Morgan, 2006). By examining organizational culture and leadership with its impact on change and safety, industry can then begin to develop and promote a better understanding of how to guide employees for best work practices and cultivate a positive work environment.

## **2.2 Design**

The research design selected for this quantitative study is a correlational design since correlational research designs are used to describe the degree of relationship between two or more variables (Creswell, 2015). The correlational design was appropriate for this study since the purpose was to measure to what degree and direction there are between two or more variables (Gall, Gall, & Borg, 2007). The purpose of this design was to discover relationships between variables through the use of correlational statistics (Gall, Gall, & Borg, 2007). The quantitative variables identified in this study are leadership and safety as the predictor variables and organizational change as the criterion variable. The predictor variables of leadership and safety were determined by using the Rogers Change Model Scale to determine a relationship with the criterion variable of organizational change.

## **2.3 Participants and Setting**

The participants for the study were an industry representation of manufacturing organizations focused primarily on safety. For this study, the number of participants sampled was 10. While this sample size is relatively small as a sample size less than 30 can be skewed by extreme scores, there were not extreme scores identified in the raw data (Warner, 2013).

## **2.4 Instrumentation**

The instrument used to assess organizational culture change is the Organizational Culture and Leadership Impact on Safety Scale (OCLISS). The questionnaire contained ten total questions with nine questions utilizing a Likert scale and identified with the OCLISS while the tenth question utilized the Roger's Change Model Rank Scale (RCMRS). Both the OCLISS and the RCMRS are unidimensional instruments elaborated from a phenomenological conception of cultural change that captures subjects' global perception of leadership and change within the work environment. The 9-item OCLISS contained all positively worded items and is rated on a 5-point Likert-type scale with items identified as 1 is strongly disagree, 2 is disagree, 3 is neutral, 4 is agree, and 5 is strongly agree. The survey provides an option to choose amongst the five ranges of "strongly disagree" to "strongly agree" beginning from top to bottom with "strongly disagree" progressing to the final option of "strongly agree." The OCLISS presented is a new scale recently developed with no current ratings in reliability and internal consistency.

The RCMRS requested the participants to rank perceived change in their organization utilizing numerical values of 1-8 with 1 being the most important and most used while the numerical value of 8 was associated with the least important and least used. The newly developed RCMRS will be used to further develop organizational change within the work environment as Rogers considers organizational change to be a component that must be updated constantly to indicate current trends.

## 2.5 Procedures

The procedures included the distribution of a questionnaire to safety managers from large industrial manufacturers. The sampling was administered through the email system to the managers with a two-week time frame to complete the survey. Once surveys were obtained, analysis was conducted to identify statistically significant results.

## 3 Organizational Culture

The term corporate culture began to take shape in the 1980's and 1990's when some began to see it as a tool to develop values (Allen & Kraft, 1982; Bryman, 1984; Peters & Waterman, 1982); others viewed culture as a system for symbols (Martin et al., 1983; Frost et al., 1991; Smircich, 1983); while others still see corporate culture as a form of social engineering (Kunda, 1992). Furthermore, some view organizational culture as something, which is created (Kanter, 1977; Mills & Taced, 1992) and yet, there is scarcity of empirical data (Denison, 1990; Murrin, 1988; Goodall, 1989; Jones et al., 1988).

Frederick (1995) makes a case for a definition of organizational culture which comes closest to that of the anthropological meaning of culture by focusing on Schein's definition by quoting the following; "What organizational culture does is to solve the group's basic problem of 1) survival in and adaptation to the external environment and 2) integration of its internal processes to ensure the capacity to continue to survive and adapt" (p.85).

Clawson (2002) refers to leadership style as being responsible for creating a set of values, assumptions, beliefs, and expectations and this being understood as organizational culture. Clawson goes on to differentiate between Argyris's (1990) *Level Two* as the "espoused theory of the organization", whereas *Level Three* is the "theory of action" (p.51). Table 1 represents a comparison between personal and organizational aspects of the three levels.

Accordingly, Schein (1992) contends that it is difficult to define the word culture because of its many meanings and, applying this definition to organizations becomes even more difficult because of "conceptual confusion because groups and organizations are also difficult to define unambiguously" (p.8).

Finally, Schein (1992) argues how specific words and concepts have been used by numerous individuals to discuss the meaning of culture and which, have now become common categories that are associated with the construct of culture.

Table 1: Three Levels of Personal and Organizational Aspects (Clawson, 2002, p.52)

	Personal	Organizational
Level 1	Behavior as seen on camera	Artifacts, buildings, physical structure
Level 2	Conscious thoughts	Espoused theories, the "talk" fads
Level 3	Values, assumptions, beliefs & expectations	Theories in action, the "walk", underlying assumptions

These phenomena are:

1. Observed behavioral regularities when people interact: the language, the customs and traditions, and the rituals used (Goffman, 1959; Jones et al. 1988; Trice & Beyer, 1984; Van Maanen, 1979).
2. Group norms of implicit standards and values that evolve in working groups (Homans, 1950; Kilmann & Saxton, 1983).
3. Espoused Values as the articulated, publicly announced principles and values that the group claims (Deal & Kennedy, 1982).
4. Formal philosophy as the broad policies and ideological principles that guide a group's actions (Ouchi, 1981; Pascale & Athos, 1981).
5. Rules of the game as the implicit rules for getting along in the organization (Schein, 1968; Van Maanen, 1976; Ritti & Funkhouser, 1982).
6. Climate as the feeling that is conveyed in a group by the physical layout and the way in which members of the organization interact (Schneider, 1990; Tagiuri & Litwin, 1968).
7. Embedded skills as the special competencies group members display in accomplishing certain tasks (Argyris & Schoen, 1978; Cook & Yanow, 1990; Henderson & Clark, 1990; Peters & Waterman, 1982).
8. Habits of thinking, mental models, and/or linguistic paradigms as shared cognitive frames that guide the perceptions, thought, and language of a group (Douglas, 1986; Hofstede, 1980; Van Maanen, 1979).
9. Shared Meanings as the emergent understandings that are created by group members as they interact with each other (Geertz, 1973; Smircich, 1983; Van Maanen & Barley, 1984).
10. Root metaphors or integrating symbols as the ideas, feelings and images groups develop to characterize themselves which may not be acknowledged consciously (Gagliardi, 1990; Hatch, 1991; Pondy et al., 1983; Schultz, 1991).

Culture, as Schein (1992) relates, "is always a striving toward patterning and integration, even though the actual history of experiences of many groups prevents them from ever achieving a clear cut paradigm" (p.11).



#### **4 Leadership's Role**

Leadership plays an important role in how organizational cultures form and adapt. An individual's leadership capability and style can make a huge difference on the culture of any business. In his book "Organizational Culture and Leadership" (1992), Schein proffers that "once a leader has activated the group, it can determine whether its actions solve the problems of working effectively in its environment and create a stable internal system"(pg.226).

Another important aspect, as noted by Schein, is that a group seeks out leadership in order to "reduce a it's anxiety" (pg.227). This again points in the direction of how any group, within an organization may first experience anxiety around safety issues and second, how much of a safety culture could be positively influenced by the leadership.

#### **5 Change Model Impact**

Whether planned or reactionary, studies show that 70% of change efforts fail (Blanchard, 2010). This translates to only 30% of change efforts succeeding and a whopping 70% of change efforts that fail. Therefore it is safe to say that there is a problem in organizations today with facilitating change. With the current number of published and "proven" change models available for organizations to follow, it is surprising that there is such a high rate of failure with facilitating change. This can pose a problem in a culture that promotes safety. A lack of anticipating change could be the problem. The following proposed change model seeks to modernize the approach organizations take in implementing change including steps that are not readily found in current change models yet are needed to substantiate change success.

##### **5.1 Step 1: ANTICIPATE CHANGE**

Change is a systematic application of knowledge, tools, and resources to deal with change that involves defining and adopting corporate strategies, structures and procedures and technology to handle changes in external conditions and business environment (Senior & Swailes, 2010). Business factors that affect change include: political, economic, socio-cultural and technological better known as the acronym of PEST. PEST factors include the following:

PEST FACTORS			
Political	Economic	Socio-cultural	Technological
1. Govt. Legislation. 2. Govt. ideology. 3. International Law. 4. Universal right. 5. Wars. 6. Local Regulations. 7. Taxation. 8. Trades union activities.	1. Competitors. 2. Suppliers. 3. Currency exchange rates. 4. Employment rates. 5. Wage rates. 6. Govt. economic policies 7. Other countries economic policies. 8. Lending policies of financial institutions. 9. Changes from public to private ownership.	1. Demographic trends. 2. Lifestyle changes. 3. Skills availability. 4. Attitudes to work and employment and to minority groups. 5. Gender issues. 6. Willingness and ability to move. 7. Concern for the environment. 8. Business ethics.	1. Information technology/ the internet. 2. New production processes 3. Computerization of processes 4. Changes in transport technology
Senior & Swailes, (2010). <i>Organizational Change</i> (4th ed.)			

Considering PEST factors, change can be both planned as well as haphazard. An unplanned change example would be reacting to a congress mandate that public employers be inclusive of LGBT demands of bathroom preferences as noted in legislation from 2016. Change can be anticipated by applying the PEST model. For example, change usually occurs in response to an economical dilemma such as lost revenue due to a decrease in sales, an increase in costly accidents or other factors impacting a business' bottom line. For example, according to former Walmart CEO Mike Duke, one of his regrets as CEO was not investing more in ecommerce to compete with Amazon (Lutz , 2017). The problem with not forecasting or anticipating change on behalf of Walmart is that their shares have fallen 21% and continue to fall since the end of 2014 (Lutz , 2017). On the other hand, Amazon shares have jumped 119% (Lutz, 2017). Walmart's lack of anticipation of change in ecommerce also cost them the investment of billionaire investor Warren Buffet, who sold off his shares in 2017 (Lutz, 2017). This is a testament to the importance of anticipating change as Amazon clearly foresaw the changing demographic of the American consumer creating online ecommerce and emerging as the number one consumer go-to online shopping tool. Although Walmart proceeded afterwards to invest billions in e-commerce, it only holds a small share of the market compared with Amazon (Lutz, 2017).

## 5.2 Step 2: RESEARCH OPTIONS

Institutional theory explains the similarities of arrangements found in a sector (Senior & Swailes, 2010). Therefore, it is helpful for an organization to understand, based on their own institution, what is going to be the appropriate means and the appropriate type of change and how the change will be managed (Senior & Swailes, 2010). Furthermore, institutions work within a boundary that raises the likelihood that certain types of behavior will occur (Senior &

Swales, 2010). As a result, applying institutional theory as it relates to researching change can help guide the organization through a true understanding of the behavior requirements and expectations of the upcoming change. This research will aid in identifying the extent of engagement and degree of motivation required for change to be truly adopted within the organization. Evidence of solid research for the need for change as well as preparation for implementing the change can encourage employee buy - in and go a long way in overcoming perceptions that the company is engaging in change simply in response to the latest organizational development “fad”.

### **5.3 Step 3: IDENTIFY THE TYPE OF CHANGE**

When implementing change, it is helpful for an organization to classify the type of change that is occurring. In other words, what will be the intensity level of the change? For example, there are three change models that gauge types of change based on intensity which include modified, inventive and radical. Modified is basically transferring existing knowledge to gain support for another action in which employees are familiar (Calloway). You are simply taking what is current to “the next level” (Calloway). Modified change would be rated as a low level of intensity during the change management process. Inventive change includes groundbreaking concepts that may not be totally new, but perhaps new to the organization (Calloway). For example, implementing a new type of technology, which would be a common example of inventive change (Calloway). Inventive change carries a moderate level of intensity. Lastly, radical / pioneering change is the discovery of something new (Calloway). An example of this would be the Ford Model T that was discovered by Henry Ford who implemented an entirely new concept and idea that was going against the grain, and perhaps even frowned upon by others (Calloway). Radical change is far removed from what is currently being done and thus carries a high level of intensity. Assessing the varying degrees of intensity associated with types of change can be beneficial in successfully preparing the workforce for change.

### **5.4 Step 4: MAKE A DECISION AND COMMIT TO CHANGE**

Once a decision is made to implement change, there are four stages that employees will likely experience before a solid commitment to the change is achieved. The four stages of change include: denial, resistance, exploration, and commitment (Jaffe & Scott, 2003). These four stages are also referred to as the change curve model. Anticipating how employees will respond to change will assist leadership in addressing concerns and obstacles within each of these stages. When we understand that this change curve is going into place and that the change curve consists of four phases that happen in a sequence, we can then prepare and brace the organization for what is to happen next (Jaffe & Scott, 2003). There are two basic transitions that are experienced by someone other than the owner of the change (Jaffe & Scott, 2003). The two transitions include a shift in focus in two areas 1) past to future and 2) self to environment (Jaffe & Scott, 2003). The present current environment is comfortable to employees, therefore, implementing change involves requesting employees to get outside of their comfort zone. Helping employees to “unhook” from the past to embrace future changes while providing them with an assurance we as to what will happen them will enable a stronger commitment to change in the organization (Jaffe & Scott, 2003).

## 5.5 Step 5: GET CONSENSUS FOR CHANGE FROM STAKEHOLDERS

Establishing a culture of change is an important part of getting consensus from stakeholders. Management requires a strong commitment for change and for employees to readily adopt the change in order for it to be successful (Van Tiem, Moseley & Dessinger, 2006). Employees have a strong sense of anticipation, as well as a strong sense for commitment one way or the other. Therefore, in order to overcome any type of negativity associated with the commitment to change, it is important that the organization establish a culture of continuous improvement so that change is just part of the lifecycle of an employee in the organization (Van Tiem, Moseley & Dessinger, 2006). It is vital that change be collaborative in order to be successful and to achieve this, management is responsible for implementing the change and being able to drive stakeholders to that change (Van Tiem, Moseley & Dessinger, 2006)

## 5.6 Step 6: IMPLEMENT CHANGE

Implementing change is, of course, the “key” to making sure change is successful. Creating a plan of action is not only beneficial but required for change success. While a plan of action should be customized in response to the specific change initiative, the implementation of certain elements will help insure success. These elements include surveys and survey feedback, intergroup confrontation, role negotiation, process consultation, team building, life and career planning and short-term wins (Senior & Swailes, 2010, pp. 351-352).

Element	Purpose	Benefits
Surveys	Assess the employees' attitudes and those involved in the change activities.	Indicates to leadership on what is or is not working.
Survey feedback	Stimulate discussion regarding what is happening.	Create a relationship between three or more groups to understand what is going on with the change.
Intergroup confrontation	A way to manage through any type of issues that two groups might be going through in order to reduce tension.	Help the members of the two groups increase the awareness of the importance of their activities regarding the change.
Role negotiation	Participants have a say in what they want others to do more either more of, less of, or no change in.	Follow-up within thirty days or so to discuss how this went into practice throughout the change.
Process consultation	An opportunity to review the processes put in to place, such as interventions.	Identify steps required to effectively engage change.
Team building	Groups work together.	Helps to accomplish the change.
Life and career planning	How people see themselves as part of the change.	Individualizes change and helps create buy-in.
Short-term wins	Enables participants in the change to experience a particular part of the change implemented was successful.	Recognition and reinforcement.
Senior & Swailes, (2010). <i>Organizational Change</i> (4th ed.), pp. 351-352.		

### **5.7 Step 7: MOTIVATING CHANGE**

Employees can be motivated by change when they feel supported by the culture. Therefore, leadership can take heed to the impact of culture and its influence on how employees will adapt to change as well as be a significant part of implementation. Evaluating organizational culture in preparation to implement steps for change, is helpful to understand change as a growth process. Growth comes with organizational “growing pains” indicated by the following signs (Fyock, 2013).

1. *“Not my job”* - Employees have a tendency of not looking at the full scope of the change, but only what they are immediately exposed to as far as their responsibilities are concerned (Fyock, 2013).
2. *Confusion about expectations* - A lack of clarity of expectations leads to change failure, therefore, setting clear expectations will provide employees with the understanding of what their role is regarding the change (Fyock, 2013).
3. *Activity but no results* - Employees want to know that what they are doing is meaningful and how the change will affect everyone’s performance (Fyock, 2013).
4. *The blame game culture* - The emotional heat gets turned when change is implemented making it easy to blame others and creating a risk for change implementation so it is important to understand and take steps to overcome this phenomena (Fyock, 2013).
5. *Organizational blinders* - To sure teams and departments are working together during change, it is helpful to educate, create cross-functional teams, and reduce conflicting organizational priorities (Fyock, 2013).

### **5.8 Step 8: EVALUATE CHANGE**

In order to determine if the change implementation was successful, a set of performance measures and standards needs to be established that will quantify success. Change can only be successful if it is evaluated against the performance target that substantiated the initial reason for the change. These standards are as unique as the change itself, therefore, the organization and its culture will play a key role in determining how change will be evaluated within its boundaries.

### **5.9 Step 9: MODIFY CHANGE**

The final step of the change model is to be aware of how change is progressing and make modifications when and where necessary. A culture of flexibility, awareness and openness to modify any derailments regarding change will more likely experience change success.

## 6 Results

### 6.1 Data Analysis

In determining the relationship in the first nine questions of the survey identified as the OCLISS, which are associated with the Likert scale, between leadership and safety and organizational change, Cohen's  $d$  was used to determine the effect size with an alpha level of .05. Data screening was evaluated by setting up a histogram to identify values of skewness and a scatter plot to assess a bivariate normal distribution shape and a linear relation (Warner, 2013). Homogeneity of variance analyses was conducted to assess and ascertain variance in each of the studied variables. Follow-up analyses will model the relationship to explore skewness and exact patterning of the relationship, if one exists (Warner, 2013).

Data analysis process was initiated by collecting the data which was uploaded into the Statistical Package for the Social Science (SPSS) for analytical determination. Individual scores were summed according to the Likert scale ranges of measurement. Descriptive analysis, means, and standard deviations of the instrument scores were completed initially. Data screening, a correlation, and then assumption testing was performed to identify if there was a valid statistical significant predictive correlation between leadership and safety on organizational change.

### 6.2 Results

Correlation coefficients were computed among 9-item OCLISS Likert scale instrument using the Bonferroni approach, which allows many comparison statements to be made (or confidence intervals to be constructed) while still assuring an overall confidence coefficient is maintained, was utilized to control for Type 1 error for the correlations. A  $p$  value of less than .05 was required for significance. The results of the correlational analyses are presented in Table 1 identifying the items of significance at the .05 and .01 levels of significance. Significance is based on the strength of relationship where 0 indicates no relationship; 10 to .29 = a small relationship; .30 to .49 = a medium relationship; .50 to 1.0 = a large relationship.

Table 1: Bivariate and Partial Correlations among Leadership, Safety, and Change Scales  
(N = 10)

Survey Question	Leadership/Safety	Safety/Change
I believe our leadership helps to make our organization a safer place.	.745*	
Leadership and organizational culture are synonymous with safety.	.651*	
In my organization employees adapt quickly to difficult situations.		.778**

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

The individual survey question results do support a large significant relationship between leadership and safety as well as safety and change. While analysis was conducted on leadership, safety and change as a whole, there were no numerical significant changes noted

although the scatterplot indicated a positively skewed result for leadership and change when questions were grouped in leadership, change, and safety categories.

Results pertaining to the RCMRS indicated anticipation of change was the most important (55.56%) while evaluating change (40%) was the least used within organizations. Participants were neutral in categories related to identifying types of change and implementing steps for change.

## **7 Conclusion**

In conclusion, the OCLISS indicated significant relationships in leadership and change within organizational culture. The RCMRS continued to support the quantitative data analysis by indicating managers who regard anticipation of change to be one of the most important aspects within their work environment. As the instruments used in this study continue to be refined and developed, change within organizational culture will provide organizations a platform from which to anticipate and expect change.

## **8 Recommendations**

Recommendations for further study as a result of this research indicates a need to expand the instruments to a larger population. While this research could be considered a pilot study, it is evident leadership and change are directly related. Since the dynamics of organizational change are varied somewhat amongst organizations, gaining information from a wider variety of industrial organizations can also provide deeper insight to new needs for change and how they effect a changing culture. In order to maintain current standards and communication with new generations, a realization that changes within organizations are inevitable will further mandate change model studies. Furthermore, continuing to explore how organizational culture and leadership play vital roles in both change readiness and safety will help industry improve the workplace.

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## **Analysing Intellectual Capital in Secondary Schools of St Petersburg**

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**Abstract:** In the past decade a lot of researches have focused on either management or measurement of intellectual capital components on macro (government), meso (local communities and industries) and micro (single organization itself) level. While it's been a current issue for commercial organisations, higher education institutions and private schools, the amount of researches about implementation of intellectual capital concept (both parts) is scarce. Russian secondary education system is faces a necessity to become more transparent and client-oriented, the existing reporting and management systems are not capable to deal with this range of problems. Our research goal is to investigate the current status quo of intellectual capital in secondary schools (Do we have an established language for Intellectual Capital in educational institutions in St Petersburg Russia?). The level of perception and representation of IC metrics is analysed by semantic analysis (what are the main IC components that value in a strategic planning of schools) and preliminary insights of the research are reported.

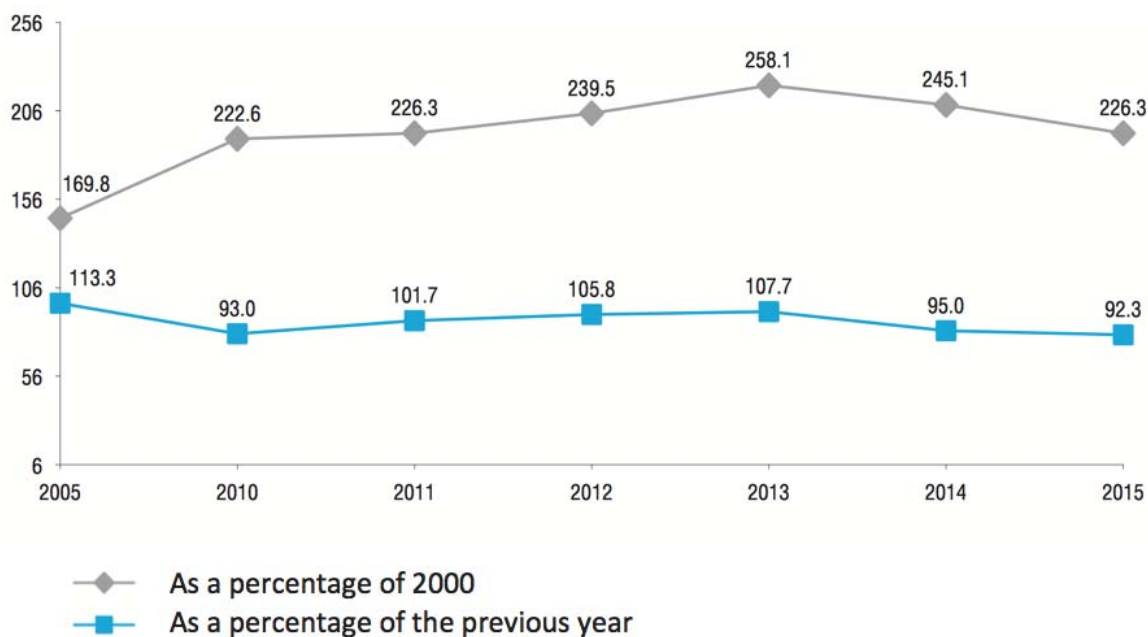
**Keywords:** intellectual capital, capital theory, secondary schools, educational organisations

### **1 Introduction**

Global and national communities emphasize the importance of developing of new educational policies to meet current trends and challenges. According to the OECD reports (OECD, 2012, 2016) governments are increasingly looking for opportunities to develop policies for equal quality of education and greater efficiency of resource usage. Bornemann imposes education as a major driver for productivity (Bornemann and Wiedenhofer, 2014, p. 452). He also pays attention to the fact that national governments strive to manage education optimally to improve well-being (Bornemann and Wiedenhofer, 2014, p. 451). According to the Russian edition of Human Development Report (HDR, 2016): "Education is a driver for a national economy, productivity and well-being". As a developing country Russian Federation uses education system as a reference point to overcome social barriers and enhance human potential. HDR resumes that Russian educational system has vast capabilities for future growth but still the current level of development is low. One of the most probable reason is

that the system is not capable of meeting existing challenges due to economic recession, lack of sustainable funding and increasing demand for transparent and client-oriented management.

Considering the statistics, the Russian Federation's expenditure on educational institutions (as a share of GDP) has risen from 2.7% in 2005 (OECD, 2016) to 3.6% in 2015, but remains below the OECD average of 5.2% (OECD Russian federation, 2016). Higher school of Economics (HSE, 2016) indicates that the share of total expenditures on education in GDP (in current prices) is more or less constant in the last five years. But if we take into account the recession and the inflation rate, the results will be reversed (Figure 1).



**Figure 1: The dynamics of public expenditure on education (in constant prices)**

At the same time, the situation looks like a paradox - government, society and private institutions still reasonably expect the quality of education to develop while the relative amount of expenditures decrease. This, due to the budget constraints and recession the main direction of national education policy is the increase of the efficiency of resource and quality management (HDR, 2016). The need for change is reinforced by the shift in demands of people. For the secondary education system these claims are reflected in national educational initiative "Our new school". This document focuses on a necessity of transparent reporting for diverse stakeholder groups and emphasizes the requirements for teaching and supporting staff, knowledge sharing and networking activities. This focus corresponds to what is well known as an intangible capital of an institution (organizational, relational and human capital).

## 2 Literature review: intellectual capital perspectives in educational institutions

Our paper aims to extend the research field of intellectual capital applications in education institutions (Hargreaves, 2001; Kelly, 2004; Bornemann and Wiedenhofer, 2014). Our goal is to use the concept of intellectual capital (IC) as relevant framework for strategic development analysis of the secondary educational system in Russian Federation. Though the concept of IC

is widely discussed in economic and financial literature today, not well known origins are also important for further understanding. In the late 60s P. Bourdieu (Bourdieu, 1984) introduced the idea of social space – a multidimension position constructed by individual's ability to articulate social, cultural and symbolic capital through social relations. The main implication of his theory was that the personal and social value is constructed by the process of capital transformation and management. Followed by the studies of human capital (Schultz, 1962; Becker, 1962) Bourdieu's capital model became a framework for substantial research on macro, meso and micro levels.

In 1990s IC was adopted as an intangible reporting and measurement framework in commercial sector: intellectual capital monitor (Sullivan, 2000), Scandia Navigator (Edvinsson and Malone, 1997), Intangible asset monitor (Sveiby, 2003), IC measurement models (Bontis, 2000). In most cases these models represent micro level – case study of a certain organization. These researchers identify three components of intellectual capital: human capital, structural (organizational) capital and network, or relational capital.

Meso level of application is presented by IC reporting initiatives in developed countries: Intellectual Capital Accounts Reporting and Managing initiatives by Danish Trade and industry development council (Danish Trade and industry development council, 1997), intellectual capital statement for small and medium enterprises project by European Commission and Federal ministry of economics and labour in Germany (BMWI, 2004) (Wissenbilanz - "Guideline for measuring Intellectual Capital – made in Germany"). As for educational institutions, different institutional initiatives (meso level) demonstrate how IC reporting and measurement is used within universities and research organisations (Sanchez and Elena, 2009). In 2006 the Federal Ministry of Austria (in collaboration with the conference of rectors) introduced the structure of ICR and the list of indicators for universities. Observatory of European Universities (OEU) created its own methodological guide to measure IC within european universities (Sanchez and Elena, 2009). There was also a special Spanish Meritum project aimed to organize annual publishing of university ICR. Bornemann (Bornemann & Wiedenhofer, 2014) states that IC is increasingly covered by universities and applied universities as part of their regular management training (e.g. Vienna University of Economics and Business, Donau University Krems, Technical University Dresden, Fraunhofer Academy). In comparison with European universities, amount of research on IC reporting in Russian higher education institutions is scarce.

Kelly (Kelly, 2004) notes, that building intellectual capital for creating values is as important process in schools as in the other educational and commercial institutions. And yet despite this, hardly any sufficient amount of studies and implementation of IC reporting in secondary education system can be found. Substantial research experience in this field is constructed by A. Kelly, C. Cheng, D. Hargreaves, recent studies of M. Bornemann and R. Weidenhofer. Intellectual capital is perceived as a relevant driver for performance, not only to tertiary education (universities) but also to all the educational processes starting from kindergarten and primary level to lifelong learning (Bornemann and Weidenhofer, 2014, p. 455). School IC refers to both human and the non-human storehouses of knowledge in a school that involve organizational routines such as policies and procedures (Cheng, 2015). Cheng concludes that concept of IC could be applied in school organization and strengthened by creating effective organizational communication strategies (Cheng, 2015). Hargreaves (Hargreaves, 2001) and Kelly (Kelly, 2004) focus on decomposition of IC elements. Hargreaves defines IC as the sum of the knowledge and experience of the school's stakeholders that they could deploy to

achieve the school's goals. He separates intellectual capital from social (relational) capital, thus implying IC is a representation of human (employees and students) capabilities in the creation of new knowledge and the capacity to transfer knowledge between situations and people. Kelly offers to divide intangible asset capital in schools into two broad parts – human (thinking) capital and structural (non-thinking capital). This model is easily transformed into classical tripartite model of IC (Cheng, 2015; Kelly, 2004; Sveiby, 2001; Guthrie & Petty, 2000): human capital, internal capital and external capital.

Human capital of schools depends on its key personnel and students. Human capital consists of competence capital (knowledge, skills, experience, abilities, know-how) (Roslender and Fincham, 2001; Cheng, 2015), attitude capital (behavioral aspects – attitudes, ethics, motivation, etc), intellectual agility capital. Kelly defines intellectual agility as ability to jump knowledge between contexts and between situations, and to innovate and transform ideas critical to the success of the school (Kelly, 2004). In terms of importance, agility capital represents ability to transfer and modify external and internal capital in the way it provides renewal and value for school. In addition to basic two components of non-thinking (structural capital), which are external and internal capital, Kelly emphasizes the role of innovation and staff development capital - the intangible side of anything that has the potential to generate value in the future but does not yet have an impact. Internal capital refers to the knowledge that remains within the organization at the end of the working day (Edvinsson & Malone, 1997). The internal capital of a school consists of the intangible assets of the organization that remain when staff and students go home, such as values, culture, processes, digital data systems, policies and procedures (Cheng, 2015). External organizational capital consists of the value generated by external relationships with parents, suppliers, local education authorities, the school's inspectorate, examination boards, community groups and alumni. These formal and informal contracts are increasingly important and schools need to take a long-term view of their development (Kelly, 2004). The three school IC components are interlinked, and they support and reinforce each other when an organization has a shared sense of purpose combined with an entrepreneurial spirit and management places a high value on agility and governs more by carrot than stick (Cheng, 2015; Stewart, 1997). Russian educational system lacks sufficient research in the area of IC and knowledge management practices. There are a few studies, indirectly referring to the discussed topic of IC measurement, transformation and reporting. T. Andreeva (Andreeva, 2013) analyzed peculiarities of knowledge management practices in secondary schools of St. Petersburg, A. Zaharov and M. Carnoy (Zaharov and Carnoy, 2015) tested the relation between student's performance and teacher's impact and predictions (on the case of unified state exam).

### **3 Methodology**

#### **3.1 Research questions**

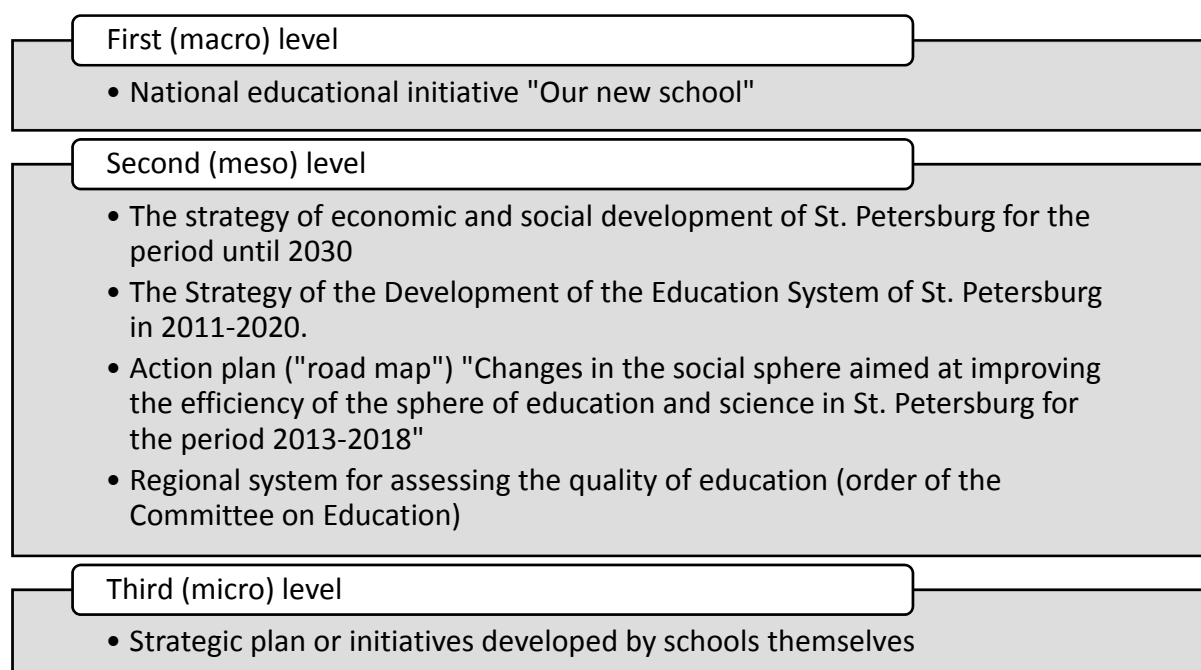
Intellectual capital per se is a quite discussable subject. Based on a literature review, we assume that the problem of inefficient and intransparent resource usage is very important for secondary educational institutions. IC reporting and measurement practices may become a reasonable solution to the mentioned problem in educational system of Russian Federation. Basing on the qualitative data sources (semantic analysis) we investigate the following research question in this paper:

Research question 1. Do we have an established language for intellectual capital in secondary education system in Russian Federation?

Research question 2. What are the main elements of the intellectual capital embedded in strategic planning of a school organization – on the one hand, and secondary education system – on the other hand?

### 3.2 Data

Based upon current Russian school legislation three levels of an educational strategic planning are identified (Figure 2). This paper reviews strategic documentation on secondary school planning in St Petersburg: The National educational initiative "Our new school", The St Petersburg's Strategic plan for economic and social growth – 2030, The Strategy for the development of the educational system of St. Petersburg in 2011-2020 (and its road map of tactical actions) and some recent orders of the St Petersburg Committee on Education are analyzed. Thus, the main sources of data for semantic analysis are documents and formal regulations.



**Figure 2 : Decomposition of strategic planning documentation for secondary schools in St Petersburg**

Authors understand the limitations of the qualitative data. As this paper presents the findings of an ongoing project, only one of the major cities (and thus – major secondary education system) is analyzed. Although the results are in line with typical problems of IC reporting practices, we denote that reliability of the findings needs to be checked additionally.

### 3.3 Method

Contemporary strategic management of intangibles is based on the concept of "dynamic abilities". Pike (Pike, Fernstrem and Roos, 2005) define them as a way of gaining competitive advantage by adapting, integrating and reconfiguring organizational skills, resources and competencies in accordance with the requirements of a dynamic (changing) environment. An important feature of this concept is that the intellectual capital (intangibles) should represent

not a static set of regularly monitored metrics (a so called report), but a systematic process of resource transformation/conversion within a clearly defined strategic framework, thereby creating value for stakeholders. This process is also referred as the management of intellectual capital. The construction of such kind a process begins with a full analysis of the strategic planning system of the organization. If we take into account the fact that educational organizations (in particular - secondary schools) are regulated institutions, the implementation of intellectual capital practices requires coherence and composition with high level strategic plans – at macro (national) and meso (regional, local) levels.

As a result of literature review (Cheng, Hargreaves, Bornemann) we decided to use Kelly's tripartite model of intellectual capital components in school. Thus, the framework for the semantic analysis consisted of three major blocks:

- thinking (human) capital: competence capital, attitude capital and intellectual agility capital;
- internal capital: student databases, internal networks and intranets, mentoring guidelines, teaching manuals and intangibles such as school ethos and style of management.
- External capital: relationships with parents, external suppliers, local education authorities, the school's inspectorate, examination boards, community groups and alumni.

### **3 Analysis and findings**

We have conducted the semantic analysis of the presence of IC metrics and taxonomy in strategic planning documents for schools in St Petersburg on macro and meso levels. The national educational initiative (macro level) "Our New School" pays special attention to the metrics of human capital of teachers. The authors of the document specify the importance of the following objectives in relation to human capital perspective:

- Updating of qualification metrics and requirements for teachers (competence capital);
- Development of teaching practices and sharing of the best practices. Exchange practices are a great example of the conversion of implicit knowledge into intellectual capital (intellectual agility capital);
- Change the providers of training for teachers and management (competence capital);
- Organize activities to enhance the image of the teaching profession, to reduce the bureaucracy during workplace adaptation for young specialists (attitude capital).

The St. Petersburg economic and social development strategy for the period until 2030, in turn, also emphasizes the value of maintaining, developing, multiplying human capital. It should be noted that this is the only document that uses the concept of "intellectual capital" directly. In accordance to the semantic framework, the Strategy depicts:

- Strengthening of the network partnership (exchange of experience, introduction and use of best practices and techniques, joint activities) - between scientific societies and commercial companies, schools and universities (external capital).
- Increasing the level of investment in human capital - attracting and retaining the best teachers and scientists, supporting schools, developing the concept of lifelong learning (competence capital, attitude capital).

- Organisation of independent external assessment of the quality of education (external capital).
- Introduction of new requirements for qualification and advanced training and retraining of teaching staff (competence capital, attitude capital).

The strategy for the development of the education system of St. Petersburg for 2011-2020 represents a significantly different amount of IC concept embeddedness. This Strategy, unlike the other documents, indicates the significance a new way to report on assets of the educational institution. The new model should contain internal self-evaluation systems, allowing to manage the quality of education not only by the resulting metrics, but also by the process and resource efficiency metrics. This model is expected to contain metrics of intellectual capital: teachers' competence levels, relationships with other institutions.

At the meso level, the importance of conducting an open assessment of the competitiveness of educational institutions is also presented in the Roadmap "Changes in social sectors aimed at improving of the efficiency of education and science in St. Petersburg for the period 2013-2018 Years". This roadmap concentrates on internal capital and competence capital metrics (professional level of information communication technology (ICT) competence for teachers and school managers).

It is also worthwhile to analyze which metrics are embodied in the model of the regional system for assessing the quality of school education. This model concentrates mostly on internal capital (ICT, infrastructure) and human capital of employees (competence, attitude capital). Students thinking capital is represented only by one group of metrics (admission statistics). External capital is measured only by two metrics - interaction with partners and suppliers.

#### **4 Conclusion and discussion**

According to the result of the semantic analysis, we can state, that there is a certain level of IC concept understanding within the regulations and the planning system of school education in Russian Federation and St Petersburg. Strategic goals are interconnected with worldwide educational trends and correlate with each other on macro and meso levels. Some documents even focus on the development of intellectual capital on macro level. But, as we start analyzing the micro level of planning, we encounter a problem – the system of evaluation for schools and the strategic plans of the exact school do not match the meso and macro levels. Thus, schools themselves need to be more independent in the process of implementation of IC measurement and reporting.

Secondly, all the strategic documents focus mostly on human capital in terms of employees (management and teaching staff). The aspect of a student is barely present in metrics and goals. Organisational (internal) part of the intellectual capital is mentioned more often than the other metrics. This fact demonstrates, that even though the educational system lacks funding, governmental agencies are still paradoxically expect schools to produce more valuable and qualitative services. Our analysis demonstrates that strategic metrics cover the result of the education, not the process itself. We continue this study to examine, whether micro level of strategic planning correspond macro level strategies. Also the level of understanding of IC concept by directors and school managers needs to be checked.



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## **MSDs: Overlooked Opportunity for Health Care Cost Savings and Productivity Loss Prevention**

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### **Abstract:**

**Purpose:** To explore workplace wellness programs (WPWPs) in the U.K. and the U.S. to learn what they offered companies, and if they demonstrated a sustainable return on investment (ROI). Another aim was to discover the financial impact of musculoskeletal disorders (MSD) on U.K. and U.S. companies and society. Also to investigate awareness of costs, impacts, strategies or concerns about MSD by corporate managers, professionals and WPWP experts.

**Methods:** A qualitative Framework Method was applied using stratified purposive questioning using a maximum variation sample within the WPWP industry. Interviews were conducted using semi-structured questions with 28 professional managers, researchers, vendors, experts and WPWP conference organizers within the U.K. and the U.S.

**Results:** The results revealed that U.K. researchers and WPWP professionals had more strategies for workplace MSD than their U.S. counterparts though U.K. corporate managers had little awareness or concerns about MSD. It also revealed that U.S. corporate managers had more awareness of the high costs of MSD but few strategies.

**Conclusion:** Current WPWPs generally did not demonstrate a consistent ROI and that MSD was not addressed routinely by U.K. or U.S. managers due to their lack of awareness in the U.K. and solutions available in the U.S.

### **CHAPTER 1: INTRODUCTION**

#### **Research Question:**

In an era when corporations and governments are targeting health care cost containment for their sustainability, why are most workplace wellness providers, and/or their corporate/government clients not addressing MSD in the workplace as a business strategy for reaching that target?

#### **1.1 Definition of Terms:**

The terms were defined here for knowledgeable peers for clarity.

**WPWP:** Work Place Wellness Programs. Corporate sponsored programs focused on the health and well-being of employees.

**MSD:** Musculoskeletal Disorders (Diseases). Also, referred to as MSK.

**HR:** Human Resources.

**HRA:** Health Risk Assessment. A battery of medical questionnaires used to determine if an employee had any risk factors for chronic diseases.

**Biometric Screenings:** Clinical screening of a patient's blood pressure, weight, body mass index, percentage of body fat, muscle mass and water content, blood analysis.

**OECD:** *Organization for Economic Co-operation and Development*. An international economic organization of 34 countries founded to stimulate economic progress and world trade. (OECD, 2013).

## **1.2 Background of the Problem:**

### **1.2.1 Work Place Wellness Programs (WPWPs)**

WPWPs have become very popular over the past two decades and even more so in the United States with soaring health care costs and with the creation of the Affordable Care Act. (HHS, 2014). The WPWP industry mainly focused on chronic diseases that the Center for Disease Control and Prevention (CDC) referred to as a "lifestyle disease" epidemic (Kuzawa, 2009) including: inactivity, poor nutrition, tobacco use and frequent alcohol consumption. These behaviors lead to an increased prevalence of diabetes, heart disease and chronic pulmonary conditions according to the CDC. (Kung, 2008), explaining why WPWPs focused on educating employees with the objective of reducing chronic diseases. The CDC also identified musculoskeletal disorders (MSD) as one of the chronic diseases according to Kuzawa (2009) but WPWPs were found not to include MSD as part of their efforts to decrease chronic diseases in corporations.

### **1.2.2 Musculoskeletal Disorders (MSD)**

There is an epidemic known as MSD, mainly low back and neck pain but also includes several other painful conditions of the muscles and bones.

A European Agency for work safety and health reported that MSD was the most common work-related health problem in Europe. Research showed twenty five percent of workers complained of backache and twenty three percent reported muscular pains. (Podniece, 2008).

The TUC reported that British businesses lost an estimated 30.6 million days to employee absenteeism through work related back pain. (Health Survey for England, 2013). The American Academy of Orthopedic Surgeons and the National Health Interview Survey estimated that back pain was responsible for over 290 million lost work days in the U.S. (AAOS, 2009; NHIS, 2012).

A report from Johns Hopkins University indicated the cost of chronic pain in the U.S. was as high as \$635 billion a year. According to this report, that was more than the annual cost for cancer, heart disease and diabetes combined. (American Pain Society, 2012).

### **1.3 Statement of the Problem**

There has been a gap in the research and business practices that does not connect the two subjects of WPWPs and MSD. Companies were looking for cost containment solutions for the direct and indirect costs associated with chronic diseases yet lacked awareness, concern and knowledge of a primary cost driver, MSD.

### **1.4 Purpose of the Study**

To explore the current WPWP strategies in the U.S. and U.K. The study was intended to learn which companies used these programs, the conditions targeted, the cost to employers and if a ROI was obtained as well as to explore the existence of a knowledge and awareness gap among WPWP experts and corporate managers concerning MSD.

### **1.5 Significance of the Study**

If this knowledge gap was filled, businesses would have a strategy to more diligently realize their objectives of health care cost containment, increased shareholder returns and improved global market competitiveness. If MSD prevention, detection and intervention became a part of corporate business strategy, there could be a potentially significant socioeconomic paradigm shift in thinking and approaching well-being in the work place as a business purpose.

### **1.6 Research Design**

A qualitative Framework Method of interviewing subjects within the corporate world and the WPWP industry in the U.S. and the U.K. was applied. Qualitative data was collected by attending nine WPWP conferences in the U.S. and the U.K. The scope of the study consisted of semi-structured purposeful questions that were asked of a stratified and variable sampling of interviewees; experts, managers, speakers, vendors and conference organizers, whose primary function was to collect and disseminate information within the WPWP space to corporate managers charged with finding WPWP solutions. This maximum variation sample was used for improved data trustworthiness to discover if MSD was currently being addressed in the U.S. and the U.K. by WPWPs in companies. It was also intended to acquire the subjects level of awareness of the effects, costs and concerns of MSD in the workplace. Computer assisted data analysis software was used to extract the interview data into specific themes and categories.

### **1.7 Assumptions, Limitations, and Scope:**

It was assumed that each participant was a qualified professional expert in the WPWP industry and that each one answered truthfully and accurately to the best of their individual abilities based on their personal experience and knowledge.

Some of the potential limitations of the study were resources, time and the availability of subjects for the interview process. The researcher was an MSD physician. This may have introduced bias for the research topic of MSD within companies but provided for rich dialogue among peers.

The scope of the research allowed for the correction of limitations since the subjects were physically present and available for interviews.

## 1.8 Summary

Chapter 2 will briefly review the history and current academic literature available about WPWPs and MSD. Chapter 3 explains the qualitative Framework Method of analyses that was applied. Chapter 4 is a presentation of the themes extracted from qualitative findings, followed by discussions of the findings. Chapter 5 is a conclusion to the work with an overview of how well the questions were answered, what could have been done differently and what else could be done considering this research experience.

## Chapter 2: LITERATURE REVIEW

### 2.1 Interactive Issues

A meta-analysis of academic research and journal articles as well as industry white papers on the topics of WPWPs, business practices and MSD using: EBSCO & Quest search engine service; Google search and MEDLINE. Search terms included, workplace wellness programs, history of, return on investment of, services offered in, case studies of, success stories of, challenges of, business strategy of, delivery systems of, in the U.S. and the U.K... Also, MSD, causes of, cost of, what is MSD, U.S. statistics of, U.K. statistics of, case studies of, impact on the workplace, presenteeism, absenteeism, medical costs of, indirect medical costs of.

### 2.2 History WPWPs

Workplace wellness programs originated in the United States and were created for healthcare cost containment, reduction of absenteeism, increasing productivity, attracting and retaining good employees, encouraging morale and promoting safety. (Baicker, 2010).

WPWPs originated and were developed in the United States starting in the 1970's (Reardon, 1998). General Motors pioneered a program in the late 1960's known as *quality of work life*. (Gordon, 1984). The program was designed to improve work conditions for employees by addressing scheduling issues such as split shifts, time spent in work stations, number of hours worked etc. Several large corporations such as Ford, GE, Motorola, U.S. Steel, Digital Equipment, Westinghouse, have adopted this philosophy as a business practice. (Gordon, 1984). In 1979, Johnson and Johnson created a prototype to the modern WPWP known as their *Live for Life Program*. (Penkak, 1991). According to Penkak, (1991), the study was designed to identify high risk habits and behaviors using a health risk assessment (HRA). According to Reardon (1998) these types of programs developed primarily as a method of cost containment due to the high direct medical cost of heart disease. The U.S. federal government "Healthy People 2000" initiatives (USPHS, 1991, 1992) focused on smoking cessation, nutrition and weight loss as preventative measures against heart disease.

In recent years, there has been an increase in web based coaching and gamification models to increase employee engagement and has become the most popular choice by employers and employees. (Hunt, 2013).

### **2.3 What did WPWPs focus on and why?**

WPWPs focused on behaviors that lead to chronic diseases identified by the CDC (CDC, 2010), such as diabetes, heart disease and chronic pulmonary disease caused by inactivity, poor eating habits, alcohol consumption and smoking.

Most WPWPs began with a health risk assessment (HRA) as a self-reporting questionnaire to get a base line on the health and habits of the employees. (Baicker, 2010). The WPWP trend focused on smoking-cessation, nutrition, exercise, weight loss and stress management. (Arnold, 2009). There has been a shift of a younger working population with chronic diseases which has put a tremendous burden on companies due to absenteeism, presenteeism and the resulting lost productivity. One study demonstrated that employees with chronic illness have health care costs over four times greater than healthy employees. (PWC, 2010). The indirect cost of chronic diseases was far greater than the cost of treating chronic diseases. This amounted to \$4.2 trillion in treatment costs and lost economic output. (DeVol, 2007).

### **2.4 The Business side of WPWPs - The Employers perspective**

Arena, et al., (2013) implied that even with evidence that there was a ROI for wellness initiatives, there was a wide degree of variability among ROI results due to the wide variability of wellness delivery models presented in each case. Workplace wellness in the U.K. included both private and public sectors. Corporations invested in wellness programs to increase profits according to Boyes (2000), by containing the indirect costs of lost productivity from work absence rather than both lost productivity and healthcare costs managed by their U.S. counterparts. Both U.S. and U.K. corporations have dealt with indirect medical costs such as absenteeism and presenteeism as the real cost driver justifying WPWP solutions in both nations as they accounted for nearly 70 percent of health care costs. (Jacob, 2014). Chris Nicholson, COO of Humana Wellness stated that most companies overlooked cost cutting opportunities when they focused only on direct medical costs such as treatment or pharmaceuticals. DeJoy (2003) said that WPWPs were an effective single strategy that aimed to maximize employee health and productivity.

### **2.5 MSD in the workplace**

According to the Mayo Clinic, there were several factors that contributed to MSD, primarily lower back pain and neck pain, including lifting forces such as heavy objects, chronic poor posture that lead to muscle fatigue and soft tissue damage, and chronic emotional stress that lead to chronic muscle tension which is a known cause of back pain. (Mayo Clinic, 2014). MSD accounted for a major part of the health care costs related to work place illness or injury. (NORA, 2011). The National Occupational Research Agenda for Musculoskeletal Disorders (NORA, 2011) estimated the cost of work related MSD ranged between \$13 and \$54 billion per year. A report from Johns Hopkins University stated the total cost in treating and lost productivity of chronic pain primarily caused by MSD in the U.S. was as high as \$635 billion per year which was more than the annual cost of cancer, heart disease and diabetes combined. The cost of lost productivity to companies in the U.S. due to pain was estimated to range from \$299 to \$335 billion. (American Pain Society, 2012).

MSD was a primary cause of 50% of work absences, lost productivity, 60% of short and long term disability as well as direct and indirect medical costs that had a socioeconomic impact in the tens of billions of Euros per year. (Fit for Work Europe, 2013). The loss of productivity related to MSD was believed to have been one of the causes of the weakening of the E.U.'s global market competitiveness. (Black, 2014).

MSD, primarily back pain, was second only to mental illness as the biggest cause of long-term absence in the U.K. (CBI, 2012). The U.K. economy lost 30.6 million working days to sickness absence in 2010 (CBI, 2012; HSE, 2013) and the U.S. lost 290.8 million work days due to back pain alone. (NHIS, 2012). MSD was costlier to business than all the other chronic illnesses combined. (Jacob, 2014). Despite this, less than 1 percent of WPWPs addressed MSD. (PWC, 2008). The literature review revealed that WPWPs in the United States and the U.K. generally did not address MSD.

## **CHAPTER 3: METHODOLOGY**

### **3.1 Introduction**

Research revealed that U.S. corporations carried the double burden of health care costs and the financial losses associated with lost productivity. (Baicker, 2010). The E.U. corporations did not have the burden of direct health care costs to the extent of their U.S. counterparts due to the national health care system (NHS), (Jacob, 2014).

The research was designed to reveal why MSD was not at the center of discussion for corporations who looked to retain earnings and decrease costs through improved productivity and decreased absence due to work related MSD. (Fit for Work Europe, 2014).

### **3.2 Research approach**

Qualitative research was used to gain an understanding of the “why” of underlying motivations or reasons and to expose prevalent trends in thought or opinion. The resulting data was non-statistical and the outcomes were more exploratory and investigative. Murphy (Murphy, 1998) and Pope (Pope, 1995) both believed that qualitative research was a valuable and legitimate method for health research because it provided new insights beyond the quantitative data. Qualitative research was used to gain understanding in a context-specific and a real-world setting.

WPWPs and MSD information were generally found as separate and unconnected research articles therefore it was necessary to collect qualitative data from appropriate stakeholders and to conduct personal interviews to collect current data on the conventional opinions of experts in the corporate and workplace wellness spaces.

### **3.3 SAMPLE**

A stratified purposive sampling method was chosen to illustrate characteristics of subgroups of interest which could facilitate comparisons among the groups. (Ellsberg, 2005; 106)



The interviewees consisted of thirty-six academically qualified professionals who worked for WPWP provider companies, HR, Benefits, Occupational Health and Safety departments within their companies. Also included were professional speakers, researchers and medical experts in the areas of workplace wellness, occupational medicine and health and safety, in the U.S., U.K., and Canada. The chosen participants were purposive because they were likely to generate useful data for the research. (Patton, 2002). The idea was to create a maximum variation sample to ensure that the sample was credible and covered the main groups of interests for the research. (Patton, 2002). Each of the interviewees also represented a variety of business sectors such as manufacturing, consulting, banking, construction, telecommunications, restaurants, hotels, retail, transportation, hospitals/medical centers and staffing agencies. Saturation was reached with the final chosen sample of twenty-eight interviewees.

### **3.4 Data Collection Method**

The individual interview method was chosen in combination with the purposive and maximum variation sample for trustworthiness that the findings represented what the research set out to answer rather than a reflection or bias of the researcher or an atypical sample group. (Boeije, 2002). The collection method of the interviews was systematic for maximum variation and the questions credible or reasonable to generate valid accounts of workplace wellness and MSD phenomenon. (Patton, 2002). The interview questions were primarily semi-structured (Patton, 2002) which meant they were made up of open ended questions intended to define the areas of WPWPs knowledge concerning workplace MSD. The same prompts were used for each interviewee to assure consistency and reliability in the questioning. (Patton, 2002; Jacob, 2012). The prompts were used to qualify each interviewee as a professional in the WPWP space and to determine their knowledge and strategies concerning MSD. Some of the interviews became in-depth or unstructured as the interviewee elaborated on their personal experiences and knowledge which lead to some in-depth understanding from experts on the two subject areas. This lead to a richer and more open interview process.

Personal interviews with thirty-six leaders in the workplace wellness space, of which, twenty-eight were the representative sample in this paper, were performed in nine professional conference venues in the U.K. and U.S. between December 2013 and July 2014. Notes were handwritten at the time of each interview. The interviews occurred during pre-scheduled networking coffee breaks, lunches and dinners which allowed for an informal and relaxed atmosphere in a professional setting. Most interviews were not digitally recorded due to the noise level of the conference venues but a transcript of each interview was typed from the notes the same day. (Patton, 2002).

The intent behind the questioning was to learn the individual leaders' knowledge level of MSD in the workplace, what they did, if anything to address MSD and what their personal opinions were concerning MSD awareness as a business practice consideration. Some of the questioning was altered based on the responses and context of the interviewee. This allowed for more depth and richness to be expressed by the interviewees.

### 3.5 Reliability and validity issues

Lincoln and Guba (1985) used the terms “Credibility, Neutrality or Confirmability, Consistency or Dependability and Applicability or Transferability to be the essential criteria for quality.” (Golafshani, 2003). Golafshani (2003) quoted Lincoln and Guba (1985, p. 316); “Since there can be no validity without reliability, a demonstration of the former [validity] is sufficient to establish the latter [reliability].” Patton (2002) suggested that reliability was the consequence of the validity in a study based on the skill of the qualitative researcher.

Validity. According to a meta-analysis of qualitative research about reliability and validity by Golafshani (2003), several researchers had developed their own concept of validity and created a more applicable set of their own terms, for example; quality, rigor and trustworthiness. (Davies & Dodd, 2002; Lincoln & Guba, 1985; Seale, 1999; Stenbacka, 2001). These researchers realized the need for some type of qualifying measures for their research because validity was influenced by the researchers’ perception of validity based on their paradigm assumption. (Creswell & Miller, 2000). For determining validity or trustworthiness and reliability, the concept of triangulation was applied. (Mathison, 1988).

### 3.6 Ethical Issues

With ethical issues considered, consent of the interviewees was requested and granted verbally and or in writing prior to starting each interview. The nature of the research interviews were business and economics focused and therefore there was no Research Ethics Board or Committee to review the research process as would be the norm for medical and healthcare research. (PRE, 2012).

### 3.7 Analysis of data

Analysis of the qualitative data gathered via the interview process was done using the Framework Method. (Ritchie, 2003). This method was selected as the appropriate choice for thematic analysis of textual data, particularly the interview transcripts. (Gale, 2013). For this study of business practices related to the workplace wellness industry, this framework was suitable as a stepping stone for further research into the development of health policy and how business and health are inseparable entities that could work toward common interests in the wellbeing of people and the sustainability of health care systems.

Qualitative data was typically in a textual form of interview transcripts before analysis. (Gale, 2013). To manage and code the vast amount of data from the interviews, a Computer Assisted Qualitative Data Analysis Software (CAQDAS) called MAXqda was used. The themes were created by evaluating the different categories using the constant comparative method between samples. (Boeije, 2002). For each theme and sub-theme there were several different yet similar categories.

*Themes:* interviews were coded and divided into the following themes.

1. *MSD Cost Awareness*
2. *Concern about MSD.*
3. *MSD Effects Awareness.*
4. *Strategy for WPWP & MSD.*

The systematic and clear process of the Framework Method made it suitable for interdisciplinary and collaborative projects (Gale, 2013) as was the intent of this research paper to combine business management and wellbeing or health as potentially collaborative disciplines.

**CHAPTER 4: FINDINGS**

**4.1 Findings Overview**

Little to no direct ROI could be demonstrated in the most current research based on current practices in the WPWP industry.

According to the literature and the interviews, most WPWP initiatives focused primarily on HRA’s, biometric screenings and behavioral modification.

**Interviewees:**

**Table 1:** Types of Interviewees

INTERVIEWEES FROM THE U.S. & U.K. IN THE WPWP SPACE	Corporate Wellness Provider Companies
	HR/Benefits/Occupational Health and Safety Managers for Corporations
	Professional Experts & Speakers
	WPWP Conference Organizers in the U.S. & U.K.

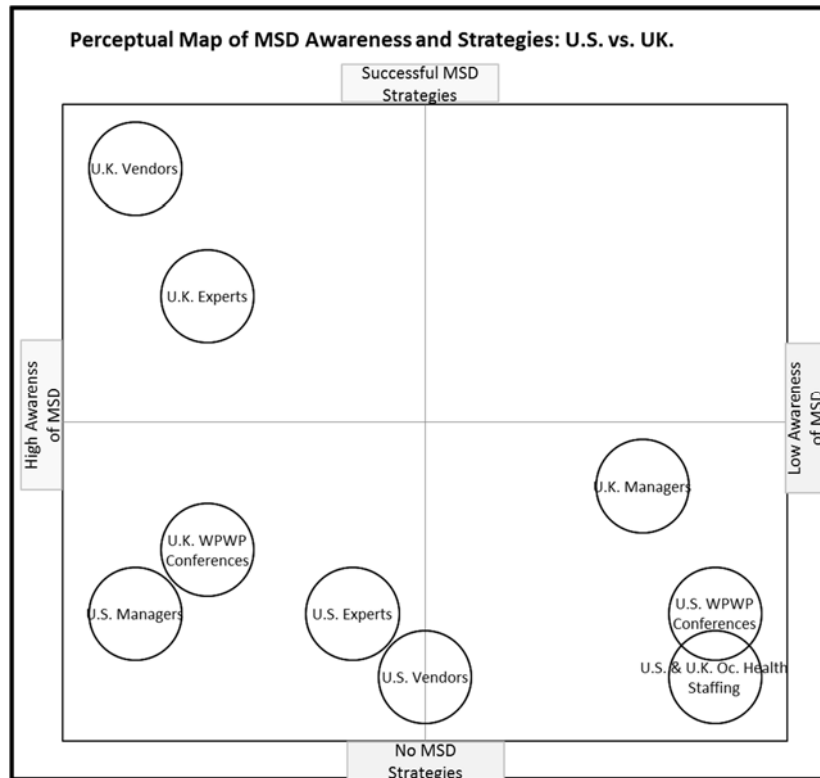
**Themes:** The interviews were coded and divided into the following themes, categories and sub-categories.

**Table 2:** List of Themes, Categories and Sub-categories

THEMES:	CATEGORIES	
MSD COST AWARENESS	No Awareness	
	Some Awareness	
	High Awareness	
CONCERN ABOUT MSD	No Concern	
	Some Concern	
	High Concern	
MSD EFFECTS AWARENESS	No Awareness	
	Some Awareness	
	High Awareness	
STRATEGIES FOR WPWP & MSD	LOCATION	Web Based
		On Site
		Near Site
	TYPES OF STRATEGY	Research
		Wellbeing Interventions
		Prevention
	Results of Strategies	

#### 4.1.1 Research Discussion and Summary:

Below is a Perceptual Map to visualize the findings of the research in graphic form in relation to the Themes: *Awareness of Costs, Effects & Concern about MSD* in the workplace by various stakeholders in the WPWP space and how those stakeholders ranked relative to the presence of *Strategies* for MSD solutions.



**Figure 1:** Perceptual Map of Findings

#### MAP INTERPRETATION:

- *U.K. WPWP vendors had the highest awareness and successful strategies concerning MSD in the workplace.*
- *U.S. WPWP vendors had a mid to low awareness concerning MSD in the workplace with very few or no strategies.*
- *U.K. Managers had a very low awareness of MSD but some had implemented strategies as a result of consulting vendors.*
- *U.S. Managers had a very high awareness of MSD cost, yet have very low level strategies or none at all. Few to no vendors offered them solutions to MSD.*
- *U.K. Workplace Experts and Speakers had high awareness of MSD yet few strategies.*
- *U.S. Workplace Experts and Speakers had some awareness of MSD with few to no strategies.*
- *Both U.S. and U.K. Occupational Health staffing companies had low to no awareness and no strategies.*
- *U.S. WPWP Congress Organizers had very low awareness and no strategies for MSD.*
- *U.K. WPWP Congress Organizers often included an MSD track based on high awareness and statistical information but had few strategies available.*

A crucial finding was, most of the specialist interviewed were highly aware that MSD was a serious and costly problem with the acceptance of U.S. WPWP vendors and job recruiters, yet few demonstrated concerns. Several interviewees whom worked for U.S. organizations consistently cited that MSD was a primary cost driver, being in the top three insurance claims for their own organizations, yet very few WPWP vendors provided or ever discussed with them, solutions for this problem. This was a common finding, primarily in the U.S. market. Most the U.S. interviewees acknowledged that MSD was a serious cost problem yet few were aware of or implemented any direct MSD solutions to resolve it. Some managers and WPWP providers in the U.K. and the U.S. believed that MSD was only a problem for heavy labor sectors and manufacturing.

Most professionals in the U.S. and U.K. who had awareness of MSD solutions referred such cases to external medical, chiropractic and physiotherapy clinics for treatment. Few managers utilized on-site MSD treatment or prevention solutions and fewer still had methods for assessing the potential risk for MSD in their companies.

The U.K. vendors appeared to lead the U.S. in terms of MSD awareness in the work place and offered more on-site educational programs for prevention, back-care exercises and proper posture yet nearly all MSD clinical cases were referred externally. The U.K. WPWP service providers appeared to have a higher awareness of the negative effects of MSD on a company's bottom line. Only two of the interviewees, from a research foundation in the U.K., were actively looking for MSD solutions.

Business groups on health and WPWP conference organizers in the U.S. demonstrated no focus on MSD yet organizers of U.K. based WPWP conferences often had at least one complete track dedicated to MSD awareness and solutions.

Most U.S. based WPWP vendors interviewed offered web-based wellness solutions. They represented the mental, physical and social aspects of wellbeing but did not include MSD. The U.S. based near-site/on-site clinics typically did not address MSD. Most U.K. vendors offered occupational health solutions, physiotherapy and ergonomic education, exercise programs and general wellness education solutions with a mixture being web-based, off site and on-site. Again, the U.K. appeared more focused on MSD prevention and awareness strategies than the U.S.

Though more U.K. WPWP providers were aware of and addressed MSD, U.K. corporate managers had very little awareness, concern or knowledge about MSD as an indirect cost driver or cause of lost productivity. The U.S. based company managers had higher awareness of the costs of MSD than their U.K. counterparts. U.S. managers did not express concern about the costs associated with MSD and focused primarily on controlling chronic diseases other than MSD through web based solutions. Such findings may have suggested a disconnect between knowledge of MSD costs to companies and applied strategies to address MSD primarily in the U.S. market.

It appeared that the U.S. benefits managers, HR managers and wellness program managers charged with developing WPWPs for their companies were limited by what the WPWP vendors offered. U.S. vendors did not offer MSD solutions therefor, the managers in charge

of developing programs did not include MSD as part of their program design. In the U.K., well organized physiotherapy networks focused on getting the employees of corporations to be treated in their network. The NHS in the U.K. paid for treating MSD.

#### **4.1.2 Conclusion of Interviews**

It appeared that U.K. Vendors were highly aware of the MSD problem in companies but U.K. company managers had very low awareness or concerns. This is a complete contrast with the U.S. manager's very high awareness of insurance costs for MSD but the vendors had no MSD solutions to offer them. Because of low management awareness of MSD, in general in the U.K. and lack of solutions in the U.S., companies have not taken on MSD as a business purpose or strategy for sustainability in either country.

## **CHAPTER 5: CONCLUSION & EVALUATION**

### **5.1 Overview**

The application of the Framework Method allowed for the 28 individual interviews to evolve into a group of coherent and associated themes that were highly valuable in answering the research questions. The qualitative methodology used for this research revealed many enlightening and interesting facts about WPWPs and MSD. The research revealed; current practices for WPWPs in the U.S. and the U.K., the socioeconomic impact of MSD in both countries and the reality that research findings concerning MSD as a major cost driver for companies and governments have largely been ignored by corporations and their managers charged with implementing WPWPs. The interview process was very helpful in learning the differences between the U.S. and the U.K. regarding awareness of costs, effects and concerns about MSD and the level of commitment by companies to implement MSD prevention, detection and early intervention strategies and solutions in the workplace.

The literature and interviews revealed that in recent years, wellness and well-being have occupied a central role not only in the popular press but also in the statistical and policy agenda of many countries of the world. (Black, 2014). It appeared that so far, most of the efforts to discover and provide solutions and policies for well-being were limited to academic research and policy circles. Surprisingly, the corporate sector appeared to be less involved in any of the discussion or implementation of solutions. MSD was not found to be on the agenda of most corporate discussions but was the center of discussion for policy makers and academics in the U.K. (Fit for Work Europe, 2014).

### **5.2 Key Findings**

There was a complete disconnect between WPWPs and MSD even though the research evidence demonstrated a direct link between MSD and work environments. In the U.S., one of the interviewees summed it up quite neatly when he stated, *"MSD does not fall under the normal workplace wellness category but rather the medical claims category...the current market has yet to address MSD in the workplace as part of the common chronic diseases."* U.S. corporate managers charged with finding solutions for health care cost containment had a very difficult time making the connection between MSD costs and solutions. The reason for this phenomenon was explained by a U.S. WPWP Conference organizer when he stated that

of, “...the current corporate wellness providers... clients and speakers, I am unaware of any company that provides on-site treatment for MSDs.”

The biggest barrier to the introduction of MSD solutions in the U.K. corporations appeared to be the managers within companies who lacked awareness or concern about MSD. For the U.S. market, the biggest barrier was again corporate managers who lacked available MSD services or tangible concern about MSD direct and indirect costs.

### 5.3 Recommendations

Research and pilot studies could be done with employee populations to examine whether MSD health of stakeholders could be an alternative business purpose; a purpose that would legitimize business activity within society and with other stakeholders including investors as a viable business strategy for the reduction of health care costs and lost productivity.

### 5.4 Limitations

High cost associated with traveling to and attending conferences to collect interview data. The results of the method were highly effective in achieving valuable information in exploring the current thinking and practices within the area of WPWP in the U.K. and the U.S.

### 5.5 Final Comments

If MSD prevention, detection and intervention were part of a company's business strategies, a new growth market could potentially develop opportunities for health care professionals who specialized in MSD treatment and prevention. Those specialists could join forces with professionals and vendors in the WPWP industry to more appropriately serve corporations by obtaining a greater ROI for shareholders, investors and other stakeholders. A greater ROI could potentially be achieved if payment methods for health care services were re-evaluated and new, more cost-effective approaches applied.

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# Human Interaction of the Organization and the Organization of Human Interaction: A 7R View

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**Abstract:** The global economic growth is predicted to be declining during 2016-2017, described by the sixth Kondratieff cycle and accentuated by the industry 4.0 concept related to intelligent technologies and cyber-physical production system (Aguilar-Millan 2012; Deloitte 2015; GTAI 2014; Reuter 2013; United Nations 2016). Organizations need to adapt themselves to stay in the business. Mergers and acquisitions (M & A) will increase, especially in the technology industry (AlixPartner 2015; Deloitte 2016). The 7R framework is an ethics-based framework for eliciting unethical thinking and decision-making issues within management ranks during merger-integration (Mak et al. 2017). This paper applies this 7R into other categories of worker, aim for entire organization, in order to surface other social issues in organization and bridge subcultures during M & A. An exploratory qualitative study was done with 80 white-collar and 400 blue-collar workers from two subsidiaries in a multinational company in Thailand. The findings suggest that the 7R framework helps elicit different perceptions and paradigms on social issues between white- and blue-collar workers and paving the way to improved human interaction and relationship among subcultures during a change-transformation period.

**Keywords:** merger-integration, mergers & acquisitions, organizational interaction, organizational communication, subcultures

## 1 Introduction

The sixth Kondratieff cycle describes economics phenomena as long-term trends related to intelligent technologies from 2010 to 2050. The six waves comprise (a) steam engine in 1780 – 1830, (b) railway and steel in 1830 – 1880, (c) electrification and chemical in 1880 – 1930, (d) automobiles and petro-chemical in 1930 – 1970, (e) information and communication technology (ICT) in 1970 – 2010, and (f) intelligent technologies in 2010 – 2050. Specially, the sixth wave is propelled by various factors such as demographic change, maturing environment concerns, web-based empowerment, resources efficient technology, and growth of health services (Aguilar-Millan 2012; Reuter 2013; Wilenius and Kurki 2012). Meanwhile, the industry 4.0 concept gains popularity as a near future industrial revolution that depicts the integration of internet of things between machine, human, and digital data in future social living. Manufacturing management is a convergence of cyber-physical production system (Deloitte 2015; GTAI 2014; Kagermann et al. 2013). It is predicted that the

global economy growth will be declining during 2016 – 2017 (United Nations 2016); organizations need to adapt themselves to stay in the business.

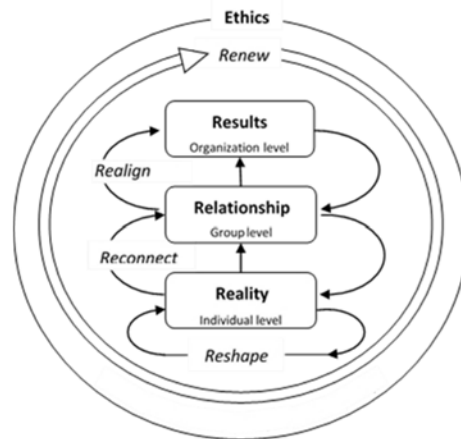
Market reports have also indicated that mergers and acquisitions (M & A) are likely to increase as a managerial strategy, especially in the technology industry. The main intention of M & A is to strengthen the business competitiveness by acquiring higher existing sales volume, new markets and products, new technologies, and other resources, while improving productivity by applying new technologies and eliminating redundancies. However, a negative impact from M & A is reported in the study of 150 deals across industries during 1990 – 2000 that percentage of eroded returns increased from 50% in 1995 to 69% in 2001. There are pitfalls associated with M & A; the top three notable impacts being (a) incompatible cultures, (b) inability to manage targets, and (c) inability to implement change (AlixPartner 2015; Cummings and Worley 2005; Deloitte 2016; Schmidt 2002). A study to mitigate these pitfalls brings value in helping organizations achieve successful merger-integrations.

Increasing the success of M & A needs consideration in both business and people, of which people issues are major cause of M & A failure (Schmidt 2002). People emotions from organizational change are strongly correlated to change effectiveness at individual, group, and organization levels (Helpap and Bekmeier-Feuerhahn 2016). From Aristotle's view, every emotion affects moral actions naturally as its consequences either pleasure or pain; positive emotions lead to choice creation while the negative emotions impose avoidance (Ostwald 1999). This suggests that people being concerned with negative emotion or pain tend to act unethically rather than nobly during change.

*How should we live?* A big question for those engaged in situation of unethical practices and ethical dilemmas. Decision making during M & A results in consequences that impact the way we (employees and company) live together. Scholars explored ethics theories that involve well being in M & A such as moral (meta-ethical) relativism, utilitarianism, rights and duties, fairness and justices, and care ethics (Harman 1980, 2013; Wong 1984). Vital procedures and processes are required in order to achieve open communication and sharing information to minimize intentional and unintentional unethical practices in decision making (Boyd et al. 2013; Zagelmeyer et al. 2016).

Mak et al. (2017) proposed the 7R framework, an ethics-based change management, to encourage open communication related to ethical decision making during merger-integration. It was developed by incorporating of three perspectives with (a) impact on employees' emotion, (b) impact on ethical decision making, and (c) ethics theories in ethical thinking and decision making. Figure 1 shows four stages of 7R; (a) *reshaping reality* at the individual level, (b) *reconnecting relationship* at the group level, (c) *realigning* to achieve *results* at the organizational level, and (d) *renewing* at all levels by repetition of the process.

Drawing on the 7R framework and reflecting on the pitfalls of M & A, the purpose of this study is therefore to answer two research questions as follows; RQ1: How does the 7R framework help to elicit conversation on social issues in an organization?, and RQ2: How does the 7R framework bridge subcultures in a merger-integration in Thailand?



**Figure 1:** A proposed framework – the 7R ethics-based change management framework (Mak et al. 2017). Adapted with permission

## 2 Methodology

This study explores a theory-based framework for change management in a M & A process, focused on social issues and organizational culture that impact the success of mergers-integration and organizational transformation. An exploratory qualitative study involving a total of 80 white-collar workers and 400 blue-collar workers at a multinational company in Thailand was conducted. The researchers were involved in their merger-integration process two years ago. Integration, downsizing, and reorganization processes impacted all levels of employees. The top executive team selection was perceived as flipped M & A; that is, the acquired company became primary members with higher authority. The integration activities resulted in downsizing redundant jobs, volume allocation between factories, harmonization in many policies of compensation and benefit; both financial and non-financial impacts were felt by employees. Some changes were executed rapidly within a six months period, while some were pending due to regulatory and legal constraints. These integration activities generated negative sensation, perception, and low employee morale.

### 2.1 Participant Sampling

Two-day workshops were conducted for both white- and blue-collar workers with 40 participants per sessions with internal and external facilitators; a total of 480 employees participated. All participants worked at various departments within two manufacturing operations (subsidiaries). The white-collar participants were nominated by snowball method; starting with department directors and down the reporting hierarchy. The blue-collar participants were nominated by snowball and convenience sampling methods; snowball method starting with the line managers and down the reporting hierarchy while convenience method was applied for the matching work schedule to workshop dates.

The four qualitative methods typically were used by researchers; (a) direct observation, (b) in-depth interviewing, (c) participation in the setting, and (d) analyzing documents (Marshall and Rossman 2006).

## 2.2 Data Collection

The researchers worked with the internal facilitators (for blue-collar participants) and external facilitators (for white-collar participants) to incorporate the semi-structured interview questions into the workshop program and constructing a focus group setting. The purpose of the workshops was to create an open-forum with psychological safe-environment where participants kept confidence of the information exchanged, shared feelings and thoughts and clarify doubts in merger-integration, and engaged in in-depth dialogue with each other. The participants was informed this intention of the workshop. Table 1 shows the tools and data collected during the workshops conducted. Thematic analysis was applied to information collected by the tools as shown in Table 1 (Braun and Clarke 2006).

**Table 1:** Description of tools and data collected during the four workshops.

Tool	Data Captured	Captured By Who	Contributors
Flip-Chart	Themes emerging from responses to open-ended questions	Three external facilitators (one listens, two scribes; alternate)	Participants
Observations (field notes)	Participant behavior, body language, tone of voice, interaction	Author (as participant-observer)	Participants
Narratives, dialogue between participants (field notes)	Stories from participants; 15-45 minutes exchanges	Author (as participant-observer)	Participants
Photographs / Videos	Interaction activity (example: game)	Author (as participant-observer)	Participants
Interviews (focus group)	Responses to open-ended questions and probes; 5-20 minutes per participant, per question / probe	Author (as participant-observer), main and assistant facilitators	Participants

## 2.3 Trustworthiness

Trustworthiness considerations in four areas, (a) credibility – taking notes by member checking and participants daily debrief, (b) transferability – reflective debrief by external facilitators, (c) dependability – triangulation by checking between authors, internal and external facilitators, documents, and (d) confirmability – authors self-reminder and cross-reminder of bias and role (Lincoln and Guba 1985; Patton 2015).

## 3 Theoretical review

Five essential theories involved in this study, namely, (a) social identity theory, (b) attachment theory, (c) bereavement theory, (d) standpoint theory, and (e) interpersonal communication.

### 3.1 Social identity theory (SIT)

Tajfel and Turner's (1986) social identity theory explains intergroup behavior, social conflict, and social change that relate to transition from individual to group perspectives. Whenever people compare or compete themselves with another, the differences of individual world's view (i.g., self-interest, profit, fairness, stability) are emerged as a conflict. These differences influence interaction or social behaviors in between interpersonal and intergroups continuum. Interpersonal relationship is developed from individual characteristics such as

stereotypes. Meanwhile, intergroup relationship associates with group identification, by designation or evaluation of ingroup and outgroup, which creates level of sense of group belonging (Tajfel and Turner 1986).

What makes people change groups? Social mobility is defined as high feasibility of individuals' ability to move from one group to another. This movement is related to self- and social-categorization, where ingroup profit is a focal point rather than personal interest. On the other hand, social change is explained as low feasibility of individuals' movement. The social status, such as reputation, legitimacy, and stability, influences individual's ease to move. The belief system, attitudes, and values affect individuals' movement psychologically (Tajfel et al. 1971; Tajfel and Turner 1986).

### **3.2 Attachment theory**

According to Bretherton (1992), John Bowlby and Mary Ainsworth jointly developed attachment theory. Attachment theory explains the short- and long-term bond and connections between humans. According to Bretherton (1992), Bowlby concluded that overall mental health of an infant was affected by the relationship and closeness between the infant and caregiver (mother, or mother-substitute). It is the future direction mentioned in Bretherton (1992) that brought interest to this study; "systematic work on the more fascinating topic of how different cultures – especially non-Western cultures – fit attachment behaviors and relationships into their overall social organization has barely begun (p. 770). This theory reflected loving and caring affect individuals' feeling to stay or separate from others; when faced with change-transition events.

### **3.3 Bereavement theory**

Park (1988) studied ways of construing the psychology of loss. The loss aspect of psychological change transition is exhibited when people failed to change their assumption or internal / mental model about the world. When Johansen (1991) examined bereavement theory by Kubler-Ross's study of *On Death and Dying*, he realized that this extremely intimate experience of impending loss was helpful in understanding of individuals' feeling from accompanying organizational change. Two-track model of bereavement theory is developed as adult reaction patterns to loss; (a) affective attachment to the deceased, and (b) extent of personality change (Rubin 1981). This theory reflects loss affect from an individuals' world view and behavior change when faced with change-transition events.

### **3.4 Standpoint theory**

Nancy Hartsock's feminist standpoint theory drew on Hegel's take on master-slave relations (Changfoot 2004) and the Marxian critique of class domination. Standpoint theory depicts the different location in social structure leads different knowledge. An individual has his or her own experience which the individual's perceptions differ. Social dominant group influences its construction, meanwhile this theory encourages voice from marginalized group. The relations in groups are developed from shared experiences and their locations (Harris 2017). The reflective thinking of using different lenses to see information is important to people

interaction, social knowledge, and construction. The people are energized to acquire more knowledge or information by different positions in social structure (Harris 2017).

### **3.5 Interpersonal communication**

Interpersonal communication describes in aspect of individually center, interaction-centered, and relationship-centered. Human interaction and subculture relationship are examined in following section.

#### **3.5.1 Human interaction**

“Human interaction is described as a communication system... system-subsystem relations, wholeness, feedback, and equifinality” (Watzlawick et al. 2014, p. 128).

From a communication perspective, when people have interaction with others, the continuum of conversation and relationship relate to attachment styles. Four adult attachment styles are described based on two dimensions of self and others with positive versus negative model; (a) secure – positive model of self and others leads comfortable with intimacy and autonomy, (b) preoccupied – negative model of self but positive model of others leads relationships, (c) dismissive – positive model of self but negative model of others leads counter-dependent, and (d) fearful – negative model of self and others leads socially avoidant (Bartholomew and Horowitz 1991).

The organization of interaction is defined as human communication and its complexity based on patterning of recurring, ongoing communication, and structure of communication processes. Interaction is perceived as a system; a set of objects and its relationships. Open systems characteristic (interaction state) includes wholeness, feedback, and equifinality. Meanwhile, close systems characteristic (steady state) aims to maintain ongoing relationships, limitation of communicating, and relationship rules. Family is an example of a system, behaviors of family’s members affect each others and their relationships rules. The nature of interactional systems inclines to adjust from disturbed to stable condition thru communication as a core (Watzlawick et al. 2014).

#### **3.5.2 Subcultures relationship**

The authors reviewed key concepts and models of organizational culture from 14 studies during 1976 – 2015. By grouping of purposes, there are four groups, as show in Table 1, (a) classification for typology from 5 studies, (b) diagnosis for understanding from 7 studies, (c) mixing of classification and diagnosis with assessment tool from 1 study, and (d) mixing of diagnosis and prediction with assessment tool from 1 study (Cameron and Quinn 1999; Cooke and Rousseau 1988; Deal and Kennedy 1982 (cited in Saffold 1988); Denison 1990; Grant 2013; Handy 1976; Harris 1994; Hofstede 1980, 2002, 2010; Johnson 2000; McGuire 2003; O’Railly et al. 1991; Rosauer 2015; Schein 1983, 2010). None of them examines on interaction and relationship between subcultures in main culture. A navigating study in an explosion of new tools in information technology and media transmission create the highly accessibility in cultural phenomena, include some unique cultures happen in the information age. Both national and ethnic cultures are examined through manifold occupational groups. Such that the four categories of culture are proposed, (a) macrocultures in global level such as nations

and religious, (b) organizational cultures of institutions, (c) subcultures in groups within organizations, and (d) microcultures in microsystem of both within and outside organizations (Schein 2010). Therefore, the study of interpersonal communication and relationship between subcultures within an organization will generate a deeper understanding in the organization.

**Table 2:** Reviewing of organizational culture from 14 studies

No.	Researchers	Year	Key Concepts / Models	Purpose
1	Charles Handy (adapted Roger Harrison)	1976	4 Types: Power, Role, Task, and Person (Link structure to culture)	Classification
2	Geert Hofstede (2002, 2010)	1980	5 Dimensions of cultures (National & Organizational)	Diagnosis
3	Deal & Kennedy (cited in Saffold, 1988)	1982	4 Types of organization: the way things get done around here	Classification
4	Edgar Schein	1983	3 Levels of culture: Artifacts, Espousal values, Basic underlying assumptions	Diagnosis
5	Robert A. Cooke & Rousseau	1988	Organizational Culture Inventory with 12 behavioral norms	Diagnosis
6	Deniel Denison	1990	4-General dimensions (Flexibility/Stability, Internal/External)	Diagnosis
7	O'Railly, Chatman, & Caldwell	1991	Organizational Cultural Profile (OCP), self-reporting tool, 8 categories	Diagnosis
8	Stanley G. Harris	1994	5 Categories of in-organization schemata (perceptions)	Classification
9	Kim Cameron & Robert Quinn	1999	4 Archetypes from competing values frameworks, Organizational Culture Assessment Instrument (OCAI) 6 characteristics	Classification / Diagnosis
10	Gerry Johnson	2000	A culture web of an organization	Diagnosis
11	Stephen McGuire	2003	Entrepreneurial Organizational Culture (EOC) with 8 elements to predict revenues from new sources	Diagnosis/ Prediction
12	Edgar Schein	2010	4 categories of culture: macrocultures, organizational cultures, subcultures, microcultures	Classification
13	Adam Grant	2013	Give & Take model: Giver, Taker, Matcher (Giver take all)	Classification
14	Bernard L. Rosauer	2015	Three Bell Curves: Customer, Work, Employees (Why-What-Who), business decoded for root-causes to achieve organic growth	Diagnosis

#### 4 Human interaction and organization: the 7R view

We will present this section aligned to four stages of 7R framework for answering two research questions previously. Including both white- and blue-collar workers in this study provides the organizational hierarchy perspective. Studying both subcultures of the two subsidiaries being merged provide the system perspective. The insightful information is elicited through dialogue workshop.

##### 4.1 White-collar participants' interaction



**Figure 2:** Attending workshop by white-collar participants from two subsidiaries. Photographs are reseearhers' own



**4.1.1 Stage one: Reality and Reshaping thinking** – understanding other’s worldview and inner self-discovery are inquired in this stage. During an activity of Heart Mandala, participants had a chance to express their feelings on receiving impacts from this merger-integration.

“I’m tired by these ongoing changes. I perceive my new job scope was limited from re-organization process. Such that change makes me has less contribution and seem useless, it demotivated me. Actually, I can do more.” (Participant, private communication, 14 Feb 2017)

“After listening everyone here, I have better understanding to the change. Accepting these changes help me to stay calm before solving any problems and making decision. Changing myself is the easiest way. Don’t tied oneself to that problems.” (Participant, private communication, 14 Feb 2017)

**4.1.2 Stage two: Relationship building and Reconnecting** – multilevel connecting between individual to group to organization are built in this stage. Reflection process after small group dialogue is applied.

“I realize that both you and I just has different styles or characters. You are more likely a practioner but I am more likely an academic, even though we are the same engineers. In another role, we are the same as parents or family members who are taking care of them too. I also can see my deparment executive who has humanity perspective. Thus, I belive that we can learn from each other rather than compete.” (Participant, private communication, 15 Feb 2017)

**4.1.3 Stage three: Results and Re-alignment** – aligning goals, expectations, and shared values are revisited in this stage. Sharing ideas for moving forward by participants.

“I understand how taugh decision making that CEO have to work on it. From his actions and communication, I can see his good intention that we are trying to have some common things among subsidiaries, no need everything. According to crisis of technology change, he is trying to do many things to keep us continue in the business, even though we have to let some employees go. I will smile more oftenly and open-mind. We will be role model of One-Team.” (Participant, private communication, 15 Feb 2017)

**4.1.4 Stage four: Renew** – when a new change emerges, these prior stages will be revisited. Repeating the cycle is reconsidered in this stage to address new of additional issues.

“I involved in the thick of merger-integration for the last one year. I understand all stakeholders. And things still keep changing like season change in the nature. We have to be prepare and ready for coming change.” (Participant, private communication, 15 Feb 2017)

## 4.2 Blue-collar participants’ interaction



**Figure 3:** Attending dialogue workshop by blue-collar participants from two subsidiaries. Photographs are resesearchers’ own

**4.2.1 Stage one: Reality and Reshaping thinking** – understanding other’s worldview and inner self-discovery are inquired in this stage. Empathy cards set (feelings vs. needs) is used as assisting tool for blue-collar participants to express their feelings on receiving impacts from this merger-integration.

“After listening her story, I see my problem is much smaller. Previously, I was worried on volume down, no overtime, and lay-off. Sometimes my boss also got stress from this merger-integration. It created difficulty in our talking and working together. Now I realize that our life has other things beyond working such as my health and family. I will stop anxiety and create some back-up plans for myself.” (Participant, private communication, 22 Sep 2016)

**4.2.2 Stage two: Relationship building and Reconnecting** – multilevel connecting between individual to group to organization are built in this stage. Reflection process after small group dialogue is applied.

“I ever got complains from my co-workers, friends, and family but I didn’t listen to them enough. Thus, I didn’t understand their concerns. What I take away is that I will listen to them more for better working in this current job and family too.” (Participant, private communication, 6 Jul 2016)

“Thank you for warm welcome me from another site, especially delicious foods. Also, thank our site executives who let us attend this session. At first, I felt a lot of anxieties when I knew that I have to join. What is it? I never heard this session name before! But now, since starting until the end, I love this session so much. My learning point is listening until they finish speaking. Normally I’m really high temperature person and judge others quickly, I will stay calm for longer listening and deeper understanding others.” (Participant, private communication, 22 Sep 2016)

**4.2.3 Stage three: Results and Re-alignment** – aligning goals, expectations, and shared values are revisited in this stage. Sharing ideas for moving forward by participants.

“All shared experiences here are thinking process for me. I’m a driver person and straight forward style. I will share this lesson learned to my friends at work for better collaborating with them and developing our organization in the better way. I will be more focusing on doing my job. If company needs to deploy this kind of workshop for front-line employees at my site, I want to volunteer to be a facilitator team.” (Participant, private communication, 22 Sep 2016)

**4.2.4 Stage four: Renew** – when a new change emerges, these prior stages will be revisited. Repeating the cycle is reconsidered in this stage to address new or additional issues.

“Whenever an unexpected event happens, especially with my kids, usually I will out of self-controlling. This cards game help me a lot to understand the difference between feeling, thinking, and need. I take away how to hold my emotions, let it go, and think consciously before reacting to that situation.” (Participant, private communication, 6 Jul 2016)

### 4.3 Human interaction themes

Thematic analysis of the data collected from the workshops elicited a common theme of human interaction aligned to theories as shown in Table 3. We also will present this section aligned to the research questions shown previously.

**Table 3:** Themes of human interaction versus theories in white- and blue-collar workers of two subcultures during merger-integration

Theories	White-collar worker	Blue-collar worker
<b>Social identity (SIT)</b>	<b>Whose authority – Money vs. Technology</b> Authority of acquirer identity	<b>Just do my job</b> Current job identity
<b>Attachment</b>	<b>Who care – I vs. Company</b> I was chosen to stay by my values. Or I wanted to be chosen to leave.	<b>You care me</b> I want to stay because this is my second home with better compensation and benefit.
<b>Bereavement</b>	<b>Lossing identity &amp; power</b> ownership, knowledge, and authority	<b>Lossing income</b> Volume down, I loss my overtime.
<b>Standpoint</b>	<b>Visible executives</b> I can see CEO and management.	<b>Visible direct supervisor</b> I know it from my boss.
<b>Interpersonal communication</b>	<b>Allowing open &amp; close system</b> Learn from each other and external expertise, get to know new people, and set work alignment	<b>Facilitating friend &amp; family system</b> Learn from friends and kids, better understanding for better collaborating

#### 4.3.1 RQ1: How does the 7R framework help to elicit conversation on social issues in an organization?

According to themes of interaction among white- and blue-collar workers, the standpoint theory perspective shows different distance to acquire organizational information during merger-integration. The white-collar group had larger distance (myself-to-CEO) than blue-collar group (me-to-my boss), which led higher ability to receive and access organizational information. Individuals' collecting of tremendous information generated the various individuals' world view which became social conflict issues in organization; referred to the social identity theory. Therefore, during merger-integration, the white-collar interaction emphasized on social identity and power issues, while the blue-collar interaction focused on basic human need of income and interpersonal relationship.

#### 4.3.2 RQ2: How does the 7R framework bridge subcultures in a merger-integration in Thailand?

According to themes of interaction among subcultures (two subsidiaries), the white-collar worker is perceived as having a personal value and knowledgeable system perspective; allowing both open and close system is needed for information flow between two subsidiaries in order to fabricate trust, empathy, alignment, and motivation. Meanwhile, the blue-collar worker is perceived as having the family system perspective; understanding each other and doing best in my area for achieving better relationship and collaboration.

## 5 Implications for HROD

Initial intent of the 7R framework centered about ethics. This study furthers application of this framework into other social issues in organization during merger-integration. Many executives mentioned that HR professionals in high-performing organization generate a value-added to enable business outcomes during economic uncertainty by their competencies and focusing on realistic organizational performance and business impact. Six domains of future HR competency are defined from outside in perspective; (a) credible activist, (b) strategic positioner, (c) capability builder, (d) change champion, (e) HR innovator and integrator, and (f) technology proponent. First competency of being a credible activist (effective interpersonal skill to build foundation of trust) is an individual core domain. Also, people perceive it is the strongest domain of HR with highest impact ratio on individual effectiveness but lowest to business. The weakest competency is technology proponent that generates higher impact to business (Ulrich et al. 2012).

According to people perception that HR interpersonal skill is the most strength but does not generate relevant impact to business as resulted. The concept of developing strengths is proposed by many scholars rather than focus on weaknesses. Developing skills that complement what people do best is an investment, not spending (Seligman 2002). The authors focus to improve on HR strengths that are essentials in people development. Therefore, as HROD professionals, we question on what is missing in this strength and how to enhance this interpersonal skill in order to bridge the gap between HR competency and business impact.

This paper proposes the significant skills of dialogue by Bohm (1996) and applying nonviolent communication (NVC) by Lasley (2010) that help in facilitating conversations at basic assumption level in organizational culture model by Schein (2010). The 7R Framework encourages two-way communication for thinking together, ideas exchange, and paradigm shift, aiding HROD professionals become competent as change agents and skillful facilitators in helping organization through change management, blending of local and global cultures and fostering a humane workplace (McLean 2006; Ulrich et al. 2012).

## 6 Recommendations for future research

There are many challenges in the future business and organizational changes. The digital age accelerates the shifting rate for new definition of workforce, workplace, and world of work. Business and HR leaders are forced to have the new paradigm about their business, talents, and role in global social issues (Deloitte 2017). Therefore, applying 7R framework for change management in this digital era is an opportunity of discovering new concepts and theories encompassed the new shifting paradigm.

## 7 Conclusion

Applying the 7R framework is a multi-level approach for organizational change management to elicit the social issues during merger-integration such as low morale, communication flow, lossing power, and relationships. There are five crucial theories: Social identity theory, Attachment theory, Bereavement theory, Standpoint theory, and Interpersonal

communication theory involved in thematic analysis on human interaction in two group of employees, white- and blue-collar worker. Also the human interaction among two subcultures (subsidiaries) were examined in this study. The authors found that the different hierarchical standpoints of workers affected their ability to acquire information which led the different perceptions and paradigms. Therefore, these differences brought in organization the various impacts in multi-level with different degree of concerns that needed a distinct approach for solving or mitigating social issues and improving subcultures relationship.

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## Does exist a way to Manage HR in Portugal? An Analysis from German Multinationals HRM Practices

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**Abstract:** Multinationals have operating problems due to the multiple contexts in which they operate. One of the greatest challenges for these organizations is the management of the cultural diversity of their human resources, in the sense of creating a collective of work capable of meeting the goals of the new economy. In Portugal, of the most represented countries at the level of their multinationals, Germany is the one that has a more antagonistic culture when compared with Portuguese culture, not preventing a multiplicity of successful cases. This paper firstly aims to characterize the HRM practices used in the Portuguese subsidiaries of the German multinationals and to see if there is a pattern in these same practices, trying to find out the "how" German companies manage with productivity the Portuguese human capital. The results dictated the existence of a pattern used in practices and a clear focus on human resources, identified by a clear approach to HRM soft model, without neglecting the importance of achieving the goals, improving empowerment, knowledge, skills and motivation.

**Keywords:** Multinationals (MNCs), Human Resource Management (HRM), Portugal

### 1 Introduction

Globalization has made the world flat (Friedman, 2005) providing companies the exploration of new markets, arising a growing number of cooperative alliances, mergers, acquisitions, and, naturally, multinational corporations (MNCs) (Mayrhofer & Brewster, 2005).

The internationalization of the Portuguese economy underwent a decisive boost with the country's accession to the European Community (EC) in 1985. Entry into the EC brought a significant acceleration of foreign direct investment (FDI) in Portugal, as demonstrated by the fact that in the first five years of integration (1986-1991), the FDI has a growth of more than 1000% (Mateus, 1992). In recent years, the European Union continues to be the main source of FDI in Portugal in cumulative terms, with a share of 87.5% at the end of 2016, notably Spain, France, the Netherlands, Germany, the United Kingdom United Kingdom and Luxembourg (BP, 2017), culminating in the arrival of countless multinationals to our country.

Of the countries with the highest FDI accumulated in Portugal, we highlight Germany, which in addition to generating 20.7% of the GDP of the European Union is still the largest European market, and the fourth most competitive economy in the world, according to the Global



Competitiveness Index - 2015/2016 published by the World Economic Forum (Schwab & Sala-i-Martin, 2015), contrasting with position 38 that Portugal occupies. The importance of this country to the Portuguese economy is still visible in the number and quality of German multinationals operating in Portugal. A "success story" of German companies in Portugal, attested by the presence record in Portugal, its importance in the creation of value and the degree of satisfaction that the German entrepreneurs manifest by being in Portugal (CCILA, 2010), raise some questions in particular from the management and HRM point of view, about how these companies, being part of a country with levels of productivity that fall short of the desired one, are able to be globally competitive.

According to Giardini, Kabst & Müller-Camen (2005), in the light of institutional theories the transfer of management philosophies, especially those related to HRM, become very difficult because the companies have to reflect the cultural, social and political environment of their country. When MNCs' managers try to export their organizational practices to subsidiaries around the world the results fall short of the desired ones, making it a challenge for these companies to find suitable practices for its subsidiaries (Ismail, 2010).

This is even more relevant when comparing the values of the German national culture with the Portuguese national culture, we perceive that they are practically antagonistic, having repercussions on the implementation of organizational culture (Hofstede, 1980, 1984, 1991, 2011) and therefore in HRM practices (Mayrhofer and Brewster, 2005). However, when analysing the literature we perceive a significant gap in the identification of the challenges and opportunities of the German Multinationals or even of any other geographic origin, in the implementation of its subsidiaries in Portugal, especially from an HRM perspective.

With this article we intend to, at first, to characterize the HRM practices used in the Portuguese subsidiaries of German multinationals and, second, to understand whether there is a pattern in the same practices, capable of becoming the first draft of what we might call a Portuguese HRM.

Due to the limited information on the subject under study, an exploratory research was carried out, with four case studies, all of them German multinationals working in Portugal, through semi-structured interviews with the CEO or HR Director trying to understand which HRM practices they use and why they use them.

The paper starts with the theoretical framework about multinationals evolution, in particular the German multinationals in Portugal. Then we introduce the topic of natural differences as key factor in HRM and what is the body of knowledge of HRM in Portugal. After the explanation of the research methodology we present the results and conclusions.

## **2 Theoretical framework**

### **2.1 The "drama" of multinational evolution**

In recent decades, and by action of the integration of capital markets, we have seen an increase in the number of multinational corporations from about 80 000 in 2006 (Ghemawat & Pisani, 2013), to 100,000 in 2016 (UN, 2017), a growth of 25% in 10 years. The foreign subsidiaries of MNCs is still expanding and by the end of 2016 its number was 860 000. Some indicators of the activity of this foreign affiliates shows their strength, for example, during the

period 2014-2016 there was a 12,3% increase in sales, 13,59% in value added (product) and 8,7% in employment (UN, 2017).

This phenomenon has awakened the curiosity of researchers to understand this complex form of organization and the opportunities and obstacles to manage the diversified workforce with the goal of increasing overall organizational performance (Aljayi, Fjer, Guennioui & Tamek, 2016).

MNCs understood as any "company that carries out transactions in or between two sovereign entities, operating in a decision-making system that allows the influence on the resources and capacities, where the transactions are subject to influences of exogenous factors to the context of the country of origin" (Sundaram & Black, 1992:733), they have had in institutional theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983), which understands that organizations are open systems moulded by the environment in which they are embedded, the theoretical support capable of explaining how the process of adaptation of an MNCs develops in a different environmental reality.

For DiMaggio & Powell (1983) there are a set of constraints that force organizations that are in the same organizational environment to behave identically, what they called isomorphism. Thus, in this adaptation process organizations are confronted with three types of isomorphism: coercive in which there are environmental pressures, mimetic in which the pressure translates into imitation of other organizations' behaviour, and normative in which pressures come from professional associations.

The evolution of MNCs was characterized by Perlmutter (1969: 9) as "the drama in three acts" and "tortuous", underlining the difficulty of this whole process. The author understands that there are three types of headquarters orientation toward subsidiaries in an MNC's development resulting therefrom three types of organizational approaches: ethnocentric, polycentric, or geocentric, assuming that although there are three attitudes to different degrees it is likely that one of them is predominant. Managing with an ethnocentric attitude assumes that what works in the host company will also work in the subsidiary company. Managing with a polycentric attitude assumes that each subsidiary must find what works in the context in which it operates. Management with a geocentric (or global) attitude is based on the principle that each subsidiary must work towards local and global objectives.

The way in which MNCs evolve, namely how they manage diversity, i.e. the identification of new and efficient ways of capitalizing on the cultural potential available to them by the local employees of the subsidiary companies, is essential to get a dominant competitive position (Badea, 2013; Dupuis, 2014).

### **2.1.1 The German multinationals in Portugal**

By 2014 there were 5 521 subsidiaries of foreign companies in Portugal and employing around 364 000 people, with 75% of foreign subsidiaries having their decision center in a European Union country, with Spain being the most represented country with around 27.2% of the total number of subsidiaries. These companies were also responsible for 23.2% of turnover and 21.8% of gross value added (GVA), compared to the total value generated by all non-financial corporations in Portugal (INE, 2015).

Germany ranked as the 4th country of origin of the control of foreign subsidiaries in Portugal, controlling about 7.8% of the subsidiaries and accounting for 16.2% of the total GVA

generated by all foreign subsidiaries in Portugal, leading the Industry and Energy sector with 24.5% of GVA (INE, 2015). We can also highlight that 76% of companies are generally satisfied with the results of commercial investment (CCILA, 2010).

In 2010, almost a third of the German multinationals operating in Portugal had more than 250 employees, looking for core competencies as the ability to find solutions, work as a team and customer orientation. The most represented sector (60%) is Industry, the result of the establishment in the country, mostly in the 80's and 90's, of companies focused mainly on exports, 24% are in commerce and 16% in services.

## **2.2 National differences as key factor in HRM**

Human Resources Management as a concept "born" in USA academic circles when Fombrun, Tichy & Devanna (1984) and Beer, Spector, Lawrence, Mills & Walton (1985) bring a new perspective about the human relations in organizations.

The "hard" model developed by Fombrun et al. (1984) assumes that people are a means to an end. The "soft" model of Beer et al. (1985) is more humanistic, people are different from other resources and cannot be seen and analyzed in the same way as an equipment or a number. These is the reason of antagonism and ambiguity that surrounds HRM in practice (Price, 2011).

The model "hard" is associated with intensive work, the practices of low wages, insecure feeling at work, tight control, setting short-term goals, reduced concern for the human being behind the worker, resulting in low levels of participation and commitment by workers (Wilton, 2011).

The "soft" model finds its roots in Resource-Based View Theory, which understands that internal resources are the main source of competitive advantage (Penrose, 1959; Wernerfelt, 1984; Barney, 1991), providing the theoretical foundations that not only human resources can be a source of sustainable competitive advantage (Schuler & MacMillan, 1984; Pfeffer, 1994), as well as human resource practices have the potential to become key components of a company's overall strategy (Werbel & DeMarie, 2005). In this sense, people will have to be managed in a way that ensures that only the best are selected, that they are given appropriate training, merit is rewarded, and look for their commitment to the organization, in Long-term perspective management. This approach gives priority to a positive relationship between employee and employer, based on mutual trust, developed through participation and involvement in decision-making processes, employee empowerment, teamwork and collaboration (Druker et al., 1996; Wilton, 2011).

This "pioneering" brings the hegemony of US conceptions of HRM and gives legitimacy to the US version of HRM, and saw the practices derived from these models being increasingly adopted in Europe (Fenton-O'Creevy, Gooderham & Nordhaug, 2005; Mayrhofer & Brewster, 2005).

Despite this strength, many scholars shows that the US model assumptions about the nature of HRM is inappropriate for Europe (Guest, 1994; Mayrhofer & Brewster, 2005; Brewster, 2007), because national differences remains a key factor in HRM (Mayrhofer & Brewster, 2005).

The literature shows that it is difficult to import US HRM practices into Europe and it is also difficult to find a European model of HRM, because the European approach under-emphasize

the level at which such differences are most cogent, the national level (Mayrhofer and Brewster, 2005). The legal, social, political and cultural environment of European countries, constrains (or supports) them, limits the unchanged application of HRM ideas (Giardini, Kabst & Müller-Camen, 2005).

Although it is very tempting to find a European model of HRM, in the sense of opposing the US model and the Japanese model, a number of studies shows the differences between various aspects of HRM in European countries which reflects at the same time the national origins of the MNCs and the national context (Brewster, Mayrhofer & Morley, 2004; Myloni, Harzing & Mirza, 2004; Savaneviciene & Kersiene 2015).

### **2.3 HRM in Portugal**

In Portugal, the role of HRM has undergone a profound evolution in the last years characterized by a growing concern with the management of skills and knowledge and the active role of human resources in competitiveness and excellence (Neves (Rego et al., 2015), but it seems to be too many social, political, social, and organizational blocks to prevent The development of people-centered interventions in organizations (Moura, 2000).

At the beginning of the 21st century, the characteristics that shaped relations in organizations in Portugal were still poorly understood, both from a theoretical and practical point of view, so that a typification could be used to act at the organizational level, although it is possible to conclude that many examples of successful management associated with human resources were not visible (Moura, 2000), a failure that seems to continue at present, since in 34 countries studied, Portugal is the fourth country with the greatest insecurity in the labor market and the 8th worst in the quality of the work environment (OECD, 2016). The few data that we have to define the practices of HRM practiced in Portugal result from the group CRANET, an international research network that regularly conducts a survey of HRM issues, although the data refers to the year of 2000, the last time that Portugal was part of this group (Rego et al., 2015). Thus, the source of recruitment is based on personal knowledge, being personal interview the main selection technique; on the other hand the promotion of organizational commitment is not a central objective of HRM, being the commitment less organizational and more to the leadership. The study concludes by stating that management culture in Portugal does not provide the best conditions for the adoption of modern management attitudes such as teamwork, autonomy and openness.

Some of the distinguishing features of HRM in Portugal are high power distance and uncertainty avoidance, collectivism, feminine and short-term culture (Hofstede, 1980, 1984, 1991, 2011). Teamwork is undervalued by a leadership that is autocratic due to high values of power distance. This results in absolute control on the part of the leader over all decisions of the company, and the consultations of the opinion of the group members are infrequent (Cunha, 2005). According to Lopes (2010), this is the great anathema that prevents the competitiveness of Portuguese organizations, which is paradoxical since we do not take advantage of our capacity to work as a team, as supported by the high values in collectivism dimensions. From Portuguese culture emerge the weak planning skills, which seems paradoxical given the high uncertainty avoidance and the feminine characteristics of Portuguese culture (Cunha, 2005; Lopes, 2010). Lopes (2010) states that Portuguese culture is strongly adaptive, having as strengths the appetite for improvisation and individual creativity, emphasizing that managing the Portuguese culture is not an easy task.

According to Rego et al. (2015), HRM in Portugal approaches the Anglo-Saxon model in a wide range of activities, such as the majority use of monetary incentive systems indexed to individual and organizational performance, individualized, direct and more frequent communication between employees and employers, with the new technologies playing an active role, and the introduction of performance management processes that are applicable to different categories of organization members.

### **3 Research methodology**

Since the study was an exploratory one, we opted for a qualitative research in order to perceive the context and the functioning of real organizations, using as empirical investigation the case study which is indicated in situations where the key investigation question it is an “how” type (Yin, 2002).

#### **3.1 Investigation goals**

There is very little scientifically based information showing how German multinationals manage Portuguese subsidiaries so this research will have an exploratory character. Thus, the main goal of this paper will be to characterize the HRM practices applied in German MNC subsidiaries in Portugal and to understand if there is a standard of performance in these companies.

#### **3.2 Selection of case studies**

The case studies were selected in order to meet the research objectives. Given the exploratory nature of our work and with the support of the German Chamber of Commerce, we were able to establish contact with 4 subsidiaries and interview the HR Director (3 cases) or the CEO (1 case) in each of them. All these subsidiaries have been working in Portugal for several years (between 25 and 50 years), in industry sector as production units, have between 180 and 517 human resources and belong to German economic groups that are well established on the international scene, and can fall into the realm of what we can catalogue as successful cases both in Portugal and in the rest of the world. The interviewed directors have between 1 and 25 years of seniority in the company, between 30 and 59 years old and all of them are high educated.

#### **3.3 Defining categories of analysis**

We supported the set of categories in the work of Liu et al. (2007). These authors’ elaborated a meta-analysis of the published papers in the journals of the specialty that show the relation of the practices of HRM and the organizational performance. From these 92 studies, which involved more than 19,000 organizations, Liu et al. (2007) found HRM practices that, according to them, affect more than one of the three processes (increasing KSAs, motivation, empowerment) and have a proven positive impact on the performance of organizations. These practices are the ground base of our categories to characterize the HR practices implemented at the studied MNC’s subsidiaries. We introduced more categories because will help to a better understanding how some human resources practices are interconnected.

*Selection* is defined as the systematized processes that helps identify people with the right set of knowledge, skills and abilities that fit the task and the organizational environment of the

company. Interviews, competency and cognitive skills tests, and follow-up studies of recruitment sources are an integral part of this HR practice.

The *training and development* practice is defined as the amount of formal training given to workers. Training may focus on company-specific policies and procedures, task-related skills or leadership and social skills (Liu et al., 2007).

With regard to the *compensation level*, Liu et al. (2007) argue that attractive compensation helps companies create the reputation of good employers, which subsequently attracts or retains the best workers, influencing their organizational performance.

Although not reported by Liu et al. (2007) as an HR management practice that increases the organizational performance of organizations, the *benefits* offered by companies are often related to the remuneration policy and the incentive system, being a competitive factor in the labour market. A System of Benefits can be considered as a set of programs / plans offered by an organization as a complement to the remuneration system. The *benefits system* can improve workers' quality of life, organizational climate, reduce absenteeism and turnover, increase productivity levels and facilitate HR recruitment.

The *performance appraisal* practice can be focused on results or behaviour. Behaviour-based appraisal focus on the behaviour that the worker needs to do his job effectively. Results-based appraisal focus on the consequences of this behaviour and usually produce quantifiable information. Behaviour-centered appraisals are most effective for routine tasks.

For the authors, incentive compensation drive motivation because it strengthens the relationship between the worker's performance and the reward. The incentive compensation system must be in line with the other HR practices and the company's strategy.

The origin of the *setting goals* category is a natural consequence of *performance appraisal* and *incentive compensation* categories, since both are related to the use or non-use of management by goals. It is thus important to better understand the functioning and interconnection of the company's HR management practices, to understand how the staffing and production goal are managed.

The authors point out that *internal promotion* practices help workers to create clear expectations about their future, motivating them not only to perform well in the positions they hold, but also to develop their skills and abilities for future positions.

Workers' *participation* puts them in a position of proactive influence on how their work is done, giving them the ability to identify and correct problems. This participation supports the constant innovation effort (Liu et al., 2007).

The authors continue to argue that *flexible working hours* such as part-time work, job sharing, compressed work weeks, telecommuting and other flexible arrangements allow workers greater control over their schedules, contributing to work-family balance.

*Grievance procedures* provide a formal vehicle to the worker's voice, helping them in the effort they can make to change a job dissatisfaction situation. These procedures empower workers by offering them a way to resolve disagreements with their managers or other workers (Liu et al., 2007).

Liu et al. (2007) argue that policies that privilege *employment security* align workers' interests with the long-term goals of the organization. Committed workers have greater devotion to the vision and goals of the organization. A stable relationship between the organization and the workers helps them to develop long-term perspectives and a broad view of their work, enabling them to seek solutions to problems outside the action limits of their tasks.

### 3.4 Instrument – semi-structured interview

The semi-structured interview was used as the data collection instrument and script was elaborated in order to meet the research goals and was based on the meta-analysis elaborated by Liu et al. (2007). The HRM practices referenced by the authors gave rise to the interview questionnaire and later to the content analysis categories of the interviews.

### 3.5 Data processing - Content analysis

In order to analyse the data, we use the technique of content analysis, based on Bardin (1995). In this sense, we defined categories that meet the research goals and they are sustained on a theoretical basis. Thus, an analysis was developed that tries to characterize, through the interview data, the HR management practices applied by German MNC subsidiaries in Portugal.

The categories were defined based on the research of Liu et al. (2007), which bases the HR management practices that improve organizational performance. For each category were also defined their indicators that allow the presence or absence of these categories to be detected in interview transcripts.

**Table 1-** Categories analysed, based on Liu et al. (2007).

Categories			
Selection;	Compensation Level;	Training and	Participation;
Performance appraisal;	Incentive Compensation;	Development Policy;	Flexitime;
Setting Goals;	Benefits System;	Internal Promotion;	Grievance Procedures;
			Commitment;

## 4 Presentation and analysis of results

Table 2 summarizes the results of the analysis of the interview content in the light of the defined indicators. The results show the presence of all categories in the 4 study cases, with a great homogeneity in the typology of response to the interview questionnaire, which opens the possibility of a standard in the HRM practices applied by the subsidiaries of German multinational companies in Portugal.

There are two channels of recruitment and selection in the multinationals studied, the external one, often through temporary work agencies, and the internal one, with the opening of new positions within the company, which allows the maintenance of the family nucleus of the company's workers valorisation, as evidenced by internal promotion policies. For Brown, Forde, Spencer & Charlwood (2008), the satisfaction with the compensation level is greater in contexts of work that promote their internal collaborators. It was also verified in our study that, rather than appraisal technical skills, it is important for these companies to validate the new workers behaviour. This approach is in line with Goleman's (1998) conclusions and later corroborated by Heckman & Kautz (2012), who assert that these competencies contribute to and increase the likelihood of success of individual careers and organizations. Goleman (1998),

in his seminal work, goes even further by pointing out that relational skills would weigh 70% on effectiveness, while cognitive and motor skills would weigh only about 30%.

**Table 2 - Summary of Results**

Categories	Summary of Results
Selection	Concern about behaviour validation; Internal disclosure maintains “family nucleus”; Internal and external recruitment; The production units look for temporary work.
Performance appraisal	Alignment with goals; Overall appraisal (quantitative and qualitative); Appraisal meetings to correct trajectories; Individual appraisal; In one case, there are monthly appraisals to relate to the monthly production incentives.
Setting Goals	Definition of staff goals based on headquarters goals (negotiated); Definition of production line goals without negotiation; Logic of company – department – individual; One case does not define goals for production line.
Compensation Level	Concern about keeping the company competitive by paying the industry average (one case pays above the industry).
Incentive Compensation	Meritocracy principle; Interconnection with performance appraisal; Interconnection with individual and company goals; One case does not have incentive compensation.
Benefits System	They consider a main benefit the job security they provide as an employer (low turnover). In all cases there is a great concern for the physical, psychological and family well-being of workers.
Training and Development Policy	There are annual training plans tailored to the company’s needs; Always in the logic of the worker personal development; Focus on soft-skills development (external training); Existence of group of internal trainers; Logic of knowledge and experience sharing; One case is a certified “training entity” (internal training academy); Formal processes in all cases.
Internal Promotion	In all cases there is the favouring of the internal promotion policy; There is a policy of valuing domestic products; Vacancies are opened internally.
Participation	Workers are encouraged to demonstrate improvements in productivity, efficiency, safety, etc..., or waste reduction. Award of proposals (monetary or symbolic).
Flexitime	No flexitime in production line (shifts) Flexitime in staff; High concern about meeting schedules and balance with family life.
Grievance Procedures	Available IT tools, suggestions box... Incentive of the problem oralization; Transparency logic in problem solving; Use of performance appraisal meetings to address potential problems; All cases recognized the difficulty in managing this issue.
Commitment of Workers	Company reputation; Low turnover; Socially correct and adult company behaviour; Concern about the people development; Concern with the workers’ family.



Performance appraisal system are in line with the goals established in the company, which are also considered by Câmara (2006), are individual, global (quantitative and qualitative) and always in a development perspective, with intermediate meetings in order to correct trajectories. Gruman and Saks (2011) argue that in order for employees to feel comfortable expressing what they feel, they must trust that the organization and its managers treat them fairly, thereby increasing their involvement with the organization.

The individual goals, both for staff and for production line, derive from the general goals negotiated between the subsidiary and the headquarters, in a company-department-individual logic. In this particular case, Drucker (1954), a great mentor of management by goals, argued that negotiating goals between employer and employee was essential if these goals were to be achieved. Although there was an openness to the negotiation of the staff goals, this was not the case in production line.

Regarding the compensation level, it was evident the concern with the maintenance of the company competitiveness, not preventing that the salaries are in the average or above to those practiced in the sector of activity. It should be noted that Pfeffer (1998) understands that paying above average competitors, while contingent on company results, would be one of seven high performance HRM practices that organizations should adopt.

The meritocracy principle dominates the incentive system, which is linked to the performance appraisal and also to the individual and general goals, which Chambers (2006) intends to be part of an effective compensation system.

The reduced turnover is considered by the companies studied as the main benefit given to their workers, through the security they transmit, at a time where the Portuguese labour market's security has been decreasing in recent years (OECD, 2016). There are studies that argue that a high turnover rate has implications for the company's results (Schuler & Jackson, 1987; Sun, Aryee & Law, 2007), because of the costs associated with recruitment and selection, training, development Skills, and productivity loss, this is at least initially (Tracey & Hinkin, 2008). On the other hand, safety at work, through a national culture marked by a high index of uncertainty control, is much to the liking of the Portuguese (Hofstede, 2011).

In all the companies was a concern the well-being of its workers and the balance of the work-family binomial. This concern is mirrored in the hourly flexibility that companies try to implement, although in production units that work in shifts, it is impossible to flexibilize the production line. There is, however, an effort not to overload the workload of workers. According to Lyubmirsky, King & Diener (2005) the well-being of workers benefits their performance in the labour market. The existence of the possibility of flexibilizing working hours seems to help to experience greater work enrichment, which is associated with greater job satisfaction and lower intentions of change (McNall, Masuda & Nicklin, 2009), as evidenced by the low values of turnover in the subsidiaries studied.

The emphasis of training and development policy is on the training of the worker, in terms of soft skills (as we saw previously, along the lines of Goleman (1998) and always in a logic of circulation and sharing of knowledge and experience. Despite the individualized plans, these are closely related to the needs of the company. This logic goes in the direction of the creation of the organization that learns, in the words of Senge (1990). The author understands that with the constant turbulence of the contexts where organizations operate, they will have to transform themselves in order to improve their learning capacity. According to the author,

companies learn through the individual learning of their collaborators. However, the collective learning of the organization is not the individual sum of the learning, but the ability to transform that individual learning into a collective learning (that is, at all levels of the organization).

The promotion of workers' autonomy, from the point of view of Drucker (2000), which determines the productivity of the knowledge worker, through monetary or symbolic incentive, so that they can think about their work and suggest improvements, is a common practice in subsidiaries of the case studies.

Giving voice to workers is a present and materialized concern through the introduction of various mechanisms and procedures such as information technology tools, suggestions box, etc... Transparency and the encouragement of the problem oralization prevail in these procedures. However, it was recognized by the managers interviewed the difficulty in managing this type of subject in their companies. According to Hofstede (1984, 1991), the oralization of a problem is difficult in a context of high hierarchical distance of Portuguese culture, a difficulty that is accentuated when it is communicated in an indirect way, typical of a collectivist society such as the Portuguese one.

In the subsidiaries studied, the workers' commitment is achieved through a set of factors such as the company's reputation, low turnover, concern with the development of workers and concern for their families. Workers' perception of organizational support (in relation to family) is positively associated with employees' affective commitment, fostered by both work-family and family attitudes (Wayne, Casper, Matthews & Allen, 2013). This organizational support approach assumes that by meeting socio-emotional needs and demonstrating the organization's readiness to reward increased effort, employees form general beliefs about how much the organization values its contribution and cares about its well-Being (Rhoades, Eisenberg & Armeli 2001). In responding to collectivism and workers' safety needs, the subsidiaries are in line with what claim Bal, Bozkurt & Ertemsir (2014), that companies can raise the levels of organizational commitment of their workers by using HRM practices according to the expectations of its employees, developing the feeling that they are the most important organization resource.

It is important to remember that the practices evaluated in the subsidiaries are formalized, with procedures and processes defined for their execution. Only in one case was this formalization still in progress, but it did not prevent the use and application of these practices, which according to Liu et al. (2007) are positively related to the increased performance and effectiveness of organizations.

## **5 Conclusions**

The investment in people by the organizations studied is notorious, demonstrated by the fact that all practices are present in a consistent and robust way. This pattern of how the practices are thought and executed suggests an approach to HRM soft model, reflected in some practices such as hourly flexibility, commitment and autonomy of workers, not neglecting the importance of achieving the company's objectives.

The presence of all HRM practices evidences the existence in the organizations of an HRM planning, which according to Liu et al. (2007), works with a gathering element of three clusters of practices: those that improve empowerment; KSA; and motivation.

We can observe the isomorphism effect (DiMaggio & Powell, 1983) in studied MNCs. The HRM practices implemented are influenced by country of origin, by the operational context and by the best practices, which are adapted to the context. We can also conclude that there is a geocentric approach (Perlmutter, 1969), where each subsidiary works in function of global and local goals, and there is an openness to a local adaptation of institutionalized practices and processes at the company headquarters.

The aim of the study is to characterize the HRM practices present in the Portuguese subsidiaries of successful German multinationals, that is to say, to understand the "how", these practices are carried out in what may be called the more tactical side of HRM. This characterization may be interesting to serve as a guideline for HRM professionals working in Portuguese companies whose management of people has historically been referred to as one of their "Achilles heel" (Moura, 2000; Lopes, 2010, 2012 ; Barroso, 2016).

As limitations of this investigation, we have the fact that all the case studies analyzed in this investigation are units of production, with their specificities in the level of human resources management. For this reason, and also due to the small number of firms observed, it is necessary in the future to use a significant sample, so that the conclusions of this study can be generalized. On the other hand, another of the limitations lies in the fact that in this investigation only the discourse of the company leadership has been analyzed, lacking the confrontation with the employees' perceptions.

This study also opens up a whole set of possibilities for future research. On the one hand, we can see if, by replicating our study applied to MNCs, present in Portugal, from different cultural realities, the results approximate those obtained by analyzing the German MNCs.

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## Should I accept this job, or not? Overqualification, an emergent dilemma

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**Abstract:** The increase of education in younger generations and the relative scarcity of qualified jobs available makes overqualification a social issue and an emergent dilemma. A person will accept a job for which he feels overqualified because he needs to have a job. Overqualification is a situation where the individual has surplus skills, knowledge, abilities, education, experience, and other qualifications that are not required by or utilized on the job. With this study we explored the relationships between perceptions of overqualification and employee's attitudes (i.e. work engagement and job satisfaction). A quantitative approach was adopted with the results from an online survey. Data were collected in Portugal, between March and April 2016, from a sample of 551 employees. To measure the perception of overqualification we used the Perceived Overqualification scale (POQ) developed by Johnson, Morrow & Johnson (2002). The Utrecht Work Engagement Scale by Schaufelli, Bakker & Salanova (2006), and the Job Satisfaction Scale by Warr, Cook & Wall (1979) were also used in this study. We verified significant and negative relationships between perceived overqualification and work engagement and also with job satisfaction. Employees who perceived higher levels of overqualification in relation to their current jobs present lower levels of work engagement and job satisfaction.

**Keywords:** perceived overqualification; work engagement; job satisfaction

### Introduction

In recent years the deep economic crisis in Portugal, characterized by high unemployment, and particularly affecting younger generations (under 25 years old) with an unemployment rate about 30% at the end of 2016 has led many young people to be forced to accept job opportunities for which they feel they have surplus of education. The evaluation that individuals do about underutilization of their skills in a job context is usually identified in the literature as perceived overqualification or underemployment (McKee-Ryan & Harvey, 2011; Scurry & Blenkinsopp, 2011). This phenomenon of overqualification constitutes an emerging problem throughout Europe (Peiró, Agut & Grau, 2010) and in Portugal in particular.

In a context of shortage of labor supply, the perception of overqualification by employees is more serious, since possible alternatives of employment are so reduced that there is no other

option than to acceptor maintain a job where it is not necessary to apply all their skills and abilities (McKee-Ryan & Harvey, 2011). Overqualification at work thus arises from perceived mismatches regarding their level of education, skills and competencies compared to the requirements required for the performance of their duties (Johnson, Morrow, & Johnson, 2002).

However, an employee when perceived as overqualified may develop a disconnection, or withdrawal, resulting in less positive attitudes or a strong will to leave the organization (Erdogan, Bauer, Peiró, & Truxillo, 2011). This relevant issue led us to analyse questions such as: do individuals continue to invest in their work in terms of vigor, enthusiasm or dedication when they perceive they have surplus skills, knowledge, abilities or education that are not required by or utilized on the job? Can overqualification influence negatively their job satisfaction?

The increase of education in younger generations and the relative scarcity of qualified jobs available brings overqualification into a social issue and an emergent dilemma for individuals when they have to make a decision on to accept or reject a job opportunity. A match between education and job helps society maximize returns in its education investment, maximize job performance (Erdogan & Bauer, 2009) and workers' wellbeing (Garcia-Espejo & Ibanez, 2006). At the individual level, a person will accept a job for which he feels overqualified because he needs to have a job by material or social reasons such as individual social status or standard of living (Brynin, 2002).

An important explanation for the effects of overqualification comes from equity theory (Adams, 1965). According to equity theory, employees will engage in input/output comparisons to determine their sense of fairness. When inputs (e.g., education, skills, and experience) do not match outcomes (e.g., recognition, pay, responsibility), individuals will develop a sense of unfairness. The theory predicts that individuals will respond to this situation either by changing their perceptions of the situation or by taking action such as leaving the situation, reducing their performance, or increasing their negatives outcomes such as withdraw behaviour or absenteeism. This theory applied to overqualification framed our research general hypothesis: *perceived overqualification will have a negative influence on work engagement and job satisfaction.*

## **Methodology**

We choose to conduct this study in Portugal because majority of the research conducted on overqualification has been in Western developed countries but this phenomenon is even more widespread in developing countries (Erdogan & Bauer, 2009), and as far as is of the researchers knowledge, there is a scarcity of overqualification studies conducted in Portugal.

In the present study, 551 Portuguese workers from various organizations, selected for convenience and voluntarily participating, completed an online questionnaire between February and March 2016. The variable Overqualification was measured by adaptation to Portuguese of the Perceived Overqualification (POQ) scale, developed by Johnson, Morrow



and Johnson (2002) in which 5 items measuring the Mismatch dimension (with  $\alpha = 0.75$ ) were used. A sample item was *“My formal education overqualifies me for my present job”*.

Work Engagement was measured based on a scale developed by Schaufeli, Bakker and Salanova (2006), UWES - Utrecht Work Engagement Scale, and used in a previous study by Chambel, Castanheira & Sobral (2016) showing adequate internal consistency ( $\alpha = 0.94$ ). Example items are *“When I get up in the morning, I feel like going to work”* (vigor), and *“I am enthusiastic about my work”* (dedication).

To measure Work Satisfaction the General Satisfaction Scale developed by Warr, Cook and Wall (1979) was used, also showing a high internal consistency ( $\alpha = 0.92$ ). An example item *“How satisfied or dissatisfied you are with the recognition you get for good work”*.

Of the 551 participants, 62,8% were female, 37,2 % were male. In terms of education levels, 26 % were high school graduates, 51,2 % were BA level graduates, and 22,9 % were Master graduates. The average age was 40,1 years, On average, participants had worked for the current company for 11,1 years and had been 10,2 years in the current job.

## Results

First, because we measured perceived overqualification, work engagement, and job satisfaction from the same source and used translated measures, we performed a confirmatory factor analysis to establish the validity of each scale through several fit indexes, namely a Chi-square statistic, the Goodness of Fit Index (GFI), Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) being most widely used (Bentler, 1990). Values between 0.90 and 0.95 for the CFI and GFI indicate adequate fit, and higher than 0.95 excellent fit. Values smaller than 0.10 for the RMSEA indicate acceptable fit, values smaller than 0.08 good fit, and lower than 0.05 indicate excellent fit (McCallum, Browne & Sugawara, 1996). Results (Table 1) showed that all the scales presented very good quality of measurement.

Table 1. Compared Fit Indexes for each scale

Scale	$\chi^2/df$	CFI	GFI	RMSEA
Overqualification	1,86	.99	.99	.04
Work engagement	3,84	.95	.91	.03
Job satisfaction	4,53	.93	.92	.08

The means, standard deviations, and intercorrelations of all study variables are presented in Table 2. All the significant relationships between the variables were in the expected direction. Overqualification was negatively related to work engagement ( $r = -0,34^{**}$ ) and job satisfaction ( $r = -0,37^{**}$ ), and also negatively associated with age and tenure in the current job (however not significantly). In addition overqualification was significantly and negatively related to tenure in the organization ( $r = -0,10^*$ ).

Table 2. Means, Standard Deviations, and Intercorrelations among Variables

	Mean	SD	1	2	3	4	5	6
1. Age	40,11	10,73	1					
2. Tenure in Organization	11,48	9,66	,71**	1				
3. Tenure in current Job	10,28	9,22	,62**	,69**	1			
4. Overqualification	3,14	,88	-,07	-,10*	-,06	1		
5. Work Engagement	3,65	,62	,23**	,12**	,12**	-,34**	1	
6. Job Satisfaction	4,89	1,07	,07	,03	-,02	-,37**	,62**	1

Notes: \*  $p < .05$ ; \*\*  $p < .01$

Using regression analysis we verified a significant and negative relationships between perceived overqualification and work engagement ( $\beta = -.34^{**}$ ;  $R^2=0.12$ ;  $p < .001$ ) and also with job satisfaction ( $\beta = -.37^{**}$ ;  $R^2=0.13$ ;  $p < .001$ ). Employees who perceived higher levels of overqualification in relation to their current job presented lower levels of work engagement and job satisfaction.

## Conclusions

The primary goal of the present study was to analyse the effect of a perceived overqualification by employees on some work outcomes. Our first finding revealed a negative relation between overqualification with employee's age, and with tenure in the organization and in the current job. However only seniority in the organization showed a significant association, older workers perceived a lower situation of overqualification, which brings overqualification as a relevant constraint for career development at young age (Groeneveld & Hartog, 2004). Secondly, we verified that perceived overqualification is a predictor of work engagement and job satisfaction, this finding confirms previous research that highlights negative effects to individuals occupying jobs that requires less education, skills or experience, and this negative effect is stronger among young workers (Erdogan & Bauer, 2009; Green & Zhu, 2010; Thompson, Shea, Sikora, Perrewé, & Ferris, 2013).

Some practical implications can be derived from our findings. Organizational practitioners and in particular recruitment and selection professionals and managers should fully considered how hiring, or not hiring, overqualified employees fits in the organizational strategy and the consequences of such decisions not only to the firm performance but also to employees wellbeing. Management leaders should develop a clear strategy of adjustment their human resources practices to optimize the use of knowledge and skills available among its workforce. If overqualified employees are recruited and if the situation of overqualification is not merely temporary neither the organization nor employee will benefit.

Overqualification is a high relevant topic and become a social issue. Results of this study highlights negative impacts of overqualification on work outcomes and consequently on organizational effectiveness.

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## Human Resource Roles in Pre-Mergers

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**Abstract:** There is much literature related to mergers and acquisitions (M&As) and the emphasis on HR's role in ensuring a successful transaction. Nevertheless, with the increasing number of M&A's, and thus their importance, the reality of this case study of Bosch Group, illustrates that studies and practices are still far apart from there being an integrated, collaborative strategy leading to effective practice. Furthermore, as reflected in the story of this case study, HR is still being used as a supporter of the company' strategy instead of as an active member, which could be an important contributor to a more effective M&A. This paper analyzes a brief sampling of the literature along with a recent case to speculate on whether integrating research findings into practice could have served as a guide in planning and carrying out the pre-merger activities.

**Keywords:** Mergers, Acquisitions, Human Resource Management, Talent Retention, Leadership Styles

There has been a significant change in the way companies plan their strategies, driven by new technologies and a world with interconnected communications. Mergers and acquisitions are one strategy used widely by organizations and is one in which human resources (HR) need to align and lead human assets in conjunction with this strategy.

### **Purpose**

This case study describes the activities within a large multinational organization prior to a merger and acquisition (M&A) within a cross-country environment, involving worldwide locations and dealing with different cultures, legal environments, and economic situations.

### **Statement of the Problem**

M&As worldwide grow market share and redefine the strategy of the company to help it become more competitive and to maximize its profits, renew its capabilities, and strengthen workforce skills. KPMG (2016) reported that the number of transactions in 2016 was the same as in 2007: "by year end, \$4.7 trillion global deals were signed" (p. 3).

Another reason for an M&A might be shifting the company toward countries with lower costs and less protection from legal threats and less demanding environmental regulations. But HR's actual roles in preparing for an M&A are not clearly articulated in the literature.

### **Significance of the Problem**

Most M&A strategies minimize the value of HR despite their relevance for a successful transaction, not only financially, but also in terms of talent retention and knowledge transfer (Larssen & Finkelstein, 1999). This paper performs an analysis of the HR situation in one company's real-life context, observing aspects that might contribute to a successful M&A process integration of its human force. While case studies are not intended to lead to generalizable outcomes, they can be illustrative of how HR's benefits can be improved prior to the actual M&A (pre-merger).

### **Review of Literature**

To conduct the literature review, the keywords listed were used to search the following databases: SAGE, Google Scholar, HRD academic journals, reports from consulting companies, and reports from official sources related to the case M&A. As Suratpipit and McLean (2014) proposed, to establish a good communication strategy, a detailed change management plan and an advanced HR role contribute actively to a successful HR integration.

Coleman and McLean (2007) created a number of HR M&A models, depending on the M&A stage. In this study, we assess the suggested approaches to determine if they can be modified to use in the preparation of pre-merger activities.

Schuler and Jackson (2001) described relevant guidelines in the scope of M&As with relation to HR, emphasizing its active role and the possible consequences with regards mainly to talent retention; the importance of creating policies and practices for learning, knowledge sharing, and transfer; and how crucial the timing is for restructuring to minimize uncertainty, and the relevance of dedicating a skilled leader to conduct the M&A project.

Schuler, Tarique, and Jackson (2004) contributed their analysis of the integration of an M&A across borders, providing several aspects in which HR is key to a successful transaction; describing the different types of M&As with regards to the strategy of the organization; and the stages and implications of each. They also described the tacit and explicit knowledge of an organization within a well-regarded domestic firm to a foreign-owned company.

There are many studies about the role of HR in the M&A process. Because of the complexity of the case study that we present in this paper, space does not permit the inclusion of more literature. In our expanded paper, however, this literature will be explored in greater depth. Such studies include the HR roles in the communication strategy, the restructuring plan, and, most important, ensuring that HR is a key member of the M&A process in preparing the process to be followed and accompanying the team in the process prior to the M&A.

### **Methodology and Methods**

The methodology used in this study was a case study. The case study was written based primarily on participant observation. The first author was employed in the organization that

is the core of this case study. In addition to observations throughout the process of the merger, interviews were held with employees across departments and locations. As neither author is employed in a university or institution with an Institutional Review Board (IRB), protection of human subjects was ensured through the use of a signed consent form prior to interviews.

### **Findings: The Case**

The findings for this study consist of the story that explains the pre-merger activities in our focus company.

### **Company Background**

Bosch is a German multinational headquartered in Stuttgart, Germany. It is a well-known manufacturer of automotive components, such as braking systems, steering controls, fuel systems, generators, and starter motors; it has also diversified its activities into other segments, such as the industrial and consumer goods with some packaging, energy and building products, power tools, home appliances and security systems. In 2011, Bosch was rated by Bloomberg, as “the world’s largest car parts supplier” (Rauwald, 2017, para. 2) based on its revenues.

By the end of 2016, Bosch had 390,000 associates worldwide. The Bosch Group is structured in four segments, the strongest being the automotive with more than 60% of the total sales; industrial goods is second at around 20%; and consumer goods, energy, and building technology each contribute 10%. Within the automotive segment, there are nine divisions: Gasoline, Diesel Systems, Automotive Electronics, Automotive Aftermarket, Automotive Steering, Car Multimedia, Electrical Drives, Chassis Systems Control, and Starter Motors and Generators.

### **Announcement of the Sale**

The entity described within this case study is the Starter Motors and Generators Division of the Bosch Group, consisting of 6,000 associates worldwide, distributed among sales offices, development centers and production sites located in Brazil, China, France, Germany, Hungary, Italy, Japan, Korea, Mexico, Russia, South Africa, the United Kingdom, and the United States.

After several years of tough competition within the starter motors and generators market, Bosch tried out several strategies to restructure its organization to bring this division into a profitable scenario, which was achieved in 2013 and 2014.

On June 2015, Bosch headquarters announced to all worldwide associates of Starter Motors and Generators its decision to sell or look for a partner. Preferably, the announcement was to be made with all personnel together with their manager, an HR representative, and a regional president or executive officer, depending on the entity, as an employee in France shared.

The communication was also shared with the press (Reuters, 2017), based on exchanges with Loeckle, Bosch’s work council chief: “It has not yet been decided whether the unit will be sold or if starters and generators will partially or completely stay with Bosch” (Schuetze & Wissenbach, 2016, para. 5). Additionally, “We have been assured that it will not be sold to an

unreliable buyer but that the best option will be sought for the business and the employees” (Schuetze & Wissenbach, 2016, para. 6-7).

At the time, the employees of the Starter Motors and Generators started to meet with the purpose of having a better understanding of the situation and their possible rights depending on location.

Given the lack of knowledge on the future owner structure, Bosch and the Starter Motors and Generators’ top management, were unable to provide more detailed information to its associates causing certain dissatisfaction among its employees, suppliers and customers, who were uncertain of the consequences that this might cause to their businesses, given the long-term relationship. Employees initially expressed discontent with this decision, as over the last six years, they had been under continuous pressure to reduce costs to be more competitive, to continue to gain business, along with the launch of new products, based on feedback from some Japanese and French employees. Germany was replacing the people who were retiring in Hungary, while Spain was not forced to hire replacements, as stated by a Spanish employee.

Considering that Bosch divisions are entwined, initially there was also uncertainty as to whether other divisions might be affected directly or indirectly by the decision to sell the Starter Motors and Generators entity.

Specifically the implication of the divisions that had a major role in the activities of Starter Motors and Generators was unclear, such as Gasoline Systems that performed all the component and vehicle validation tests of the alternators and starter motors, or Automotive Electronics division, as the unique supplier of electronic components of alternators.

In order to illustrate this, specifically in Europe, the unions expressed their concerns stating that this event was the beginning of a complete new business strategy defined by top management and therefore, the consequences to the other divisions might have not been clearly identified, showing that by just considering the services provided by Gasoline Systems and the Automotive Electronics division to the Starter Motors and Generators entity, several locations would have been added to the financial transaction in the scope of the sale of Starter Motors and Generators, such as Australia, Czech Republic, South Africa, Sweden, and other sites based in Germany and France, increasing the number of associates from the original 6,000 to close to 50,000 employees, as a German executive estimated.

These discussions permitted not only to gain time from the employees’ perspective, but also gave top management time to further clarify the situation with the Board of Directors at Bosch; to define more specifically the scope of work and required time, effort, and resources to perform such a carve-out; and to define the boundaries of the organization, given the ambiguity of what was for sale. As Starter Motors and Generators had been the first part of Bosch and, based on its needs, the other business units were created, thus implying that a number of their activities were related to Starter Motors and Generators for development, manufacturing, patents, validation, and test equipment, all of which finally prevented the creation of a new legal entity in the two months that followed the announcement, as per the original plan as shared in the official communication.

The daily work activities started to become difficult, people were overwhelmed with the situation as the carve-out made it harder to progress on their projects on schedule, with resulting delays. This uncertainty related to their future employer as well as the time it took to reach a final agreement with a partner or buyer, encouraged some employees to keep their eyes open for new job opportunities.

Internal communication was continuous, especially in Germany, trying to reassure people about their employment along with the commitment from Bosch to keep the current conditions, however, it was impossible to provide detailed information concerning the future owner or the potential prospects, as it was still unknown or considered as sensitive information for the business.

A separate organization was set up to handle the restructuring project within the internal organization to help define the scope of the entity for sale, with appropriate documentation: contracts, financial statements, patents, IT systems, and invoicing; besides keeping communication flowing with all customers, this ensured a transparent process so as not to jeopardize any deliveries or transactions.

Internally, the HR and legal departments, along with the unions, actively involved by the Starter Motors and Generators top management and the Bosch representatives, in an effort to increase the acceptance of the deal, prepared all the documentation related to each employee and the working conditions: contracts, type of position, salary, location, seniority, performance reviews, training plans, pension funds, and specific agreements depending on each country's requirements related to benefits and services, such as health care, insurances, transportation, canteen, and travel agency. The purpose of this was to create a scenario in which employees were guaranteed employment in the new legal entity, with the same conditions as before regarding benefits and job's responsibilities.

A key aspect of this process was the intensive communications and workshops designed to reassure employees with concrete examples of people who had supported previous joint ventures or acquisitions, as well as to keep them motivated and aware of the challenges that would arise in the upcoming months. Finally, they wanted to train them in communication to show them how to use the space to reduce rumors, allowing employees to talk to obtain further information and address conflicts in a timely manner.

### **Creation of the New Legal Entity**

By August 2016, almost a year after the announcement of the sale, the official legal entity was created based in the Netherlands, as most of the transactions related to this industry are tax free if the entity is based there; the rest of the worldwide organizations were attached to this new organization, as soon as they became independent legal entities from the Bosch group.

Top management took several steps in communicating, including creating a list of the key members who were absolutely required to support the transition to the new legal entity or potential buyer. Specifically, in Germany's legal framework, employees have the right to accept or refuse to get their contract transferred into a different legal entity, therefore a series of invitation letters to join this new organization were sent, along with a new contract,



requesting a signature to identify the potential risk of the loss of its human and intellectual capital, as most of the core activities, including research and development, are based in Germany, therefore a big loss of talent would have negatively impacted employees worldwide, as they rely on their expertise and knowledge with significant years of experience in their roles.

The other worldwide entities, based on their own legislations, could not refuse to join the new legal entity; existing contracts would be transferred to the new legal entity and afterwards to the buyer. Therefore, there needed to be a good contract in place, covering the existing benefits or employees could resign or negotiate for better conditions within their local entities to stay. Top management was supportive and collaborative to ensure that all the current conditions of the contracts were respected and assured in the transition to the new legal entity.

Given the impending separation from Bosch, the Starter Motors and Generators' organization created new job opportunities mainly in the areas of marketing and purchasing, in which some employees were eager to enlarge their professional knowledge and areas of expertise. Some examples include a German employee who moved from project management to marketing; a project manager from Brazil to the United States as an expatriate, and an engineer from Hungary to Germany with a local contract.

Thus, there were opportunities within this new legal entity, Starter Motors and Generators, to move into another position, but it was difficult to move back into one of the Bosch divisions, since the objective was to ensure a good transition with all the resources and knowledge to the new organization and ultimately to the potential buyer.

Finally, despite some rounds of negotiations to keep certain key people in their roles, some personnel in Germany refused to join this new legal entity. Surprisingly, refusal rates varied depending on the departments. A possible reason for this outcome could have been the uncertainty regarding the buyer and the future work conditions; the feeling that there might be more opportunities to switch between positions or divisions at Bosch in the near future; the familiarity within their own position and the potential change that might impact them by getting them out of their comfort zone; and the limited understanding of how the company would be capable of building the required competences for independence within such a short timeframe (less than a year to close the transaction).

Negotiations were held with some key positions, mainly people who had interface directly with the customer or had been in their role for a long time, on some occasions offering a higher position or specific trainings to reach another level within the organization.

At the same time this gave the opportunity to other colleagues to take on another role or responsibility, as some departments were looking for internal candidates with existing background and experience in the activities related to this business unit.

The HR departments were busy announcing the open positions, having interviews, and selecting personnel. The new employees were alerted that the division was for sale and potentially they would be working for a different company. Many replacements were young

professionals, eager to learn and motivated to contribute to this transition, saw the looming independence of the Starter Motors and Generators as an opportunity to make a difference and gain experiences for their professional careers. It's relevant to mention that the hiring process was done at a great speed, despite the number of positions that were required to be filled, not only given the refusals but also the new departments that were created in order to become an independent entity from the Bosch Group; such as purchasing, some quality functions, etc., finding, on most cases, a replacement within 3 to 6 months that followed.

Obviously for the organization, the transfer of knowledge was a challenge, even if there was a time during which the two organizations were together to do such sharing. This occurred as often experience cannot just be passed on but has to be gained by facing tough situations, such as new developments, quality issues, or the need to improve components or to continuously look for options to reduce costs.

In addition to this, the newly created departments, e.g. purchasing, can only partly build on the experiences and processes established within the central departments at Bosch. Knowledge is hard to transfer, even though interaction with experts from other departments or through good documentation, as that knowledge is often related to a particular use of the part or a certain scenario. In addition, age differences and their approach to learning were completely different. For instance, the existing organization still had to fill out procedures forms to comply with internal processes that were about to become obsolete, as the process was changing and shifting to other locations. While hiring was a priority in Germany, in other locations the task was also to separate the Starter Motors and Generators production from the current Bosch plants without interfering on deliveries, quality or customer satisfaction. People from Germany travelled often to set up the laboratories and train the new operators and engineers. However, this transition was understandably not smooth, since not only the physical locations but also the processes between Bosch divisions and the Starter Motors and Generators organization had to be split. Issues arose that led to the creation of taskforces to find solutions and define strategies in order to minimize the effect on production capacities and client relations.

Especially in the Americas, due to the local laws, there was an urgent need to spin off and transfer all activities to a new facility with existing resources on an aggressive timeline with no possibility of delay. The top management in those specific regions worked hard to find a location close to the current one, less than 30 km away, preserving the daily life and routine of the employees. Specifically in Brazil, a transportation service was put in place from the existing plant to the new one, to avoid any additional charges on fuel or issues with traffic that could be problematic for the employees. Safety stocks for inventory were built up also with the support from other Starter Motors and Generators plants around the globe.

Aside from this, negotiations with potential buyers continued, not only by reviewing in detail all documentation and strategy, but also by visiting production sites to verify assets, locations, and overall spirit of the people. No details about these negotiations could be shared with the employees not to endanger a potential deal; despite the visits of the potential buyers, the employees could only speculate about the companies interested in acquiring the Starter Motors and Generators business.

The official communication from top management was very optimistic with photos of the new plants, the first shipment out to a customer, and the signed engagements with the unions in an effort to encourage people to keep a positive outlook towards the goals and further steps to achieve this sale. It was also stated that the buyer was expected to be officially announced at the beginning of 2017; however, in attempts to find an ideal fit both for Bosch and the future of the Starter Motors and Generators, it had to be postponed to February, then to March, afterwards to April, stating that the negotiations were close to being finalized, but a better offer was being negotiated. By mid-March, an extraordinary meeting with the European Commission was held to present the final decision regarding the strategy for the Starter Motors and Generators, mainly to ensure that there would be no conflicts on this decision, whether the division would be sold or the creation of a joint venture, related to the antitrust law.

### **Contract Signature of the Purchase**

At the end of April, a member of the union in France stated that an informative meeting with all European unions was set up to share the outcome of the negotiations, stating that there had been ten candidates to buy the Starter Motors and Generators division and that a final decision had been made without disclosing the name of the buyer before the signature of the contract.

On May 2, the official name of the buyer was communicated to the Starter Motors and Generators employees in parallel to the general public. It was explained that the buyer is a consortium consisting of ZMJ, Zhengzhou Coal Mining Machinery Group Company Limited, and its long-standing business partner CRCI (China Renaissance Capital Investment), a Chinese investment fund.

The agreement of the purchase consists on several clauses; one of them, related to “No Employee Objections,” specifying that 90% of the workforce, from group leaders, managers, directors, to vice-presidents, in research and development, sales and marketing roles, must remain and join the new legal entity. If the percentage of employees who accept is between 75% and 90%, Bosch has the possibility to adequately fill these positions within a time frame of 18 months.

From mid-June until mid-July, a series of invitation letters was handed out to all the personnel with a German contract, via its manager to their direct reports, or a certified courier sent to their home address in case the employee is not present due to holidays or a specific type of leave, requesting an official and written reply from the employees to the HR representatives before July 12, in case of refusal. All the associates have the right to accept or refuse the new contract, which is an exceptional case, as most of the times in the scope of an M&A in Germany, it's only once the buyer or partner is announced, however as it was required to define an independent legal entity from the entire Bosch Group, this gives the opportunity to the employees to make a second decision in a further stage in the process with all the relevant information available regarding the buyer and conditions for the next couple of years, allowing most of the workers who are close to retirement to have the same conditions as in the current company.

The buyer has agreed to keep in place all previous agreements and benefits offered by Bosch and maintain all current positions and locations, guaranteed until at least 2022. After this period, changes could be made, as this is also the right of any employer. Depending on the number of refusals and other conditions that must be met, the buyer has the right to lower the price of the transaction or cancel the purchase. The closing of the transaction and all its activities are due by the end of 2017.

An important aspect to be mentioned is that Bosch assumes responsibility of the employment of its associates within Germany, not only for the employees that might potentially refuse the new contract with the buyer, but also in the case of economic layoffs, implying that employees that might be laid off afterwards are guaranteed to be hired by Bosch.

Regarding the other Bosch sites or Starter Motors and Generators' employees worldwide this is not applicable due to the local legislations.

### **Discussion**

The main problem that occurred in this case study is the amount of time required to share openly the strategy for the organization and its employees, causing a lack of communication related to the employees' future, due to the confidentiality agreements accompanied by the negotiations with potential buyers or partners, as well as the inability to plan for additional staffing and its required competences and skills, given the uncertainty with regards to the strategy, as to whether the division would be sold or a part of a joint venture, along with the specific local legislations for the existing locations and its unions.

### **Communication Plans**

As Suratpipit and McLean (2014) emphasized, it is important to have a strategy for planning and implementing communication to bridge the gap between rumors and facts, and to avoid the stress of uncertainty about the future. Thus, it might have been useful to establish, prior to the announcement of the sale, a well-rounded step-by-step communication strategy explaining the reasons for this decision and to outline clearly the potential steps and its specific dates, as much as possible: firstly to set up this organization as an independent legal entity, prior to even look for buyer or a partner, in order to reduce the time, resources and the stress that was highlighted in the story of this restructuring process.

Moreover, as Schuler and Jackson (2001) said, "it appears to be crucial that restructuring should be done early, fast and once. This minimizes the uncertainty of 'waiting for the other shoe to drop'" (p. 8); contrary to the case study, in which there were continuous postponements in announcing the buyer, due to several reasons such as the constant negotiation with the potential partners. This led to confusion among employees. Therefore, it would have been helpful to pre-define an appropriate communication strategy related to each of the steps required, from the creation of an independent legal entity until the buyer or partner was chosen, to disclose the information according to each stage. Possibly by taking into consideration the findings of Schuler, Tarique, and Jackson (2004) in which they suggested, as a first step, the formation of "the partnership stage" (p.9) to explain the reasons for the decision to create a separate organization from the Bosch Group without the need to

disclose whether it would be a sale or a joint-venture as such decision would be related to the specificities of the potential partner or buyer. Planning in such a way would help employees to understand the benefits, as an opportunity to restructure, based on the lessons learned from the Bosch braking system division sale to a U.S. investment firm in 2012, as reported in the Financial Times by Wilson and Bryant (2012). Further, exerting efforts to listen and provoke exchange among the employees can help in defining a new strategy specific to this division, and its related needs, to create an identity that might allow the employees to be more willing to accept and drive the change within this organization. All of these communication approaches would have helped them to adapt their business model by incorporating such suggestions in the Bosch procedures and guidelines.

### **Team Focus**

In the pre-merger stage, it is important for any organization to have a dedicated internal team, despite the integration of consulting firms. As suggested by Schuler and Jackson (2001), it is helpful to define “a dedicated and skilled leader and a team for M&A activities” (p.6) to be able to focus directly and solely on the restructuring project without having to look over the daily activities of the business. By including HR on the team, the necessary HR activities can then be planned and carried out in a smooth way. This will free them up to address HR personnel and union issues in a timely manner.

In general, naming a successful leader is also important, being, as described by Schuler and Jackson (2001), regarding a case of Johnson & Johnson, a leader is needed who is:

sensitive to cultural differences, open-minded, flexible, able to recognize the relative strengths and weaknesses of both companies [in this case Bosch and its divisions], committed to retain employees, good listeners, visionary, able to filter out distractions and focus on integrating key business drivers such as R&D and customer interfaces. (p. 9)

Thus, it is important to identify a manager, for the new business development, who is a team player and can work well with the team. He or she needs also to be aware of the business situation in the division, the company culture and its employees, along with market constraints. Such a manager could bring new ideas to encourage employees to engage actively in the project of restructuring in order to prepare, identify, and select potential partners adapted to the values, culture, and objectives of this new organization.

### **HR Diagnosis of the Organization**

Prior to making an official announcement of a carve-out, as a definite strategy, as Coleman and McLean (2002) commented, as part of the pre-deal stage or organization transformation, to perform a diagnosis of the organization to prepare and plan for the needed intervention. This helps mainly to identify, in a very early stage, the type of leader required and the size of the M&A team. Further, given the time that this organization had existed, as suggested by Schuler, Tarique, and Jackson (2004), it is vital to identify the risks related to tacit knowledge of the organization, “deeply embedded in organizational routines (e.g. structure, rules and policies) and difficult to codify and teach” (p. 7). HR and the internal communications teams

can then have establish an action plan to identify the willingness of the employees to learn, to prevent discord and prepare for the eventual turnover and transfer of knowledge.

### **HR Role Managing People**

Schuler and Jackson state clearly (2001) that “research indicates that people issues occur at several phases or stages in just the integration phase of mergers and acquisitions include: (1) retention of key talent; (2) communication; (3) retention of key managers; and (4) integration of corporate cultures” (p.5); thus, HR’s organizations play an important role to manage people and their expectations; in this case for example to drive the continuous exchange with the unions, to manage resources considering the additional workload due to the pre-merger, and to not only to hire, but also to prepare the new contracts to assure the commitment of the organization towards its employees.

### **Recommendations for HR Practice during a Pre-merger**

While it is not possible to generalize from a case study, it is, nevertheless, possible to suggest activities that HR might have performed during this case study during the pre-merger to ensure a smoother transition.

First, and most important, is how important it is to have HR involved in every aspect of an M&A, not only to negotiate with the unions but also to ensure that the communication is represented by HR. In this case, as some of the tasks usually associated with HR in an M&A process were taken on by another department specialized in organizational development and the process as a whole was led by a task force, HR was not clearly defined as the leader during the process.

At the same time, the strong presence of the unions, especially in Germany, led to have two sources of communication for the employees with different goals and messages. Further, HR could potentially have played a greater role during the planning of the transition process in order to improve the strategy, mainly regarding the communication of this restructuring, with respect to the knowledge transfer, and the possible new job opportunities to encourage the employees to embrace the change and the resulting potential for personal growth.

In general, performing an in-depth diagnosis of the organization can help to both limit the turn over and support the preparation of a plan to transfer the knowledge in a timely manner. This is especially important in this case, as by design, most of the knowledge is situated in the HQ in Germany. The change process initiated by the pre-merger could potentially also be an opportunity to distribute, share and ultimately transfer knowledge to the other regions, develop their competences for growth and potentially create new job opportunities.

It is also vital to assess, prior to an M&A, the legal framework and the possible impacts that could have into the HR practices, to prepare the communication and action plan, such as training, compensation and other benefits, aligned with the milestones and estimated budget of the M&A.

## **Recommendations for Future Research**

Further studies are suggested in the context of cross-country practices of HR in the pre-merger phase of an M&A to identify the extent to which HR departments are prepared for all phases of an M&A, especially in a cross-country context. Further, there is need to determine whether the limited influence of HR from the case M&A is typical, or, if included, what factors support such inclusion. If the case example is typical, why does this happen? Why does top management, as in this case, split the responsibilities between HR and another department in charge of the organizational development?

It would be valuable to perform further studies to verify to which extend would it be possible to identify the readiness of an organization in a cross country context for a merger or acquisition depending on the different aspects such as knowledge transfer and culture adaptability.

Also might be important to explore, in the scope of business disruption, how an HR organization could be prepared in the event of a sudden merger or acquisition given the financial volatility.

Additionally, it is recommended to assess the role of HR within the organization with regards to the activities that are under its responsibility, to see whether that is a factor that is contributing to consider HR as a separate organization from the core entity in which the strategy is being defined.

Other studies are suggested in the scope of pre-merger activities, mainly in Europe, due to the strong legislations and the significant power of the unions to identify whether this is a common pattern in other companies.

## **Conclusion**

This case study evidences some of the potential communication issues in the scope of an M&A with a previous carve-out of the division that is then to be sold. It's clear that due to the amount of workload to continue the daily activities on top of the preparation for a merger, certain issues could not be addressed or communicated in a timely manner having a direct impact in the organization.

In addition, HR had the role as a process partner, with different levels of involvement among the regions, instead of a driving force, despite being vital to keep turn over down, motivation up and fill many new positions necessary to prepare the organization for independence.

It is difficult to determine whether this is part of the culture of this company in which innovation and its engineering background could be a contributor for this symptom – as shown in the split between HR and the deployment business excellence department, in charge of the organizational development in all the division within Bosch.

Nevertheless, the pre-merger experience along with the investigation of the case study, shows the importance of considering case studies related to M&A to address, define and prevent some of the problems that can otherwise occur in pre-mergers like this.

Despite the statement that 80% of the M&A that underperformed is due to the lack of planning, mainly on this case, it could also be due to the objective to restructure in parallel to the selection of a partner or a buyer along with the HR negotiations with the unions to reinforce the commitment of the company towards its employees, which limited the participation of HR in other activities that were also important to the restructure, as an example, the knowledge transfer. It is however, important to acknowledge that despite the pre-merger, the Starter Motors and Generators entity achieved and exceeded its business targets during 2016.

It's relevant to mention that HR has a very important role within the strategy of the company, it should not be seen only as a business partner or a service department, and must be linked with all the operations of the company as the driver of the change. Furthermore currently that it is hard to define a steady strategy for a certain period of time, given the new business environment, it's relevant to have a strong HR organization that can integrate and adapt with agility to the internal and external changes.

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## Does Minimal or Inconsequential Organizational Changes Matter?

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**Abstract:** The world, companies, economy and people faces every and each day more and more rapid changes. In the workplace, some Organizational changes are considered not important because of it's minimal or not direct impact on the daily routines or work procedures. As A, Mustafa affirms, (Mustafa, 2013) "*Human reaction to a change does not always depend upon logic. Generally, it depends upon how a change will affect one's needs and satisfaction in the organization.*", so attitudes are very important in determining the resistance to change because an employee's perception of the likely impact of change will depend upon his attitudes. Attitudes, as we all know, are not always a matter of logic, but are entirely different from it. Therefore, there is a very close relationship between change and human attitudes and each one sensemaking. Considering that in our days, most of the people spend lots of their work-time under pressure and stress to complete assigned tasks, managers don't lose their time communicating or even thinking on the possible impact of this kind of OC. However as quick as organizational changes happen (even the little or considered inconsequential ones), employee's opinions are constructed, and social construction can happen. During all this kind of busy days thousands of messages are transferred. Each day more and more messages are written than spoken. During a working day, ideas, beliefs and rumors are shared, creating new realities to the ones involved on it. All this activity is essential for the prosperity and survival of organizations. However if the subjects of those messages are not treated conveniently, any organizational change may lead to the creation of rumors, ideas, concerns, opinions, converting inconsequential organizational changes in "big fights" where each employee sees and feel involved. Organizational changes that could not even have direct impact on the daily routine work, may become a "dark cloud over the employees heads and ideas" turning into important and critical changes that at first sight, seems like not important. As a consequence the workplace can be transformed in a living hell, an unbearable place to be.

**Keywords:** Social Construction; Online conversations; Organizational Change; misunderstanding; Communicate Organizational Change, Sensemaking

### Theoretical base

The following concepts are analyzed: organizations, organizational change, social construction, sense making, conversations face to face vs online conversations.

### Organizations

Organizations can be considered as socially constructed realities in which the reality we know is interpreted, constructed, enacted, and maintained through discourse (Berger and Luckmann, 1966; Holzner, 1972; Searle, 1995; Watzlawick, 1984a; Weick, 1979), It can even be understood in terms of created networks of relationships and interactions.

Organizations are also understood as interpretive systems and cognitive processes are central to understanding attitudes, behaviors and organizational decisions. Organizations are social constructs or tools, products of individual and collective actions. Weick's concept of organization is adopted (Weick, 1987).

### Organizational change

OCs are incontestable, literature on OC and related subjects is very wide. Authors, like Smith (1982); Weisbord (1988); Woodman (1989); Barnett & Carroll (1995); (Jeffrey D. Ford, 1995); (Lima & Bressan, 2003); Van de Ven & Poole (2005), Neiva & Paz (2007; 2012), Ruona & Choi (2011), (Hutchison 2001), defined and classified the concept, types, contents and processes of OC. Several dimensions of OC were identified in the presentation of relevant types of changes, such as continuity or discontinuity of time, the object, the intensity, the speed, the intentionality of change, the response time to external environment, the role of those involved in the process, and also the period in which the change occurs. Burke and Litwin (1992), proposed a distinction between Transformational Change and Transactional Change, a few years later, Weick and Quinn (1999) presented the same kind of changes under different names (continuous and episodic), and again few years later Burke (2011), reaffirms the distinction between Transformational and Transactional Changes. Weick and Quinn (1999) find out that there are two major types of changes that are analyzed in the literature: the continuous changes involving small advances over time and are cumulative and episodic changes as a result of organizational imbalance. According to Van de Ven and Poole (2005), this differentiation reflects trends in the study of organizations and visions, as well as different methodological approaches to the study of organizational change.

Organizational changes can even happen because of internal or external forces, as government police changes, Market conditions or Social changes, and have several levels as individual, group or organizational. (Mustafa, 2013).

However, most of the studies are about CC, changes that have direct impact on everyday work of employees, approaching the theme most of the times in a planning perspective and besides the conceptual issue and the evolution of the field. Most of the considered concerns were the need to specify what type of change is under discussion, and which are its object and contents.

Inconsequential Changes (IC), are changes like logo color changes, carpet color change, wall painting change, changes have no impact at all on employees, daily work however can influence employee's attitude on work and have not been quite studied.

Even when organizational change, doesn't affect directly the employees every day's work, it may cause them uncertainty and fear about what's going to happen after, and in conversations with others the social construction of meaning about change can be influenced

negatively affecting its motivation and consequent behavior. (Jimmieson, Terry, & Callan, 2004)

The difficulty that organizations have to make changes and that literature faces to explain them, is often related to the overemphasis on rationality of change management processes that is considered simplistic and reduced the person to a mere skill (Beer and Nohria, 2000; Bovey & Hede, 2001; George & Jones, 2001; Holbeche, 2006; Soumyaja et al, 2011; Townley, 2008).

Many authors, criticized the reductionist and simplistic rational view of organizational change from the human social context and favored research focused on people, and their social construction, addressing the importance of the role of the individual feelings, attitudes, behaviors, emotions as agents, and the role of conversations on social construction of meaning as facilitators and responsible for the success of change. (Giddens, 1984, Ford & Backoff, 1988, Poole & DeSantis, 1990, Kotter, 1990, George and Jones, 2001; Antoni, 2004; Judge et al, 1999;. Wanberg and Banas, 2000; Vakola and Nikolaou, 2005 Huy, 1999; Chrusciel, 2006; Herkenhoff, 2004).

The use of factors that facilitate or hinder change is necessary to understand what can be identified by the members of the organization and its relationship with the perception of the occurrence of CC and IC. Authors like, (e.g) Greenwood & Hinings (1996), Oxtoby, McGuinness and Morgan (2002), Slack & Hinings (2004), Litaker, Ruhe & Flocke (2008), Weiner, Amick & Lee (2008), Judge & Douglas (2009), have emphasized the importance of establishing organizational readiness for change and recommended various strategies for creating it. That's to prepare this readiness for change that human resource managers should be aware of human sensemaking about oc during online conversations.

### Social construction

Social constructivism emphasizes the active role of conversations in the construction of reality. People's ideas about the world are constructions, even if the universe isn't a "mental object". During conversations, people can't ignore the categories of knowledge, meanings, stories, experiences and sensations. Reality goes from static to a dynamic – becoming a concept where people are networks, with patterns of interaction, modulating its own reality as it happens. Social construction happens in a sequence of interactions and conversations; people concerned with same "problems" in the social context of other actors, engage about ongoing circumstances from which they extract cues and make plausible sense retrospectively, while enacting with more or less order into those ongoing circumstances (Weick et al., 2005). It can also be reinforced by networks that are not only as groups of individual cognitions in the heads of individuals, organizations, but also as structures which nurture negotiation, persuasion and reinforcement between individual interactions (Kildulf and Tsai, 2003)

Social construction of meanings has been considered as one indicative factor of organizational capacity of change creating a new wide area of research, Prochaska, Norcross & DiClemente (1994), Cunningham et al (2002) understand the construct change capacity as –readiness for organizational change - correlating it with readiness, but looking exclusively to the person,

looking for its psychologically and behaviorally condition which can allow or not the process of change. This position is compared to those presented by Slack and Hinings (2004), Litaker et al. (2008).

### Sense-making

Karl Weick, suggests that the term means simply “the making of sense” (weick, 1995). It is the process of “structuring the unknown” (Waterman, 1990) “enabling us to comprehend, understand, explain attribute, extrapolate, and predict” (Starbuck & Miliken, 1988). Is also the activity that enables us to turn the ongoing complexity of the world into a “situation that is comprehended explicitly in words and that serves as a springboard into action” (Weick, Surcliffe, & Obstfeld, 2005).

Sensemaking involves, and requires the articulation of the unknown, because, sometimes trying to explain the unknown is the only way to know how much you understand it. (Ancona, 2012) The move to the complex occurs as new information is collected and new actions are taken. Then as patterns are identified, and new information is labeled and categorized, the complex becomes simple once again, now with a higher level of understanding. Sense-making is most often needed when our understanding of the world becomes unintelligible in some way. This occurs when the environment is changing rapidly, presenting us with surprises for which we are unprepared or confronting us with adaptive rather than technical problems to solve (Heifetz, 2009).

### Conversations

The broad view of conversations as “a complex, information-rich mix of auditory, visual, olfactory, and tactile events” (e.g.. Cappella & Street, 1985: 2), as conversations include not only what is said, but also what is done in correlation with what is said (i.e., a gestalt).

(Jeffrey D. Ford, 1995), claims that conversations may include symbols, artifacts, theatrics, and so forth, that are used in conjunction with what is spoken. This view is not inconsistent with the understanding of conversations as clusters of interrelated speech acts.

(Jeffrey D. Ford, 1995) study was an introduction to the conversations of producing intentional change so the focus was only with the spoken aspects of conversations.

According to Ford and Ford (1995) conversations are written verbal interaction between two or more people that can range from a single speech acts, e.g. "do it", to an extensive network of speech acts which constitute arguments (Reike and Sillars, 1984), narratives (Fisher, 1987), and other forms of discourse (e.g. Boje, 1991; Thachankary, 1992). Conversations may be monologues or dialogues and may occur in the few seconds it takes to complete an utterance, or may unfold over an extended period of time lasting centuries, e.g. religion.

A single conversation also may include different people over time, for example, when a board member's tenure expires during the process of changing corporate policy.

Jeffrey D. Ford, 1995, proposes that, although participants will engage in many conversations, there are four different combinations of speech acts that correspond to four different types of interactions in the intentional change process. The specific content, sequence, tone, and so

on, of these interactions will vary, but the emphasis a change agent puts on certain speech acts will define the stage of development of the change. The four conversations are initiative, understanding, performance, and closure.

### Online Conversations

However at online forum conversation this face to face communication can't be viewed, so it can't influence OC sensemaking.

Online forum conversations can be the key to the analysis of the dynamics of organizational change processes. Since the informal conversations not prescribed relationships within organizations, characterized by ties of affection, belonging, security, support, social support and bonding and refer to a set of spontaneous interactions in which the person is understood as an active subject, the relate to others and to take formal and non-prescribed social roles. (Wellman et al., 1996). J.V. da Cunha, W.J. Orlikowski (2008) considered "online forums are not necessarily cooperative spaces for neutral exchange of information and ideas". It can promote social construction of meanings.

Online conversations affects the sensemaking (perception) of the change serving the dissemination and sharing of meanings mechanism, assuming that organizations are located in unstable environments and need to be adapting to survive.

According to Cunha, João V. (2007), there are 4 types of Face to Face conversations each one leading to one purpose.

### Role of information during organizational change

One of the managerial challenges facing organizations is the effective implementation of organizational change programs that minimize feelings of uncertainty and associated threat. As discussed by Milliken, (1987) uncertainty in the work context is a crucial need for the provision of information during periods of organizational change.

Sutton and Kahn (1986) argued that when profound organizational change is imminent, employees go through a process of sense-making in which they need information to help them establish a sense of prediction (e.g., the time frame for organizational change) and understanding (e.g., the need for organizational change) of the situation. Feelings of workplace uncertainty can be reduced by providing employees with timely and accurate information concerning the organizational changes, either through formal or informal communication channels (see also Ashford, 1988). It is important to note, however, that providing detailed information about the change event may be difficult or simply not possible, especially during the early phases of the implementation process. As noted by DiFonzo, Bordia, and Rosnow (1994), if a particular issue cannot be addressed, then it is best to explain why it cannot be answered. In a case study analysis of a manufacturing firm that had developed an effective change communication strategy, DiFonzo and Bordia (1998) found that letting employees know when the provision of information was incomplete and providing them with a timeline for when information would become available helped to minimize the emergence of damaging rumors, as well as reducing anxiety associated with uncertainty.

However, as noted by Sutton and Kahn (1986), it is still preferable for those responsible for the implementation process to keep such periods of uncertainty to a minimum.

According to Sutton and Kahn (1986), prediction and understanding are likely to have a direct relationship with employee adjustment to organizational change, as well as acting as potential buffers in the stress—strain relationship. In this respect, prediction and understanding may reduce the negative effects of change-related stressors on employee adjustment. Indeed, the notions of prediction and understanding have received research attention as potential buffers of the negative effects of work stress on employee adjustment. There is some evidence in the broader occupational stress literature indicating that the negative effects of role stress on employee adjustment are most apparent for individuals with low levels of prediction and understanding concerning the work environment (e.g., Jimmieson & Terry, 1993; Tetrick & LaRocco, 1987). In the context of organizational change there is a growing body of research examining the main, and to a lesser extent, the moderating effects of a variety of different information-related constructs on employee adjustment.

Authors like, Miller and Monge (1985), Brockner, De Witt, Grover, and Reed (1990), Schweiger and DeNisi (1991), Shaw et al. (1993), studied the impact of information during change, in different contexts.

Also according to Kotter, 2000 one of the 7 steps needed for change not to fail is “communicating the vision – Using every vehicle possible to communicate the new vision and strategies teaching new behaviors by the example of the guiding coalition (Kotter, 2000).

#### Online discussion forums and organizational change

Online forums used as toll of organizational change, can be a very good help to improve organizational change acceptance and understanding. It can also help to lead employees about that change as a good factor. (Cunha, J. V. D., and Orlikowski, 2008)

(Cunha, J. V. D., and Orlikowski, 2008) research has shown that participants invest part of their identity in views they share online, and if such views get challenged, personal attacks and “flame wars” may result (Burnett & Buerkle, 2004; Lee, 2005). In spite (or perhaps, because) of such social dynamics, online forums have been found to be effective spaces to build various communities of interest, where groups of individuals share and develop information online about a specific topic (Gongla & Rizzuto, 2001; Wasko & Faraj, 2005).

Online forums are also frequently used for coordination. Organization-specific online forums are commonly used to coordinate activities across organizational and geographical boundaries because they facilitate the distribution and integration of work among members who may never meet face to face (Jarvenpaa & Leidner, 1999). The online forums allow members to mutually adjust their efforts, and to work towards developing a shared language, a joint history, and over time, possibly common values and beliefs (Lakhani & Von Hippel, 2003). Further, as online forums provide a repository of communications exchanged, the historical and ongoing documentation of members’ interactions, agreements, and procedures serves as a useful collective memory.

These online forums, however, are not without difficulties, and a number of researchers have documented complications and conflicts associated with information, interpretations, and interests that arise as groups try to coordinate their work across time and space (Cramton, 2001; Hinds & Bailey, 2003; Mortensen & Hinds, 2001).

When debates and disputes persist for prolonged periods, the community may be polarized into different and possibly incompatible accounts of its shared experience (Smith, 1999), with members becoming increasingly disengaged and alienated over time (Leizerov, 2000; Mortensen & Hinds, 2001). However, conflict may also serve as an occasion to take stock of a community's values and beliefs, generating a renewed commitment to common goals (Kollock & Smith, 1996). For example, studies of task-oriented virtual communities (e.g., open source software development) find that informal leaders, especially those whose expertise or performance have earned them a central position in the community, can play a crucial role in turning disputes into productive exchanges by offering a fresh interpretation of the challenges jointly faced by the members (Koch & Schneider, 2002).

Online forums have also been used to seek and provide emotional support, as when participants discuss personally challenging problems or disorders with others who share common circumstances, for example, a chronic disease, an addiction, or mental illness (Galegher, Sproull, & Kiesler, 1998). Such use of online forums often involves providing detailed information about the experiences, treatments, and consequences of the shared difficulty, and, more importantly, also offers relief through the direct support of others (Turner, Grube, & Meyers, 2001). The possibility of anonymity (or pseudonymity), which allows participants to openly discuss their experiences online while avoiding personal disclosure or embarrassment (Bowker & Tuffin, 2002), it's a powerful feature. The online nature of the interaction in these forums allows individuals to choose how to present themselves to others, affording the shaping of virtual identities that can reduce the threats to face entailed by co-presence, especially when it's hard to give opinion face to face. Research has shown that participating in these communities may help participants overcome the identity challenges associated with various physical, social, and psychological hardships (see Cummings, Sproull, & Kiesler, 2002).

All three of these purposes for using online forums—information sharing, coordination, and emotional support—may be valuable in both the design and implementation of change and in the mobilizing of resistance to it. As many of these online forums extend within and across organizations, it's also expected that their use in change efforts will entail a scale that would have been difficult to manage with traditional communication media.

A number of studies suggest that online networks can facilitate social change by increasing the pace and reach of that change, while also enabling additional innovations and improvisations (Kling, 2000; Morrison, Roberts, & Von Hippel, 2000). People may engage in online interactions to share their experiences and adaptations with others, and in this way reduce the overall disruption occasioned by the change that is experienced by the broader community. Online forums may also provide access to various forms of assistance that can help users incorporate the changes in their everyday work practices (Cecez-Kecmanovic, Moodie, Busuttill, & Plesman, 1999). This allows those involved in implementing the changes

to deal with objections and questions early, gaining the opportunity to know about and address some of the obstacles to change as they arise (Orlikowski, Yates, Okamura, & Fujimoto, 1995).

The availability and use of online forums may also enable change agents or managers to communicate directly with the people most affected by the change, rather than relying on the more formal and sometimes opaque social networks that exist within large organizations and communities. Studies of online activism suggest that online communication spaces may be used to craft shared interpretations of a virtual community's goals and conditions for action (Leizerov, 2000; Wilson & Peterson, 2002). Once produced, this sense of shared fate can then be used to enlist members' commitment towards some specific changes.

However, other studies, have shown that online forums may also be used to mobilize and organize resistance to change (Kahn & Kellner, 2004), for example, facilitating the online synchronization of large-scale, offline demonstrations against globalization (Leizerov, 2000; Smith, 2001), a phenomenon that has been referred to as "smart mobs" (Rheingold, 2002). Research on the use of online forums to oppose change has suggested that participants' identities may be enrolled in practices of resistance (Langman, 2005). Identification with the online community enables the development of common beliefs, language, interests, and memory (Burnett & Buerkle, 2004; Diani, 2000; Summers-Effler, 2002), lowering the requirement to frequently share explicit information and engage specific coordination mechanisms to mobilize and organize the action of participants (Bennett, 2003).

While there have been some studies of the use of online forums to shape social change, there has been no systematic assessment of their role in framing people's interpretations and experiences of organizational change. As a result, there are no strong indications to suggest certain outcomes are more likely than others. Given that the research results that are available point in different directions, it's expected that attempts to use online forums to influence meanings, identities, and actions will be used in multiple, contingent, and emergent ways within organizational change processes.

## **Discussion**

### *Implications for practice*

Considering the rapid growth, wide use of online communities, it's important to establish the connection between conversations and sense-making about change, for better conduct change communication. If a set of conversation types is created it will improve the acceptance of OC, minimizing change negative impacts risk.

If the correct speech acts about IC and its consequences are known they can be correctly used with great benefits for company.

*"If men define situations as real, they are real in their consequences."* (W.I. Thomas, 1928: 572)

People live in the worlds that they believe to exist. In this sense, the old truism that seeing is believing (I'll believe it when I see it) can just as easily be reversed: believing is seeing (I'll see



it when I believe it). While we like to think that everyone sees the same things we do, this is not the case.

Perception is a dynamic and active process, not the passive reception of signals from an outside reality that is the same for everyone. The end product of this process depends on a whole slew of factors ranging from biological differences, selective attention, different orientations in space and time, to different beliefs about what kind of reality exists 'out there'. Our perceptions and beliefs are therefore quite intimately connected. Together, they determine much of what we do—our behavior—and whether we think our actions are good or bad, right or wrong, justifiable or not—our cultural and moral values.

In this context, discourse analysis of organizational members is an important dimension in the study of human behavior, it serves as a source of diagnosing construction of their identities as a result of multiple interpretations of the dialogues and relationships in which they participate. (Becher, 2003; Penteadó & Silva, 2004; Hogg e Terry, 2000; Phillips et. Al., 2004).

Language is the most essential system through which humans construct reality. (Leeds-Hurwitz, W., 2009).

Bad communication may lead to damages on the collaborators health and consequently on financial losses to companies. Communication does not exist just for itself, it is intuitive and basic. However it's present in people and society in general. People share information's, conscious or unconscious, verbal or nonverbal, communication is the base of human relationship and a great deal of human life exists as it does due to social and interpersonal influences (Gergen 1985).

(Brum 2010) says companies are the reflex of its communication, the way how companies communicate with their employees, strongly contribute for construction of their image, therefore it is extremely important to Management, considering that Human Resources behavior can be affected by employees communication, it becomes vital to know when organizational changes occur, each are the new realities imagined by employees about it.

How employees deal with it, what does it mean to them, how they expose the subject at online conversations

Each Organizational Changes are more controversial, does the on-line conversations lead to SC in each way?

Research shows that conversations have a powerful effect on human behavior (Ford & Ford, 1995). It has emphasized the central role of conversations among employees in defining how employees think about, and react to every kind of subject. However this studies approached it only on face-to-face conversations.

Reaction to online conversations about the workplace may influence employees behavior it's pursue of opportunities for advancement, the length of time they spend on a project, whether they are willing to ask for a raise or promotion, and how they navigate the social structures internally.

So the use of factors that facilitate or hinder change is necessary to understand what can be identified by the members of the organization and its relationship with the perception of the occurrence of Inconsequential Organizational Change (IOC) and Consequential Organizational Change (OC). Authors like, (e.g) Greenwood & Hinings (1996), Oxtoby, McGuinness and Morgan (2002), Slack & Hinings (2004), Litaker, Ruhe & Flocke (2008), Weiner, Amick & Lee (2008), Judge & Douglas (2009), have emphasized the importance of establishing organizational readiness for change and recommended various strategies for creating it. That's to prepare this readiness for change that human resource managers should be aware of human sensemaking and social construction (SC) about organizational Change (OC) during online conversations.

### **Considering that on-line vs face to face**

This article intends to be the articulation of two important phenomena in the field of organizational studies: the formation and dynamics of informal social networks in work their online conversations and the construction of meanings and sharing across organizational actors about the processes of change taking place in the organization. The approach of these two phenomena is related to the need to understand the role of online conversations in the sensemaking of organizational changes. In turbulent environments, online conversations can influence either as a leverage or as a restraining force to change.

In fact research indicates that social construction about change occurs on conversations, revealing also that online conversations, amplify the process of social construction relatively to face to face conversations. Good understanding of processes of social construction may lead to more efficient communication/creation of IOC, and less traumatic impacts on employees, reducing resistance to change and consequent failure of OC. (jvc)

### **Conclusions**

According to (Jimmieson, Terry, & Callan, 2004) "organizational change can be viewed as a critical life event, which has the potential to evoke stress reactions and other negative consequences on employees". As the reviewed literature, indicates conversations are a strong form of making social construction. Even when it occurs online opinions and emotions are expressed strongly leading to an amplified construction of meaning.

Considering also that the process of company readiness for change is connected to the perception of the person about its own personal conditions to the real process of change. Silva & Vergara, 2002, defend that organizational change can be more or less traumatic to persons. From this perspective, organizational change can't be analyzed only at the level of strategies, requiring change initiator to think about, the role of individuals and it's online conversations in this process as well as the meaning that the changes have for The motivation of the employee was also found to be significantly correlated to continuing commitment to proposed change (Daif & Yusof, 2011), it's extremely important to accomplish the understanding of social constructing about change as way of involving the employee.

Increased communication of change is the first mechanism for the creation of availability change among individuals, (Kim, 2011) – acting as a tool for conveying information, create understanding, share experiences and sensemaking. In cases where the communication process fails, "noise" and rumors accelerate the negative aspects of change and increase resistance to change. (Becher, 2003; Wanberg and Banas, 2000; Reichers et al, 1997; Armenakis and Harris, 2002; Bernerth 2004).

To implement organizational change considering the social action in the organization and the people who participate in it (Weick and Quinn, 1999) requires that members involved in changing understand, internalize and adopt the intended (organizational) goals. (Smith, 2001; Wanberg & Banas, 2000). Considering the manager as the most visible representative of an organization and as such, is the link that bounds employees to the course of change (Parker, 2012), understanding the online forum conversations of it's employees can help him to perform this task.

To understand the process of change in organization is critical that the focus on the individual engages in the context of change, considering that the way individuals construct the meaning of change significantly affects the results. (Parish et al, 2008; Balogun, 2006; Stensaker et al, 2007.).

To better understand the process of sensemaking thru social construction of individuals and groups inserted in a context of inconsequential and planned organizational change, feelings and emotions, such as: fear; uncertainty; anxiety; insecurity; psychological contract breach; procedural justice; perceptions of opportunities and threats, experienced by those can be examined, and treated on time, of correct treatment is given to online forum opinions.

Taking into account that existing research of organizational change communication is considered consider critical to the success of it, that online forums are an excellent way to exchange ideas and social construction of meaning. In future study's, conversations held around changes though distant and inconsequential for employees, during the talks held became consequential, or they were given a new significance or meaning should be analyzed.

Therefore online forums can be a way of constructing change. In the future it's aimed to define a set of recommendations on what type and gender of conversations may originate CC from IC. It's also hoped to study the networks that perform and originate CC from IC.

In further studies, it's aimed to conclude that there is theoretically a strong link between studies of social construction and the field of study of cognitive processes. The people's perception of environmental stimuli (organizational change) varies during online conversations.

And it's intended to articulate two important phenomena in the field of organizational studies: the formation and dynamics of informal social networks in work their online conversations and the construction of meanings and sharing across organizational actors about the processes of change taking place in the organization. The approach of these two phenomena is related to the need to understand the role of online conversations in the sensemaking of

organizational changes. In turbulent environments, online conversations can influence either as a leverage or as a restraining force to change.

### **Future Work**

K-mart passed thru a lot of inconsequential organizational changes during the year of 2002. During this data analysis, it's relevant the number of written messages after many of considered inconsequential changes.

For future work it's proposed that all the messages are classified to find out if historical events are really triggering the social construction, or if everyone just use the online forum for it's own pride, just using the anonymity opportunity not to create a set of well constructed conversations that can lead to social construction, but just saying what comes out to his mind without listening to others opinions.

This research is the first stage of a larger study on social construction during online conversations.

In future work it is aimed to conclude that there is theoretically a strong link between studies of social construction and the field of study of cognitive processes. The people's perception of environmental stimuli (organizational change) varies during online conversations. The notion that the online conversations affects the sensemaking (perception) of the change serving the dissemination and sharing of meanings mechanism is central in this research project, starting from the assumption that organizations are located in unstable environments and need to be adapting to survive.

Identifying principal subjects online spoken in organizational change context, and it's consequent social construction during online conversations, it will be easier to communicate changes or even to do changes in a controlled way to achieve the goals needed.

The Data was collected in Kmart online forum between 08<sup>th</sup> jun 2001 and 10<sup>th</sup> Jan 2003 between this 2 moments there were quite critical moments and changes in the k-mart.

There are 14440 messages, 734 users participating in the online conversations.

### **Expected Conclusions**

This research is the first stage of a larger study on social construction during online conversations. It's expected to identify principal subjects spoken online during the organizational changes, involved users on it, and social construction during conversations.

## Implications

Considering that according to (Mustafa, 2013) Lack of Communication is one of the resistance to change best friend, so if the workers have the opportunity to participate in the process of change even with online conversations the resistance is likely to be less.

The results of this study will be used to understand if:

- Is it possible to transform IOC in OC ? by online conversations ?
- Create a list of conversations and procedures to communicate organizational change
- Create a coach procedures list to help employees to deal with IOC

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# **Gaming in Education, Scientific and Market Research and Business Activity**

Szymon Truskolaski and Justyna Majewska

The role of gamification – which may be defined as the use of game elements in non-game context – is expected to increase over the next years within a variety areas of application, such as learning and assessment, scientific and market research, promotion or business operations, etc. Its potential is related to, among others, the rise of new needs with the entering the labor market by the Y generation. The common purpose of gamification is to enhance one's motivation (eg. students, employees, job candidates) and engagement in certain activities. Gamification is also an effective tool to help in problem solving which is also used as a support in research. Papers in this stream aim at deepening a contemporary understanding of gamification with a focus on (higher) education in particular and the role of gamification as a tool in scientific and market research, marketing, and business activity. They also focus on identification and assessment of the opportunities and challenges of gamification.

## The impact of international digital distribution on “indie” sector of Polish video games industry

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**Abstract:** The goal of the paper is to assess how a rise of digital distribution platforms impacts the behavior of small Polish “indie” developers, whether they tend to export or even skip the domestic market in their sales strategies (bornglobals), how they adjust their products to the needs of foreign markets (language, cultural differences, etc.). It is of crucial importance for these companies to evaluate the effectiveness of the decisions on the choice of markets (developing language versions) taking into consideration their limited financial assets.

The research is based on several case studies of recent Polish indie games as well as on sales data from Steam, developed by Valve Corporation, which offers digital rights management (DRM), multiplayer gaming, and social networking services. Steam provides the user with installation and automatic updating of games on multiple computers. There are currently ca. 26 500 games on this platform. Although Steam itself does not provide data on sales (apart from game pricing series that are available at [steamdb.info](http://steamdb.info)), they may be obtained from [steamspy.com](http://steamspy.com) – a website that uses an application programming interface (API) to the Steam software distribution service to estimate the number of sales of software titles offered on the service. Estimates are made, based on the API polling user profiles from Steam to determine what software titles (primarily video games) they own and using statistics to estimate overall sales.

The video game industry is one of the fastest growing industries worldwide. By 2006, the video games market had a turnover of US\$ 31.2 billion globally, surpassing the film industry and indicating ever upward trend [Teipen, 2008] and now global video game industry has an estimated 1.4 billion consumers and software revenue expected to reach the \$100 billion range by 2018 [DFC report 2016]. In 2016, 58% of growth of the global games market comes from the Asia-Pacific region with China replacing the USA as the largest market for video games [Newzoo Games, 2016]. It is a young industry of the “new economy” being a “creative industry” and the creative sector is often described as a sector with a significant positive impact on both, sustainable economic growth and the quality of life.

Although Poland with the market of video games worth US\$ 440 million is ranked beyond top 20 markets in this regard, Polish gamers are very active and they constitute 2,9% gamers worldwide – much more than the share of Polish market in total revenues and close to the share of 3% of global revenues that have been generated in whole Eastern Europe in 2016 [Newzoo Games, 2016]. Similarly active are gaming companies in Poland, which due to the limited size of the internal market try to place their products on foreign markets. On the other

hand, almost all international market leaders distribute their products in Poland through Polish publishers and distributors. In consequence, Poland is an exception to most of the European countries where domestic publishers are being outplayed by big international publishers from the USA, Japan and France [Akyildiz et al., 2011] and there is an abundance of small game developers in Poland, with just a handful able to develop high-budget productions, which form the so-called indie development scene. An independent video game (commonly referred to as an “indie game”) is a video game that is created without a substantial external financial support. Indie games often focus on innovation and rely on digital distribution. Indie gaming saw a rise in the latter half of the 2000s, primarily due to new online distribution methods and development tools. Some indie games have been very successful financially, with Minecraft as the most notable example.

The study shows that the efficiency of digital distribution of indie games depends largely on such determinants as: target market size and the price levels in the market, the tendency to accept the high price of games, adaptation to the expectations of buyers in the foreign market, including the selection of a specific language version, as well as the scope of the internationalization of projects related to the development and sales of games.

**Keywords:** video games industry, international digital distribution, international sales strategies, indie games development

## Teaching Business Simulation Games: Preliminary Current Practice Overview

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**Abstract:** Business simulation games are used as an educational method in order to prepare future experts for making effective decisions in a real world setting. By overcoming challenges that business simulation games contain, students evolve the capacity to make quick and effective decisions, even to predict future business events and their possible outcomes. The paper presents and discusses the syllabuses of the courses focusing to the usage and development of business simulation games. The syllabuses of different courses are compared using a web content analysis. Case study of a course “Simulation games for managers” taught at the Faculty of Economics & Business, University of Zagreb is presented.

**Keywords:** business simulation games, education, teaching case, syllabus

### 1 Introduction

Business simulation games are used as an educational method in order to support students in the improvement and development of develop business logic, thus preparing them for making effective decisions in a real world of business and economics (Doyle and Brown, 2000; Zoroja, 2009).

Business areas simulation games apply to are various, such as marketing management, trade management, and financial or bank management. Simulation games for managers are not only used in education at business studies on universities, but they are also used in business courses for the development of the entrepreneurs or corporations. Usage is helpful because of the fact that business professionals evolve some new analytical skills that will help them to improve their business profits through making better business decisions.

In order to shed some light into the practice of the teaching of business simulation games, the goal of the paper is to overview syllabus of the courses from the best MBA studies as listed in Financial times (2016). In addition, we present the syllabus of the course “Simulation games for managers”, taught at the Faculty of Economics & Business at the University of Zagreb.

### 2 Literature review

Business simulation games are used as an educational method in order to prepare future managers for making effective decisions in a real world setting. By overcoming challenges that business simulation games contain, managers evolve the capacity to make quick and effective decisions, to develop the scenarios of the future business events and their possible outcomes.

According to Bosilj Vuksic and Pejic-Bach (2012) business simulation games are studying method used for *practice of decision-making in safe environment*, where business students learn to apply their theoretical knowledge from various fields (management, finance, marketing etc.) to simulated business situations in order to gain an insight of business world before entering the job market. Vos et al. (2010) defines business simulation games as widely used method that simulates competitive environment where some *business rivals make important business decisions* through a software application. Avramenko (2012) focuses to the usage of business simulation games as an educational method, in simulated conditions, that upgrades students' theoretical knowledge and makes them *unique, challengeable and employable at the labor market*. Pillay and James (2013) define business simulation games through the three types of activity: role plays, gaming and computer simulations. All of the definitions include decision-making in safe environment, which is the main point of this kind of education, especially at some business studies, since they allow students to make important decisions, while the business outcomes won't suffer from their mistakes.

Faria and Dickson (1994) provide the overview of the development of business simulation games. The history of business simulation games begins with war games. For example, before the Second World War, Japan prepared their soldiers for battles through simulation war games. This method was applied in the United Kingdom and United States of America also, to test the strategies and prepare the troops. Lately, in 1955, US Air Force Logistics System was settled in an instructional simulation game developed by Rand Corporation. The very first business simulation game was Top Management Decision Simulation from American Management Association in 1956. The games development had a large growth in 1960s and came to the very modern and educational versions in the 21<sup>st</sup> century, including variety of business fields and improved graphic interfaces.

Characteristics of business simulation games stems from the three activities played by the students: role playing, gaming and using computer simulations (Pillay and James, 2013). The most often mentioned characteristics of business simulation games are: (i) similar to the reality, that enables making mistakes that are not followed by bad consequences (Zoroja, 2013); (ii) immediate response-getting from a system (Faria and Dickinson, 1994); (iii) graphic interface that makes gaming attractive (Wood et al., 2009).

Business simulation games are used as an educational method at universities and variety of courses for successful management. The games apply to many areas, which helps their usage to reach a high level. Some of the areas games can apply in business field are management (making decisions about human resources, financial plan, business plan etc.), marketing (deciding about some innovations in order to make a profit or a better commercial), international and inland trade (comparing international and inland costs), accounting and auditing, financial and banking sector, small and medium entrepreneurship, telecommunications etc. Other areas of appliance could be aviation, military training, marine navigation or medical engineering (Stevens et al., 2015). Rettberg (2007) with co-teaches even applied games in a literature class of New Media by "teaching games as literature and teaching literature as games". Belloti et al. (2013) stresses that the games are lifelong learning tool because they motivate students through application of skills they learn by simulated business situation.

Advantages of business simulation games are various, such as continuous learning, developing business strategy logic, evolving analytical skills, getting a new educational method experience

and making failures, such as wrong decisions, but in virtual business, so there are no negative side effects (Faria and Dickinson, 1994). The games can be played individually and it pursues students' self-confidence because they can make important decision. When making decisions, they won't pay for the mistakes because of controlled virtual environment, where the faults can be corrected (Vos, L., & Brennan, 2010). As the example, at the Salford Business School, University of Salford, Salford, UK, students highlight the opportunity of practicing theoretical knowledge in appliance as a major advantage (Avramenko, 2012). Role of the games in education lies, also, in students' motivation and concentration-keeping because of dynamic sequences of playing.

The main disadvantage may be simplifying the difficult concepts, for example, players have an opportunity to solve simple situations because of a lack of time and the decisions they make can produce the results for a business immediately, while in a real world everything is more complex (Gros, 2007).

Considering that technical learning is relatively new and interesting method of learning, institutions, such as universities and other educational organizations, are focused on it to provide their students some benefits, for example, applying their acquired knowledge in analytical way (Kikot at al., 2013). In addition, modern age allows students to expect mainly digital methods of studying as useful, so they learn better on computer simulations and games (Lynch, M. A., & Tunstall, 2008).

Several authors investigate the effectiveness of the usage of business simulation games in the educational process. Chapman and Sorge (1999) compared the effectiveness of the usage of business simulation games with the textbook and papers as the sources of knowledge. Students evaluated the usage of simulation games as the most beneficial to their learning. In addition, students that were engaged in the business simulation achieved better grades compared to the control group of students that were not exposed to this activity. Also, students who were more involved in the simulation perceived the benefits to be stronger. Cook and Swift (2006) used one simulation "Sales Management Simulation" at five different classes. Students evaluated the simulation game as the be superior as the means of learning comparing to the textbook, since they get in-depth knowledge about the sales force problems and developed a problem solving skills related to sales.

### **3 Usage of business simulation games in the management education**

In order to shed some light to the usage of business simulation games, the usage of business simulation games at the management studies was investigated at the top 10 MBAs according to the Financial Times Global MBA Ranking 2017. Number of other institutions publishes similar list (e.g. The Wall Street Journal), but in our research we have focused to the Financial Times list, mainly due to the comprehensive data about the characteristics of the schools (Navarro, 2008). In this research we focus only to the top 10 MBAs, while in the future we plan to extend our research to total of 100 MBAs.

In order to collect the data, we investigated the websites of the business schools. The usage of the websites of business schools as the source of the information is widespread. For example, Larrán et al (2017) used them as the source of the information in their research on the ethics and corporate sustainability courses at the top MBAs according to the Financial

Times Global MBA Ranking, as well as other research (Larrán and Andrades, 2015; Setó-Pamies et al., 2016; Wymer et al., 2017). The data was collected from the 1<sup>st</sup> May to 1<sup>st</sup> June by the two researchers. In our research we did not contacted business schools in order to retain objective approach towards the usage of business simulation games in their curricula.

None of the business schools teach the course that is oriented solely to the business simulations in general, but mainly used business simulations as part of the course to support the learning. In some cases, the course is taught by using the business simulation as the sole mean of learning, such as Dynamic Marketing Strategy, Strategic Marketing Simulations, taught at University of Pennsylvania, Wharton.

#### *Insead*

- Course „Entrepreneurship in action“ brought the usage of „dynamic business simulation puts participants in the shoes of an entrepreneurial team competing in a consumer-durable market. The aim is to simulate the pressure-cooker environment of managing a new venture in the critical second-round financing stage. The highlight is the relentless focus on action and the realism – as you take dozens of strategic and tactical decisions under enormous time pressure, significant uncertainty and intense competition. Prepare for long hours and late nights“. Simulation is used as the part of the course. Source: Insead website in Appendix.
- Course „Market driving strategies“ syllabus states that „most importantly, students will have the opportunity to apply the material from the course as well as the knowledge, concepts and tools from your core courses by developing and implementing a growth strategy for your own business using the Markstrat business simulation“. Simulation is used as the part of the course. Source: Insead website in Appendix.

#### *Stanford*

- Course „Financial Trading Strategies“ uses the simulation as part of the course in the following manner: „Trading simulations employed on the Rotman Interactive Trader and Rotman Portfolio Manager (using real market data and computer generated data) will be used extensively in this course as a way to learn and test different strategies“. Source: Stanford website in Appendix.
- Course „Energy Markets and Policy“ uses the simulation as the main media of teaching, but combined also with the traditional teaching methods: „A primary teaching tool in the course is a game-based simulation of California's electricity markets under cap and trade. Student teams play the role of power companies and compete to maximize return by bidding generation into electricity markets and trading carbon allowances.“ . Source: Stanford website in Appendix.
- The course „High-Performance Leadership“ uses the EIS simulation in teaching, during one whole day. According to the EIS website: „In the EIS Simulation, participants working in groups are challenged to introduce an innovation in a division of the EuroComm corporation. They have up to 6 months of (simulated) time to convince as many of the 22 members of the division's management team as possible to adopt an important innovation, which in this case is an Executive Information System introduced corporate-wide to increase transparency and reporting“. Source: Insead, 2017.

#### *University of Pennsylvania: Wharton*

- Course “Leadership: Foundations of Teamwork and Leadership” states that it *„develops your future personal leadership style and capabilities. You will begin with the Teamwork and Leadership Simulation—a team-based, highly interactive simulation that is custom-designed for this course. Utilizing an interactive pedagogy, Learning Teams play the role of a company’s senior management team, experiencing first hand the skills of teamwork and leadership. A highly interactive simulation allows students to experience the core concepts they learn in class.”*. Source: University of Pennsylvania: Wharton in Appendix.
- Course „Marketing“ is oriented toward the development of dynamic marketing strategy, using *Strategic Marketing Simulations*. Source: University of Pennsylvania: Wharton website in Appendix.

#### *Harvard Business School*

- The course „Marketing“ uses *„brand management simulation“*, as one of the teaching methods. Source: Harvard Business School websites in Appendix.

#### *University of Cambridge: Judge*

- The MBA website mentions the elective course *„Financial Market Trading Simulation“*, which is based solely on the simulation. Source: Harvard Business School websites in Appendix.

#### *London Business School*

- The course “Leadership Launch” aims at providing *„a varied and stimulating learning environment through simulations, panel discussions, group workshops and coaching“*. Students are invited to: *„Experience a full-day business simulation on the Global Leadership Assessment for Managers (GLAM) and focus your study group into an effective, supportive learning team“*. Source: London Business School websites in Appendix.

#### *Columbia Business School*

- The course *„Developing and Executing The Market Strategy“* is *„a specially designed simulation-based course for both MBA and EMBA students. The goal of the course is to prepare you for making critical strategic marketing decisions in today’s modern corporations — large, mid-size, small, and start-ups. Clear thinking and decisive decision-making is the critical currency for entrepreneurs and practicing managers. The main course component is the MARKSTRAT simulation. Students are assigned to a firm that competes against four other firms in its industry. The starting positions of firms within the industry are different. Decisions are made over eight periods. In the simulation, you secure marketing research information, assess likely competitor reactions to your potential moves, and make strategic marketing decisions accordingly. You will be required to provide information on your plans and on your decision-making processes. Since the simulation is played over eight periods, you have the opportunity to measure the outcomes (i.e., sales, market share, and profit contribution) of your decisions and to modify your strategies over time.”*. Source: Columbia Business School websites in Appendix.



- The course „Marketing: Innovation through Customer Centricity“ uses a „combination of lectures, cases, hands-on exercises, a brand management simulation and industry speakers, the course covers such topics as demand analysis, product/service management, pricing, distribution, promotions and integrated communications“. Source: Columbia Business School websites in Appendix.

#### IE Business School

- No courses identified from the IE Business School website

#### University of Chicago: Booth

- The course “Integrated Strategic Management” is “built around a complex, multi-round simulation game that requires students to integrate concepts and tools from much of the EMBA curriculum. Student teams will compete in a market environment in which they will need to make financing, investment, pricing, production, product choice, channel, and marketing decisions.”. Source: University of Chicago: Booth websites in Appendix.

#### Iese Business School

- Iese Business School claims that “Simulations are innovative and powerful learning experiences that put you in the shoes of a CEO, CFO, or senior decision-maker and challenge you really put what you’ve learnt to the test in an immersive, simulated business scenario. Over the course of your MBA you’ll have the chance to experience simulations that range from scrum simulation with the lean Lego Game to the Executive Simulation (EXSIM): an intense, immersive five-day “call of duty” that sees you take on a C-Suite role in an industrial company.” However, the names of the courses could not be retrieved from the school website. Source: Iese Business School websites in Appendix.

Table 1 reveals that only two top schools use business simulation games in three courses, while other schools use simulation games in 1 or 2 courses. The only one business school that did not claim the usage of simulation games in its curricula is IE Business School.

**Table 1:** Simulation games

School name	Country	# of courses including simulation games
Insead	France / Singapore	3
Stanford Graduate School of Business	US	3
University of Pennsylvania: Wharton	US	2
Harvard Business School	US	1
University of Cambridge: Judge	UK	1
London Business School	UK	1
Columbia Business School	US	2
IE Business School	Spain	0
University of Chicago: Booth	US	1
Iese Business School	Spain	1+

Source: Authors work

Table 2 provides the names of the courses that include simulation games, and roles of the games in the teaching process. The area that has the largest number of courses with the

inclusion of simulation games is Marketing (6 courses), followed by Leadership (3 courses). Strategy and Finance courses are in two cases supported by the usage of simulation games. There is only 1 course teaching Entrepreneurship or Trade using simulation games. In most of the cases, business simulation games are taught as the support teaching method, while they are used as the main teaching method only in 3 courses.

**Table 2:** Names of the courses that include simulation games, and roles of the games in the teaching process

School name	Name of the courses	Supports other methods of teaching	Main teaching method
Insead	Entrepreneurship in action	✓	
	Market driving strategies	✓	
	Blue ocean strategy	✓	
Stanford Graduate School of Business	Financial Trading Strategies	✓	
	Energy Markets and Policy	✓	
	High-Performance Leadership	✓	
University of Pennsylvania: Wharton	Leadership: Foundations of Teamwork and Leadership	✓	
	Marketing	✓	
Harvard Business School	Marketing	✓	
University of Cambridge: Judge	Financial Market Trading Simulation		✓
London Business School	Leadership Launch		✓
Columbia Business School	Developing and Executing The Market Strategy		✓
	Marketing: Innovation through Customer Centricity	✓	
IE Business School	None		
University of Chicago: Booth	Integrated Strategic Management		✓
Iese Business School	Various courses	✓	

Source: Authors' work

The analysis of the top 10 MBA websites revealed that the courses that use the Simulation games for managers are rare, since only 3 courses among 15 found are taught solely by the simulation games. To our knowledge, the courses that teach business simulation games in general are rare.

#### 4 Case study of the Course "Simulation games for managers"

##### 4.1 Basic characteristics of the course

At the Faculty of Economics and Business, University of Zagreb, the course named "Simulation games for managers" introduces students to simulation modeling and simulation games, from basics to complex games.

Students are taught on how to evaluate the usage of simulation games in management education. Course also covers the key features and use of simulation games in specific business activities, such as financial analysis, forecasting, marketing research, accounting,

auditing, inland and international trade etc. Beside evaluating and using simulation games, students also learn how to develop simple simulation games for managers on simple case studies. Experiences and thoughts of the participants of the course will be discussed in order to improve the course, bring some new methods and adjust the syllabus to the demands of the market.

The Teaching methods rely on critical thinking and analytical skills in order to learn how to assess the quality and utility of the games.

## **4.2 Course syllabus**

Syllabus of the course at the University of Zagreb, Faculty of Economics and Business, Department of Informatics is composed of six large units: 1) Introduction into business simulation modeling and business simulation games; 2) Use of business simulation games in management education; 3) Key features of business simulation games; 4) Use of business simulation games in specific business activities; 5) Simulation games development process; and 6) Future of simulation business games.

### *Introduction into business simulation modeling and business simulation games*

Starting from Introduction to Simulation games for managers, students acquire the concept and the usage of simulation games. While reviewing different examples and methods of applied simulation games, students realize the benefits of those games implemented to an enterprise. In the introduction, there is also analyzed the graphic interface of business simulation games, just like methods for development of the same games.

### *Use of business simulation games in management education*

After the introduction, the Process of using simulation games in education of managers begins through defining goals and rules of the games, showing the process of playing to students and analyzing the results of their first simulation game process. Students can see the opportunities of learning how to be a good manager or a good decision presenter, in safe environment where the faults are welcome.

### *Key features of business simulation games*

Students are taught about the importance of the precise definition of object, area and goal and business simulation games. Simplicity of usage is stressed as the important feature. Possibility of bringing the high risk decisions in «safe environment» of business simulation games is discussed. Encouraging systematization and creativity is also presented as one of the goals of using business simulation games.

### *Use of business simulation games in specific business activities*

Different areas of usage of simulation games in education process of managers are the next focus of the course. The specific usage stands for entrepreneurship, strategic management and marketing. Those branches are kind of bloodstream of every economy in the world. If business professionals are educated properly, they contribute to the whole economy, just being one little piece of it.

Acquired knowledge is tested in many ways and variety of tasks. For instance, case studies are the best methods for applying theoretical knowledge in order to provide a real image of

management and its struggles, such as deciding. Considering that Faculty of Economics and Business is based on finance or accounting, case studies are mostly from banking sector.

On the other hand, the banking sector is not the only one that covers decision-making which is necessary to good economists or managers. Therefore, students have insight to the area of the specific use of simulation games in human resource management, so as their appliance in trade, customer relationship management, service industries etc.

Employees' performance has a special impact on the total factor productivity of companies, including the sector and the entire economy. Thinking of education process' influence on employees' and their motivation and production, the conclusion is easy. Simulation games are useful to measure the productivity. Students have an opportunity to review and design experiments for influence measuring, such as questionnaire development framework that can guide through the development of educational methods and teaching of this course by the results of analysis.

#### *Business simulation games development process*

The syllabus implicates simulation modeling as a method for development of business simulation games. The students are offered dynamic systems with positive and negative causal loops, but also, dynamic systems with more causal loops.

One of the teaching methods is also qualitative analysis of simulation games' models by system archetypes, very typical examples of a certain system. Students predict model behavior according to particular archetype.

By the end of the course, participants have enough of knowledge to develop simple quantitative business simulation games. They try to develop simple games with one causal loop. If the simple game works, the next step is development of complex quantitative business simulation games with more causal loops. Game development is engaging students through the application of their own logic. Students at business simulation games courses apply the games in different business areas through resolving case studies or even reviewing the games and trying to make it better or develop a new game, specific for some field, on their own.

#### *Future of business simulation games*

The last step of the course is research of future development of simulation games for managers. Students predict future usage of business simulation games through case studies.

### **4.3 Software used**

The course presents the overview of the simulation methods that can be used for the development of business simulation games: system dynamics, discrete simulation and agent based simulations. In order to get some insight in the simulation modeling, students learn basic knowledge of system dynamics: the notion of feedback, positive and negative feedback, usage of feedback loop digrams, and usage of stock and flow diagrams. Students develop several similar models using Vensim software and conduct experiments with the software.

In order to present the variety of the business simulation games, students play at each course the free simulation games that are avialble at the web, mainly from the Forio website.

Examples of the games are: Tablet Development Sim (Forio, 2017a), Restaurant Wait Time (Forio, 2017b), Near Bear Game (Forio, 2017c), and Project Management Game (2017d).

## 5 Conclusion

Simulation games for managers have a significant role in education of future business professionals because they prepare them to decision-making in a real world of business by going through analytical methods and using their own logic in order to improve the business. The advantage of simulation games in education is, of course, controlled and safe virtual environment. The emphasis lies in continuous educating through simulated business situations and logical thinking of managers themselves.

In this preliminary research we investigate a websites of 10 top MBA business schools ranked by the Financial Times Global MBA Ranking 2017. The result revealed courses that focus solely to the business simulation games are rarely found, and simulation games are more often included as part of different courses, e.g. Strategic management. Most of the syllabus are focusing to the playing of different games, while background methodology used or the simulation games (e.g. system dynamics) is not so often discussed.

The findings of the study suggest that universities currently do not include business simulation games to the high extent in their curricula, although the students have indicated the high level of satisfaction with the active learning approach as demonstrated in the case study. The course Simulation games for managers taught at the Faculty of Economics & Business, University of Zagreb was used as one of the examples of the courses focused to the development of the business simulation games and getting insight into the broad range of business simulation games.

The future development of business simulation games courses could benefit on the findings of the study, since the overview of different syllabus is presented. Since the students of this course have the opportunity to solve practical problems in groups and individually, teamwork and leadership skills are also developed. After going through this useful education, students, future business professionals, can create new simulation games based on their business or a field they work in and, in that way, try to educate their own employees or improve their own knowledge.

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## **Appendix: List of the links to the courses**

### *Insead*

- ENTREPRENEURSHIP IN ACTION. Available at: <https://www.insead.edu/master-programmes/mba/academics/elective-courses/entrepreneurship-and-Family-Enterprise>
- MARKET DRIVING STRATEGIES . Available at: <https://www.insead.edu/master-programmes/mba/academics/elective-courses/Strategy>

### *Stanford*

- Stanford courses catalogue. Available at <http://explorecourses.stanford.edu>

### *University of Pennsylvania: Wharton*

- Leadership: Foundations of Teamwork and Leadership. Available at: <https://mba.wharton.upenn.edu/mba-curriculum/>
- Marketing. Available at: <https://mba.wharton.upenn.edu/mba-curriculum/>

### *Harvard Business School*

- Marketing. Available at: <http://www.hbs.edu/mba/academic-experience/curriculum/Pages/required-curriculum.aspx>

### *University of Cambridge: Judge*

- Elective course: Financial Market Trading Simulation. Available at: <https://www.jbs.cam.ac.uk/programmes/mba/>

### *London Business School*

- Leadership Launch. Available at: <https://www.london.edu/programmes/masters-courses/mba>

### *Columbia Business School*

- Developing and Executing The Market Strategy. Available at: <http://www8.gsb.columbia.edu/courses/emba/2015/spring/b7620-100>
- Marketing: Innovation through Customer Centricity. Available at: <http://www8.gsb.columbia.edu/courses/mba/2014/spring/b6602-003>

### *University of Chicago: Booth*

- Integrated Strategic Management. Available at: <https://www.chicagobooth.edu/programs/exec-mba/academics/curriculum/electives>

## Gamification in Higher Education: Motivation, Engagement and Knowledge

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**Abstract:** In recent years Gamification has been proposed as a way to involve people, both individually and socially. Education is an area with high potential for application of this concept, whether in board format or in digital format. The application of classroom games as a method to motivate and increase students' interest in learning continues to see its popularity grows, leading students to strive and feel satisfied with the teaching-learning process. In this sense, some studies have been carried out and demographic aspects such as age, gender and school background have been presented as characteristics that influence the use of Gamification features. This empirical study was carried out through the application of questionnaires during the accounting classroom lessons, to students of a higher education institution in North of Portugal (UTAD). The purpose of this empirical research is to understand whether demographic factors such as age, gender and school background influence the use of Gamification and whether other factors such as learning outcomes, utility, appearance and easy to use increase motivation to learn accounting. The results reinforce the importance of Gamification in education, particularly its future adaptation to higher education, whether in accounting scientific area or in other education areas.

**Keywords:** gamification; games-based learning; learning effects; motivation; engagement; achievement

### 1 Introduction

From the 70's and 80's video games have seen their popularity increase exponentially, becoming an effective form of entertainment for every type of target audience from men to women, from young to old. Gamification has become a highly persuasive technological form and therefore widely used, whether for marketing purposes, change of attitudes or motivational attraction (Hamari & Lehdonvirta, 2010; Huotari & Hamari, 2016).

Throughout the ages, technological advances have allowed the enrichment of video games, making this industry truly multidisciplinary and market leader (Chatfield, 2010). Those who advocate the use of video games in a variety of contexts, from mere play to learning, point out that these can have a real impact on education (McGonigal, 2011; Schmitz, Czuderna, Klemke & Specht, 2011).



Therefore, institutions, both nationally and internationally, have increased the use of educational games (Honey & Hilton, 2011) due to the existence of well-designed educational games that offer continuous opportunities to improve learning in different environments (Barab, Gresalfi & Ingram-Goble, 2010).

Van Eck (2006) points out that the generalized attention expressed by young people in video games is provided by the popularity gained by them, whether they are just for leisure or for educational learning. New generations prefer innovative teaching rather than archaic traditional teaching, hence the interest in game-based learning has emerged, not only for digital natives but also for students and researchers linked to the educational phenomenon in general and learning in particular (Kirriemuir & McFarlane, 2004). Game-based learning is capable of engaging young people and is more successful than traditional methods (Holmes & Gee, 2016).

Despite Gamification, applied in the classroom, lead students to learn new ways of studying and decrease boredom, which many feel, when subjected to the traditional teaching-learning process (Kapp, 2012) only recently teachers began to explore the possibility of making the classroom a place where the application of educational games is possible, viable and academically motivating (Glover, 2013).

The empirical studies on this subject, besides scarce are not consensual as to the motivation that can confer to the teaching-learning process. If, on the one hand, some authors advocate this relationship (Lee & Hammer, 2011), others concluded that there was no positive interference in the process (Egenfeldt-Nielsen, 2007; Squire, 2005).

Based on the insufficiency of empirical studies, the purpose of this empirical research is to understand, in first place, if factors such as game appearance, playability, utility and learning increase students' motivation and, additionally, if sociodemographic factors as gender, age or school background influence the use of Gamification.

Finally, in addition to this brief introduction, follows a literature review about main concepts, then the research methodology is presented. Finally the results are given and discussion and the final remarks.

## **2 Literature Review**

### **2.1 Gamification**

In the last decades, Gamification has become a highly persuasive and therefore widely used technological form, both for marketing purposes and change of attitude or as a motivational attraction (Hamari & Lehdonvirta, 2010; Huotari & Hamari, 2012).

Gamification is a wide-ranging concept that influences behaviours in various domains with the main objective of creating value in the user through the practice of games (Huotari & Hamari, 2012). It represents the games' use and techniques, with clear and defined objectives, to involve people in non-game contexts, promoting thinking and learning (Werbach & Hunter, 2012). Briefly, and according to Deterding, Dixon, Khaled, and Nacke (2011) the goal of Gamification is to support and motivate users to perform a given task, promoting motivational changes (Hamari, 2013) enhanced by feedback, goals, progress and incentives provided by the game throughout the learning (Huotari & Hamari, 2012).

This is a process that aims to induce motivation, involvement in educational activities and, consequently, reduction of educational failure rates (Camilleri, Busuttil, & Montebello, 2011). Games equally allow the user experiencing fearless (Lee & Hammer, 2011). However, the effects of Gamification depend heavily on the context in which it is implemented and on the target audience (Hamari, Koivisto, & Sarsa, 2014).

## **2.2 Games Based Learning**

In the last 30 years, research has shown that the immersive nature of the use of educational games facilitates the involvement, motivation and interest in the retention of knowledge (Burguillo, 2010; Erhel & Jamet, 2013). More recently, it has been found that commercial games develop problem-solving skills by providing players with an action-feedback cycle (Dickey, 2005; Hickey, Ingram-Goble, & Jameson, 2009).

The popularity of games among young people has grown exponentially and this has not gone unnoticed, so teachers have begun to adapt certain games to teaching as well as promoting efforts to create new games (Johnson & Mislin, 2011). This have encouraged students to learn new ways of studying and as a result, decreasing boredom (Kapp, 2012). However, only recently, teachers begin to explore the possibility of making the classroom a place where the application of educational games is possible, viable and academically motivating (Glover, 2013). This effort, to adapt technology to learning, according to Prensky (2006) is related to the fact that, currently, students are more able to use IT. The generations Y and Z have grown along with the new ITs, which have been incorporated very early in their lives, as current students deal daily with each other through IT, interactively working and consuming video games much more than previous generations (Beck & Wade, 2006).

Summarily, the importance of promoting meaningful and active learning of students is increasingly recognized in the academic world (Brown et al., 2011). The current trend is to learning process move away from the traditional sphere and be based on new technologies, thus incorporating new virtual environments, connecting the both worlds, learning and technology (Klopfer & Squire, 2008).

## **2.3 Learning and Motivation Outcomes**

Video games make traditional learning more attractive because they allow users to make their own learning management according to their own rhythm, preferences and goals, and this high level of interactivity between the student and the game is very motivating (Gee, 2007) because it changes traditional teaching in a positive way. Video games can bring a greater return on learning than simple content exposure. For Gee (2009) students feel more comfortable with interactive learning than in a traditional classroom setting with a positive social impact of using video games. Ulicsak and Wright (2010) advocated the development of games for non-recreational purposes, aimed at learning as main objective. In this sense, Malone (1980) studied the potential of video games in education and concluded that there are numerous advantages in their application such as increased motivation, interest, involvement, learning and teamwork. As video games are a field of technology so sought after by young people, this fact can increase students' interest, thereby boosting learning (Lee & Hammer, 2011).

The empirical evidence on the cognitive outcomes of game use is modest (Hays, 2005), however the various studies have proven three typologies of conclusions. Kebritchi, Hirumi,

and Bai (2010) point out that the application of games allows a motivational effect and positive learning results, in turn Egenfeldt-Nielsen (2007) and Squire (2005) report motivational effects but no results of learning and Cordova and Lepper (1996) report the existence of positive motivational effects and learning outcomes but without any relationship between both.

## **2.4 Socio demographic factors influence**

In the last decades the use of games has become one of the main forms of entertainment of the most diverse cultures and different demographic groups (Yi, 2004). This field of entertainment, dominated by young males, is nowadays used, practically in the same proportion, by both genders and the average ages of users have also increased substantially (Greenberg, Sherry, Lachlan, Lucas, & Holmstrom, 2010; Williams, Yee, & Caplan, 2008).

Socio-demographic differences are a very relevant issue when one investigates the use of games technology (Venkatesh, Morris, & Ackerman, 2000). The perception and motivation for the use of technology are important because they reveal the intention to use that may or may not vary according to sociodemographic factors (Venkatesh et al., 2000). However, both age and gender have not taken great care of researchers as variables that may moderate the use of these resources, but it is known that these factors can generate differences in use and motivation to use (Greenberg et al., 2010; Williams et al., 2008). Several studies on the effects of age on the use of technology, in general and games in particular, have shown that younger users value technology more than older ones, with more intent to use Gamification in these strata (Venkatesh, Morris, Davis, & Davis, 2003). In addition, older users are more influenced by society in the use of technology than younger users (Venkatesh et al., 2003; Wang, Wu, & Wang, 2009), who are more autonomous in using these technological resources (Taylor et al., 1995). This reality can be explained by the fact that older users have been less exposed to the technologies than the younger ones (Morris & Venkatesh, 2000). In this sense, studies have shown that acceptance of technology and the perception of its use are affected by users' age, playing a fundamental role in tendency to use games (Arning & Ziefle, 2007; Ijsselsteijn et al., 2007). Other studies found differences between genders in the use of technologies and the use of Gamification features (Sun & Zhang, 2006; Venkatesh et al., 2000), with men being more affected by the utility of technology than women (Venkatesh et al., 2000). However, some studies have concluded that more and more women use social networks in general and Gamification in particular (Hamari & Järvinen, 2011), most of whom are between the ages of 30 and 40 (Paavilainen, Hamari, Stenros, & Kinnunen, 2013).

In the context of the use of games, several studies indicated that there are differences between genders, with motivation and competitiveness being the predominant factors in accentuating these differences (Hartmann & Klimmt, 2006; Poels, De Cock, & Malliet, 2012; Williams, Consalvo, Caplan, Yee et al., 2009, Williams et al., 2008). However, it is still not clear that there are large discrepancies in age and gender in the use of Gamification, so the motivations that lead to the use of these resources may be the key to discovering how demographic aspects can influence the use of this type of services.

### 3 Methodology

In this study, multivariate statistical tests were applied to understand how the motivation for learning (dependent variable) is influenced by the independent variables provided learning outcomes, utility, appearance and ease of use of the resource. We also analyze how demographic factors such as age, gender and school background influence the use of the game.

The sample included 59 Financial Accounting students (20 male and 39 female) aged 18 to 30 years who during five classes, two hours each, played a game called "Count Game" whose objective is to answer questions about the subjects inherent to the curricular unit of Accounting. After the use of this resource, a questionnaire based on Fang, Chen, and Huang, (2016), was applied, adopting the 5-point Likert scale.

According to research objective the following hypotheses were formulated:

**H1:** The motivation for learning is positively influenced by the learning outcomes of the gamified resource;

**H2:** The motivation for learning is positively influenced by the utility of the gamified resource;

**H3:** The motivation for learning is positively influenced by the appearance of the gamified resource;

**H4:** The motivation for learning is positively influenced by the easy to use of the gamified resource.

In **Table 1** we present a summary of the variables in our study and of the predicted associations with the dependent variable.

**Table 1:** Independent variables and expected associations

Variables	Author(s)	Expected association	Hypotheses	Statistical Technique
Learning Outcomes	(Deterding et al., 2011; Gee, 2007; Huotari & Hamari, 2012; J. J. Lee & Hammer, 2011; McGonigal, 2011).	+	H1	Linear Regression
Utility	J. J. Lee & Hammer (2011).	+	H2	Linear Regression
Appearance	(Huotari & Hamari, 2012; J. J. Lee & Hammer, 2011).	+	H3	Linear Regression
Easy to use	(Hamari & Eranti, 2011; Hamari et al., 2014; Huotari & Hamari, 2012; J. J. Lee & Hammer, 2011).	+	H4	Linear Regression

## 4 Results

### 4.1 Descriptive Analysis

Starting from the descriptive statistics, we can say that, in relation to the sociodemographic data, the mean age of men (19.95 years) is slightly higher than that of women (19.66 years), of the 20 men and 39 women who compose our sample. Regarding the school background related to the curricular unit of accounting, 95% of the men did not have previous accounting school background in contrast to 97.4% of the women who reported never having learned accounting previously. Concerning motivation for learning, 90% of the men were motivated,

while the women showed slightly higher motivation levels, reaching 95%. Regarding the utility of Gamification as a resource that promotes learning, 80% of men and 75% of women reported being extremely useful.

#### 4.2 Linear Regression – Model analysis

A multiple linear regression was calculated to predict the dependent variable “Motivation to Learning” based on independent variables “Learning Outcomes”, “Utility”, “Appearance” and “Easy to Use”. A significant regression equation was found with an  $R^2=0,593$  and  $p<0,05$ .

The first model can be written as below:

$$\text{Motivation to learning} = 0,098 + 0,320 \text{ Learning Outcomes} + 0,512 \text{ Utility} + 0,141 \text{ Easy to Use} - 0,042 \text{ Appearance.}$$

However, the independent variables *Easy to Use* and *Appearance* hadn't statistical significance because  $p>0,05$ . We remove this two variables and we had a new final model that can be written like that:

$$\text{Motivation to learning} = 0,129 + 0,347 \text{ Learning Outcomes} + 0,574 \text{ Utility}$$

with statistical significance  $p<0,001$  and  $R^2=0,583$ .

Reading the model we can say that students, who used the “Count Game” resource, increase significantly Motivation to learning with the Learning Outcomes (34,7%) and Utility (57,4%).  $R^2=0,593$  indicates that 59,3% of the variation occurring in the % motivation to learning is explained by the two independent variables included in the model.

## 5 Discussion

This paper has examined the effects of demographic factors such as age, gender and school background influence the use of Gamification and whether other factors such as game appearance, easy to use, utility and learning outcomes increase motivation to use this resource.

The results indicate that, in this sample, age does not affect the use of Gamification because the age means was similar. Talking about gender and school background we can say that characteristics influence the use of Gamification (Koivisto & Hamari, 2014), because the female users, who had more school background, and more motivations revealed less opinion about Gamification than male. This finding holds similarities with considerations of differences in use of Gamification between male and female (Beasley & Collins Standley, 2002; Cassell & Jenkins, 1998; Eagly & Kite, 1987; Hartmann & Klimmt, 2006; Kafai, 1998; Lucas & Sherry, 2004b; Poels et al., 2012; Spence & Helmreich, 1980; Sun & Zhang, 2006; Venkatesh et al., 2000; Williams et al., 2009, 2008).

Regarding the comparison of the results with the literature review for each of the defined research hypothesis, we conclude that:

**H1: The motivation for learning is positively influenced by the learning outcomes of the gamified resource;**

This hypothesis is verified for the final model developed, since there is a significant correlation between learning outcomes and the learning motivation, where the increase of one percent

in learning outcomes causes an average increase of the learning motivation  $\beta=0,347$ , the ratio being statistically significant ( $p < 0.001$ ). This positive relation is corroborated by several authors which states that the goal of Gamification is to support and motivate users to perform (Deterding et al., 2011; Huotari & Hamari, 2012, 2016), motivating for a particular subject (Gee, 2007; J. J. Lee & Hammer, 2011; McGonigal, 2011).

**H2: The motivation for learning is positively influenced by the utility of the gamified resource;**

This hypothesis is verified for the final model developed, since there is a significant correlation between game utility and the learning motivation, where the increase of one percent in learning outcomes causes an average increase of the learning motivation  $\beta=0,574$ , the ratio being statistically significant ( $p < 0.001$ ). This positive relation is corroborated by several authors (J. J. Lee & Hammer, 2011).

**H3: The motivation for learning is positively influenced by the appearance of the gamified resource;**

This hypothesis does not apply, since in none of the models presented there is a significant correlation between the game Appearance and the learning motivation, more specifically in the final model, that the increase of one percent in game appearance causes an average decrease of the learning motivation of  $\beta= -0,042$ , however, this relation is not statistically significant ( $p > 0,05$ ). The non-verification of this hypothesis contradicts the arguments that appearance of the game increase the learning motivation (Huotari & Hamari, 2012; J. J. Lee & Hammer, 2011).

**H4: The motivation for learning is positively influenced by the easy to use of the gamified resource;**

This hypothesis does not apply, since in none of the models presented there is a significant correlation between the game easy to use and the learning motivation, more specifically in the final model, that the increase of one percent in easy to use the game causes an average increase of the learning motivation of  $\beta=0,141$ , however, this relation is not statistically significant ( $p > 0,05$ ). The non-verification of this hypothesis contradicts the arguments that appearance of the game increase the learning motivation (Hamari & Eranti, 2011; Hamari et al., 2014; Huotari & Hamari, 2012; J. J. Lee & Hammer, 2011).

## 6 Conclusion

One of the objectives of this study was to verify if demographic factors such as age, gender and school background influence the use of Gamification, and we can concluded that the students age of who participated in this investigation is not an influencing factor of their preference by Gamification, contrary to the conclusions of the (Morris & Venkatesh, 2000; Venkatesh et al., 2003; Wang et al., 2009).

However, the gender and the school background influence this choice, showing that women, despite being more motivated to learn accounting than men, but do not see Gamification as a more useful resource for learning, corroborating with the findings of the studies (Morris & Venkatesh, 2000; Spence & Helmreich, 1980; Sun & Zhang, 2006; Venkatesh et al., 2000).

Regarding the model tested on the influence of the variables Learning Outcomes, Utility, Easy to Use and Appearance provided by the game in the independent variable Motivation to Learning, we conclude that the following variables: Learning Outcomes and Utility provided

by the "Count Game" as a resource for the teaching of accounting in Higher Education, influence students motivation to learn, while the Easy to use and Appearance variables did not reveal a statistically significant effect on Motivation to Learning.

These results explain the reasons why the rise of virtual games has very important to teaching some curricular units in higher education context.

## 7 Limitations and future research

The main limitation of this study is the small size sample. Another limitation was the number of times the game was used.

In future studies, the game should be applied to a larger sample in different classes of different universities, and control groups should be established, to compare opinions about the motivation to learn between students who use and those who do not the resource.

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# Innovation and Entrepreneurship

Manfred Bornemann and Susanne Durst

Massive technological progress in communication technology supports new forms of organizations and shift boundaries of innovation teams and networks. For entrepreneurs, this creates new opportunities to develop new products and services based on Intellectual Capital (IC) and knowledge. This stream discusses various questions concerning the relationship between IC and innovation.

## Design-based method for service innovation: a case study in a public utility company in Hong Kong

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**Abstract:** Service innovation studies embedded in service-dominant logic provide an analytical framework for articulating value co-creation processes. However, whereas much literature covers the importance of value co-creation for innovation, little or no research reports how this is done in usage contexts. This paper contributes to the literature on service innovation by proposing a design-based method for service innovation. The method is presented in the organizational context within which it was developed, i.e. in the training re-design innovation project in a large public utility company in Hong Kong.

**Keywords:** service innovation, service design thinking, narrative circles

### 1. Introduction

With conceptual lenses of “service dominant logic” (SD-L) (Vargo & Lusch, 2004, 2008) services have become a superordinate to physical goods which are seen as outputs in the process of providing benefit. SD-L understands services as having inherent processual nature, as actor-oriented and relational. Instead of on means of the distribution and transaction, SD-L puts focus on the quality of relationships - collaboration and dialogue. In SD-L the value becomes a *value-in-use* or *value-in-context*, i.e. as determined by the user in a specific context. SD-L furthermore considers employees as the primal source of service innovation since the organizations bring benefit to other parties primarily through the collaborative effort of their employees (Lusch et al., 2007).

However, SD-L framework remains very analytical in providing an understanding of service systems and innovation. Research lacks methods that would allow an examination and understanding of the process through which innovation unfolds in practice through collaborative action. The objective of this paper is to contribute to bridging this gap by proposing a method that allows a study of innovation as embedded in practice, i.e. as situated in an organizational context. To achieve this objective, we develop a method by complementing SD-L as a well-established theory of value-creation with service design thinking (SDT), a widely hyped approach to innovation and narrative approach to organizational studies. Furthermore, we present the method in the context within which we have developed it, in a study that we have conducted within a large public utility company in Hong Kong. Namely, in the project that serves as our implementation case, we take an internal

perspective on service innovation by applying the method for the purpose of training programme evaluation and re-design.

## **2 Developing a design-based method**

### **2.1 Service design thinking**

An interdisciplinary field of design thinking (Brown, 2009; Martin, 2009) or service design thinking (SDT) (Stickdorn & Schneider, 2012) has been suggested by some authors as a possible vehicle to translate well-established concept of SD-L within the domain of service into a practical approach that aims at innovation (Gustafsson et al., 2016; Wetter-Edman et al., 2014). SDT provides practice-based frameworks, tools, and methods that engage users in co-design activities that lead to *value co-creation*. One of the core principles of SDT is *user-centricity*. SDT approach, instead of jumping immediately to “definition of a problem,” firstly attempts to gain an empathic understanding of the problem situation with an aim to design better solutions that reflect various trainee needs. The most valuable source of new ideas that have a true competitive advantage is users` unarticulated needs (Bettencourt, 2010). Furthermore, users become co-designers of the service that is offered to them, i.e. they are invited to actively participate in the idea generation and concept development and are given the “position of an expert of his/her experience”(Sanders & Stappers, 2008).

SDT approach involves small experiments that enable organizations to test their robust prototypes, learn early, and pivot to a different direction when they gain new insights from the feedback that they get from the users (Miettinen, Rontti, Kuure, & Lindström, 2012). In the design process, visual design artefacts such as service journey maps, context maps, and storyboards are used. They allow transformation of abstract ideas into a tangible form which further serves as a communication tool and helps to create new insights about the service design components and surrounding contexts (Dorst, 2015; Tschimmel, 2012).

### **2.2 Narrative circles**

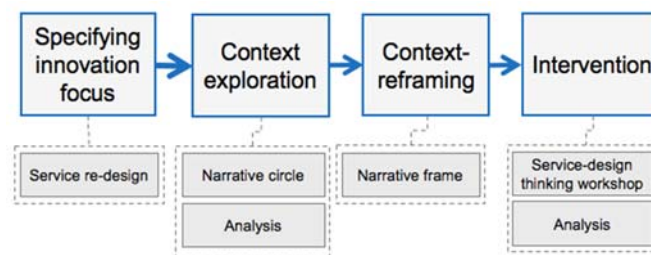
For eliciting user needs, emotions, and values, indirect knowledge elicitation techniques such as narrative circles are more appropriate than conventional user study techniques such as interviews and surveys since they provide an environment for emotional expressions and dialogue (Yip, Lee, & Tsui, 2015). In introducing narrative approach in design of the method, we build on the knowledge elicitation tool proposed by Zou & Lee (2007), which was developed based on the coding techniques of the grounded theory (Glaser, 1978) and the open interpretation principles implied by the sense-making theory (Dervin, 1992; Weick, Sutcliffe, & Obstfeld, 2005). The tool consists of two major parts: the elicitation and the collective analysis. In the elicitation part, the bottom-up method of narrative circles involves acquiring the experience of users by mimicking conversational discourse “around the watercooler” to elicit participants` naturally occurring stories (Snowden, 2001). Further, participants are asked to write down the words or phrases that make sense to them from the narrative. These words or phrases are called sense-making items, and they can be interpreted as the open codes in grounded theory since they denote the meanings of the narratives as perceived by participants. Participants conduct the analysis of sense-making items, the second component of this step, mostly collectively. Namely, they are guided to categorize the post-

its by moving them into different clusters according to the themes of the post-its and to name the themes of the clusters. Such indirect elicitation method is common to designers, who, instead of asking direct questions, watch users and their actions, ask them to narrate, visualize or show their experiences (Visser, Stappers, van der Lugt, & Sanders, 2005).

### 2.3 Proposed design-based method

The proposed method is based on the major principles of service design thinking and narrative methodology described in the previous paragraphs and consists of four major components (see *Figure 1*): (1) Specifying innovation focus; (2) Context exploration; (3) Context reframing; (4) Intervention. In operating these steps, a role of a researcher is to guide participants to express and make sense of their experiences. A researcher acts as a facilitator who doesn't impose pre-conceptions to dominate discussions (Yip et al., 2015).

*In the first step*, the innovation focus to pursue is specified. This decision serves as a guide for the development of further steps, for example, what are the main groups of service users and service providers for the formation of narrative circles in the second step.



**Figure 1** Proposed design-based method

*The second step* is to elicit stakeholders' latent and uncovered needs in a narrative form via derivation of knowledge elicitation tool proposed by Zou and Lee (2007). Participants are invited to share their personal experiences of the situation at hand with others by narrating them. The participants empathize with narrators, write sense-making items, and collectively analyze them as described in 2.2. Researchers further consolidate participants' interpretations and detect patterns to form categories that serve as a basis of a conceptual framework that guides the design of the next steps.

*In the third step*, the context of the study is reframed based on the outputs of the previous step. Namely, researchers seek to find a novel standpoint from which a problem can be perceived and solved. Reframing the context refers to reorganizing the meanings parenthetically, i.e. by modifying (and not completely transforming) the current context (Dorst, 2015). For this purpose, they develop a narrative frame, i.e. a semi-fictional story that aims at providing a setting for participants' collaborative action that favors innovative activity. Design artefacts such as paper templates are produced to support the narrative frame implementation in the next step in the form of intervention.

*In the fourth step*, researchers implement the narrative frame in a research setting via SDT workshop. They facilitate participants to become co-designers of their service by getting familiar with the archetypical users of the service (i.e. personas), brainstorming and

prioritizing ideas, developing and iterating working prototypes of service concepts. The analysis is conducted based on various data gathering techniques: surveys (once the participants finished the activity), observations (from researchers during the activity), sense-making maps (from the workshops).

### **3 Implementation case study**

In this research, we adopt a case study approach since the focus is on a phenomenon within its real-life context, and the boundaries between phenomenon and its context are not obvious (Yin, 2014). The research site is the Training Academy of a large Hong-Kong public utility company. The Academy was launched in 2014 to provide training for customer service employees to upgrade their professional skills and knowledge. In the project that serves as our exemplary case, management was dissatisfied with current design of the training programme and as a result engaged with the researchers in the evaluation and re-design. Namely, according to their view, the existing approach, which consisted of focus groups and meetings chaired by the Training Academy head, failed to adequately elicit and take into account the needs of trainees – the Academy’s internal customers. To overcome limitations of this approach, we have applied our proposed method by further embedding the set of activities and tools based on the knowledge we gained in each step of the method.

#### **3.1 Specifying the innovation focus**

The initial meetings with stakeholders were open-ended sessions the goal of which was to develop an understanding of the organizational policies that lead to training design, means of its evaluation, and to develop an understanding of some aspects of the organizational culture. These meetings crystallized the steps trainees were required to take while experiencing the training services, the goals of the training programme, course promotion activities, and particulars of the industry they were working in.

#### **3.2 Context exploration**

The purpose of this step was to collect primary data, i.e. to elicit participants’ training experience. The procedure consisted of two steps: narrative circles and analysis. By following the logic of theoretical and purposeful sampling (B. G. Glaser, 1978), we have selected 15 participants to gather their unique perspectives on training experience in two-hour workshops. The differentiating factor was a position one has in the organizational hierarchy. By separating different groups of trainees, we aimed to create a safe setting in which each participant would feel free to express its voice. Namely, forces of power, more than often in organizations “prescribe acceptable answers and make disagreeing with them, even in the face of the evidence of one’s experience, a scary and risky thing to do” (Dervin, 1998). Thus, we have formed a group consisting participants with positions lower at the organizational hierarchy (Group 1, consisting interns and operational staff) (N=7), and a group with the positions higher at the organizational hierarchy (Group 2, consisting team heads or above and course organizers) (N=8).



### *Narrative circles: elicitation through empathy*

To create context awareness and elicit narratives from the participants, we have used probes and generative techniques such as prompting questions, training journey map, and pictures of training promotional material. We aimed to elicit narratives about training experience with a particular focus on the trainees' behaviors, values, actions, and emotions surrounding that experience. We asked the participants to explain what was going on at each stage of their training journey and their views on the service.



**Picture 1** Narrative circles: Elicitation through empathy

To provide additional encouragement, we have framed the probing elicitation question as follows: *Imagine that you run into a very good friend of yours who just joined the company and he tells you he has been invited to participate in training and asks for your opinion whether he should join. What experiences, for example, incidents or events, would you share with him during the training journey that you have just completed? It could be any difficulties you met, any interesting moments that you encountered, or any issues that you noticed.*

Each participant shared, in front of the others his/her experience. When one participant was narrating, others were encouraged to pay attention to the feelings, values, beliefs the narrators express, i.e. to empathize with them. Additionally, they were noting down the key words or phrases that made sense to them, i.e. sense-making items. We have ensured that everyone is offered a time to pick up the thread of the story and to tell a related one. In this way, we allowed diverse perspectives to surface.

### *Analysis: detection of patterns and development of conceptual framework*

Participants conducted the first part of analysis of sense-making items collectively. Namely, we have guided them to categorize the post-its by moving them into different clusters according to the themes of the post-its.



**Picture 2** Collective analysis

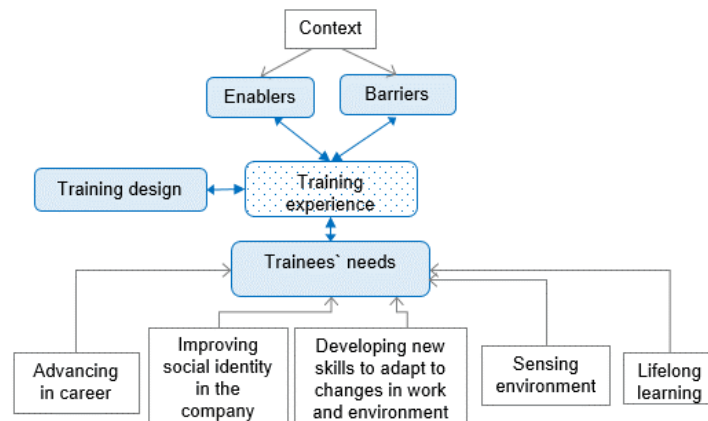
During the consolidation processes, we have further compared and contrasted themes from different groups according to the principles of the grounded theory methodology (B. Glaser & Strauss, 1967). We have grouped the similar themes into four major categories: *trainees' needs, training design, obstacles, and enablers* (see Table 1).

**Table 1** Consolidated categories and themes of Group 1 and Group 2

Categories	Group 1 (lower hierarchical position) themes	Group 2 (higher hierarchical position) themes
<b>Trainees' needs</b>	Lifelong learning; Advancing in career; Building better image in company; Performing better; Developing skills for new job	Developing capabilities to adapt to change; Learning from other companies; Keeping competitiveness; Nurturing learning mindset
<b>Training design</b>	Learning portal; Case studies; Small group discussions; Fresh content; Games and interaction	Practical content; Best practice examples; Joint training with other companies; Site visits
<b>Obstacles</b>	Bored due to not interesting content; Fear of asking supervisor due to cost and required time; Not useful for the career path; Disappointed due to mismatch of the expectations; Shame of presenting in front of others; Trainers lacking knowledge and training skills	No strategic plan to identify employees' needs; uncomfortable to ask for immediate manager; Lack of good quality communication among trainers and participants; Courses don't target specific groups of employees
<b>Enablers</b>	Appraisal; Appreciation; Company loyalty; Obstacles free involvement	Needs-based training; Learning mindset; Sense of pride of having academy; Company loyalty

The integrated categories of *Group 1* and *Group 2* formed the basis of a conceptual framework and served as our guide for the design of other steps (see Figure 2). Among the four categories, we have identified *trainees' needs* as a core category since user-centered innovation begins with an understanding of users' unmet or unarticulated needs. Identification of *trainee needs* and associated narratives allowed us to develop archetypical learners, i.e. personas. Personas are a widely used tool in SDT as a mean to understand the heterogeneity of users. They are fictional user profiles derived from data that represent a unique group of individuals (Miettinen & Koivisto, 2009).

Further, we have understood categories *barriers* and *enablers* as effects of the organizational context that could promote or hinder participants' training experience. Hence, we have as well included the construct *context* in the framework. For example, we found out that a *barrier* for Group 1 was fear of asking the supervisor to attend training since it requires money and since they believe it will be perceived as a loss of time (e.g. "my supervisor will think I don't work hard enough"). This led us to understanding that the company culture has some attributes of a hierarchical culture (Cameron & Quinn, 2006). On the other hand, as an example of an *enabler*, we have realized that the employees from both groups are very loyal to the company and that there is a very low turn-over of the staff. They expressed pride of having the Training Academy. In particular, many of them perceived training as a cultivation of the learning mindset in the company and as a way to develop capabilities that would allow them to adapt to change and keep competitiveness. Participants provided as well some ideas on training tools and methods that they would like to see in a training delivery. These elements we have gathered under the *Training design* category.



**Figure 2** Conceptual framework based on trainees' needs

In the end of this step, we have shown the *Obstacles* that were identified as staying in the way of fulfilling trainees' needs to management for further refinement and prioritization. They have chosen the following obstacles as a focus of a training re-design: (1) Face problems to get supervisor's approval for training; (2) No link with career path/job promotion; (3) No direct link with one's workplace/profession; (4) Uninteresting courses and lack of training skills of particularly internal trainers.

### 3.3 Context reframing

The purpose of this step was to take into account some obstacles as effects of the context that could hinder innovation activity of the participants. In particular, during our context exploration step, we have found out that the company has some attributes of hierarchical culture (e.g. values structure and control as reflected in the *Obstacle* "Fear of asking supervisor due to cost and required time"). The behavioral literature suggests that creativity occurs when individuals are free from pressure, feel safe, and experience relatively positive affect (West, 2002). Thus, as a narrative frame, we have developed the "contractor game" (see *Picture 3*) where we utilized the game design elements such as roles and game tasks to frame interaction and value co-creation of the participants. The purpose of the narrative frame of the game was to allow participants to act and experiment indirectly through roles or characters. We expected that they would share their ideas more freely since acting through roles allows "disclosure without attribution," the aim of which is to address issues of power (Snowden, 2000). Instead of directly implying specific trainees and their needs, the perspective of archetypical learners, i.e. personas, allows discussion about trainees' needs indirectly, through fictional characters. We expected that this approach would mitigate possible face-saving factors that may inhibit innovation efforts.

The goal of the game was to bid as a training service provider for the Training Academy of the organization that was the research setting of the study. Paper templates were created as visual tools to use in the intervention.



Picture 3 "Contractor game"

### 3.4 Intervention

The purpose of this step was to stimulate value co-creation and innovation of the participants to generate new working prototypes of training concepts. The procedure consisted of two parts: SDT workshop and analysis. By following the same sampling logic as before and based on the availability of participants, we have selected 12 participants to form two intervention groups, one involving trainees with a lower hierarchical position (i.e. Group 1, consisting interns and operational staff) (N=6) and the other one involving trainees on a higher hierarchical position (N=6) (i.e. Group 2, consisting teams` head or above). All the participants from Group 2 were course organizers.

#### *Service design thinking workshop*

The game was implemented in an SDT workshop which lasted five hours. Textual and visual materials with the information about the game tasks were provided to all participants in the intervention groups. The groups worked separately until the last, implementation planning step when they were guided to give feedback to other group`s work.

In alignment with user-centricity design principle, participants first got familiar with characters of typical trainees, i.e. personas developed by researchers. As well, researchers shared trends and training design stories from other companies to stimulate additional insights. Afterward, participants were given time to brainstorm ideas for initial training concept proposals based on the templates developed by researchers. They were asked to think about service objectives (values that they want to create for customers such as service outcomes and service experience), deliverables (such as scope, types, and scales of training to implement), and measures of effectiveness of the training programme.



Picture 4 Implementation of the "Contractor game"

At the end of the brainstorming session, participants followed the collective analysis procedure which included a comparison of ideas, grouping the similar ones into clusters and naming the clusters to form “themes” of ideas. Subsequently, each participant was asked to indicate the relevance of each theme to a critical obstacle on the prioritization map. If participants perceived that a theme is relevant for the critical obstacle, they could put maximum two dots into the corresponding box. Higher synergic effects among themes of ideas and critical obstacles served as a guide which ideas to take further.

In the next step, the groups developed the ideas that received most votes into initial training proposals, which contained group’s training objectives, description of how the innovative training ideas address the obstacles identified in the context exploration phase and rationale behind it. Subsequently, each group presented its training proposal to the other group and to a judging panel comprising company management and researchers. Judge’s criteria for a successful training design were whether the proposal addresses the learners’ needs, whether it contributes to a learning organization, and whether it supports business growth. Groups accepted the feedback and further developed the best ideas into the working prototypes of training concepts with implementation plans in knowledge café discussions facilitated by researchers.

*Analysis*

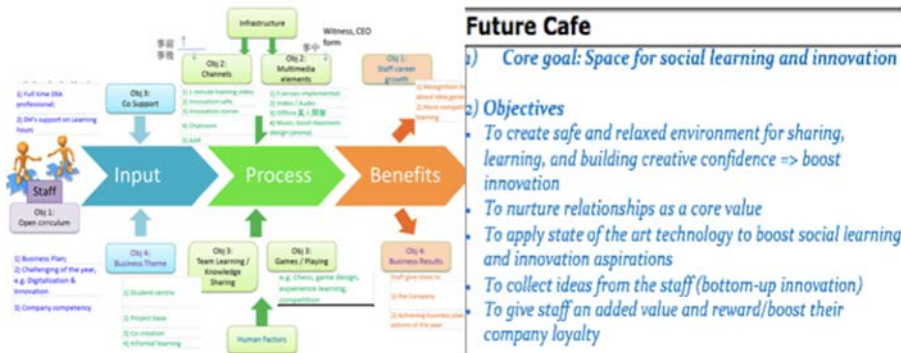
The output of SDT workshop includes the ideas generated by participants, prioritization maps, and working prototypes of training concepts. The prioritization map is a visualized artefact which aligns “themes” of ideas generated during the intervention in relation to critical obstacles identified in the context exploration step. Themes are high-level names which represent a set of ideas generated by participants and gathered under different categories based on similarity. The aim of the prioritization map is to help to determine the priority of ideas to pursue in developing training concepts. A total of nine themes of innovative ideas were generated by each group (see *Table 2*).

**Table 2** Themes of ideas developed by each group

<b>Group 1 (lower hierarchical position) themes</b>	<b>Group 2 (higher hierarchical position/course organisers) themes</b>
Job-related course design	Use of Technology
Environment - Future Cafe	Team Learning
<b>Digital Method - Online</b>	Games & Play
Short- term Course Delivery pattern	Knowledge Sharing
Long-term Course Delivery pattern	Learning Desires
Interactive Sharing	Innovation Implementation
Innovation Training Tool	Staff Recognition
Recognition from Management	Training Approach
Innovation Objectives	<b>Obstacles facing training academy</b>

The groups` prioritization maps showed different synergic effects among themes of ideas and critical obstacles. For example, course organizers (Group 2) perceived that ideas related to the obstacles that training academy faces are most central in respect to obstacles (e.g. one idea was to design training programme in a less standardized and rigid manner), whereas trainees from Group 1 perceived as more central the ideas that would modernize the training delivery

(e.g. one idea was to use learning apps). Consequently, different thought worlds of two groups led in the subsequent steps to the development of the innovative solutions that reflected these differences (see *Figure 4*). For example, trainees from Group 1 built on the ideas primarily generated in the “Digital method” and “Environment - Future Café” themes to develop two concepts: 1) “Future Cafe” concept as a safe, relaxed and interactive environment for sharing and creativity, and 2) “Just-in-time learning” concept as a social media empowered e-learning approach.



**Picture 5** "Open curriculum" concept developed by course organisers (on the left) and "Future cafe" concept developed by trainees (on the right)

On the other hand, course organisers, building primarily on the theme “Obstacles facing training academy” and others such as “Training approach” developed two concepts: 1) “Open curriculum” as a comprehensive, more flexible training approach based on the changing training needs, involving different touchpoints and processes which enable its operationalisation, and 2) “Blended approach” as an interactive co-creational approach to training by blending physical and digital learning environment.

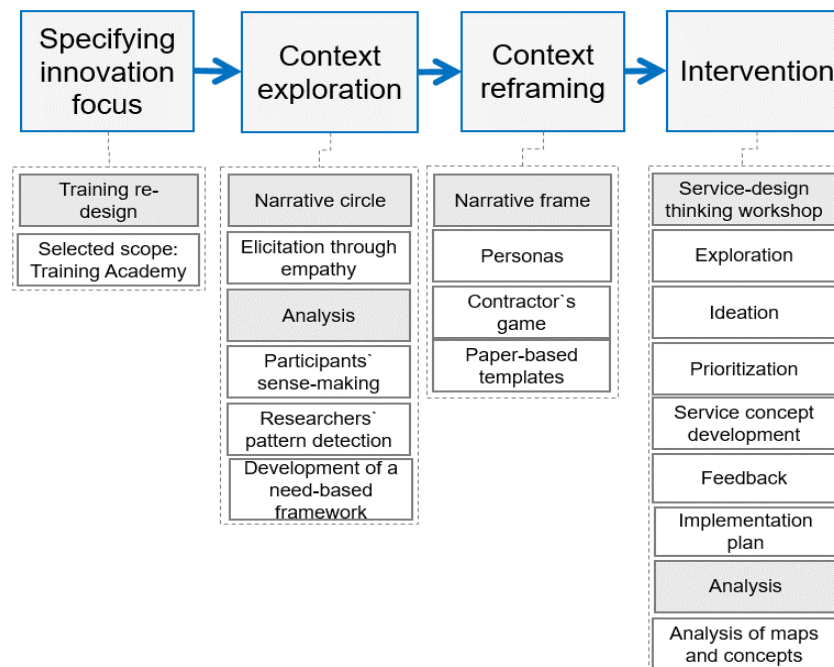
#### 4 Findings and discussion

Overall, the proposed method has four steps that we have further developed during the implementation process (see *Figure 3*). Following the philosophy of the grounded theory, the analysis of the data gathered in each step provided a foundation for the design of the steps in the later stages. For example, the trainees` needs-based conceptual framework that we have derived in the analysis process based on the narrative data has guided us in designing a narrative frame, i.e. the “contractor game” and subsequent intervention.

Research setting created a context in which there was a creative tension among different groups of trainees – internal customers. Involving different groups of participants led to differences in the emerging needs and innovative solutions proposed by each group. Implemented narrative frame, i.e. “Contractor game” utilized design elements such as personas, roles, and game tasks to frame interaction and value co-creation of the participants in a way that freed up their creative confidence. Furthermore, involving differing perspectives contributed to the diversity of proposed training concepts, and hence, innovativeness of possible solutions to implement in the new training design. Innovation requires the insights



of multiple "thought worlds" who think differently from each other (West, 2002). According to the feedback collected from participants via survey, they all strongly agreed that the proposed method stimulated them to formulate innovative ideas. Most of the participants as well expressed that the proposed method is more effective for training evaluation and redesign than other methods, such as traditional meeting chaired by the Training Academy head or assigning a working group.



**Figure 3** Outline of the design-based method as developed in research process of the project

## 5 Conclusion

The study is a contribution towards the application of service dominant concepts and frameworks in service system innovation. SDT principles, together with the narrative approach have served as our guide for the development of the design-based method that aimed to interpret users and their contexts and to enhance their value co-creation and innovation efforts. By taking an internal perspective on service innovation, in congruence with SD-L, we consider employees as the primal source of service innovation since the organizations bring benefit to other parties primarily through a collaborative effort of their employees (Lusch et al., 2007). Subsequently, we take the position that service systems should develop a service culture by treating employees in ways by which they become empowered in their role as value co-creators.

The study has the main limitation of the inadequacy of the employed method to fully retain the richness of the contexts in the mapping results. Further on, it is our impression that rules of the game and templates to capture and assess new training concepts could have been designed in a more structured manner to provide better guidance to participants. Since a single case study approach is adopted, which locates studied innovation practices within a particular organizational project, the analysis of the findings is contextually specific. However, managers can benefit from the study to develop more effective innovation projects.

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# From Needs to Satisfiers: How Design Thinking Can Inform Organizational Learning Processes

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**Abstract:** Needs drive organizational learning and guide organizational change. Current research proposes efficient methods to identify (shared) needs in organizations. However, there is a lack of organizational learning methodologies that utilize knowledge about (shared) needs and promote the development of need-based solutions.

In organizational practice, we face complex social dynamics, which strongly influence such learning processes. Design thinking is one approach to cope with these dynamics and provides a frame for participatory methodologies to develop need-based solution.

In this article, we clarify the concept of shared need. Moreover, we review seminal literature on design thinking to crystallize its basic principles. We consider how these principles could enhance the necessary capacities to turn needs into viable satisfiers.

We report from a first attempt to implement these principles in practice and reflect on the results of this organizational learning intervention.

**Keywords:** organizational learning, design thinking, innovation, need-based solution knowledge, co-creation

## 1 Introduction

How does an idea become a lasting organizational innovation? How should we go about organizational change? Senge (2001) argues that organizational change causes “inner shifts” in people’s values, aspirations, and behaviors as well as “outer shifts” in processes, strategies, practices and systems; *profound* change causes shifts in both domains and happens “from within”. We argue that profound change requires us to consider the organization’s inner dynamics and motivations. Taking these into account, i.e., changing an organization from “within”, enables lasting “inner shifts”. A concept reflecting this inner motivation are needs, which motivate our behavior (Sheldon, Elliot, Kim, & Kasser, 2001). Scholars demonstrated that needs drive processes such as strategy development, product design, innovation, and other value-creating and knowledge-intensive activities (e.g. Altschuld & Watkins, 2014; Bayus, 2008; Goffin, Lemke, & Koners, 2010; Patnaik & Becker, 1999; Ulwick, 2002). Moreover, we argue that needs trigger sustainable change in organizations, as they reveal what is substantially necessary to the organization and its stakeholders. As any intentional change in the organization is accompanied by a continuous process of creating and exploiting

knowledge, organizational learning is a suitable theoretical lens to describe and analyze such change processes. Organizational learning processes focused on shared needs potentially transform organizations in a profound way.

### **1.1 Research gap and objectives**

Needs moderate adaptation and learning processes in organizations (Altschuld & Watkins, 2014). Identifying and explicating needs of the organization and its stakeholders serves as a starting point to profoundly transform the organization (Altschuld & Kumar, 2010; Kaiser & Kragulj, 2016; Patnaik & Becker, 1999; Ulwick & Bettencourt, 2008). When different needs are taken seriously, measurements gain the support of the stakeholders concerned. However, meeting needs on an organizational level is vastly more complex than finding an optimum for only a single individual. This can be illustrated by two observations.

Firstly, different entities can have different needs. Understanding needs as necessities towards a purpose implies that any entity that follows an overall purpose, irrespectively of its size (e.g. organization, school, community) can have needs. As a consequence, there might be a divergence between needs of an organization and needs of its stakeholders. However, organizational needs might overlap with individual needs to a certain extent and individuals might share needs among each other (Kaiser & Kragulj, 2016; Kaiser, Kragulj, & Grisold, 2016). When developing actions, the question arises, whose needs are to be met by the action?

Secondly, even if an organization and its stakeholders agree on (abstract) needs, this does not imply consensus on how to meet them. In organizational settings, individual preferences, values, expectations, and goals influence the individuals' matching of needs with satisfiers, i.e., concrete means of need satisfaction (e.g. actions, decisions, strategies, artefacts). The question arises, how should an organizational learning process cope with these dynamics?

We miss a consistent organizational learning methodology that clearly focuses on needs as guiding principles for creating viable satisfiers. This should deal with social dynamics in organizations as well as divergent values and preferences of stakeholders.

Since design thinking usually starts with a phase of formulating needs (or problems) (Razzouk & Shute, 2012; Seidel & Fixson, 2013) and involves different stakeholders in experimental and iterative processes (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013), we argue that it is a suitable paradigm for creating viable satisfiers such as processes, interventions, and artefacts. Literature on organizational learning paid little attention on how to transform needs into viable satisfiers adopting a design thinking perspective. As a consequence, there are no attempts to explicitly incorporate knowledge about needs into learning interventions that follow design thinking principles.

### **1.2 Research question**

This paper constitutes the first attempt to fill this gap and addresses these two issues in the following way. Firstly, we clarify the relation between individual needs, shared individual needs, and system needs. We propose a working definition of these concepts. Secondly, following a knowledge perspective, we review design thinking literature and identify core principles and concepts which can be borrowed from design thinking (Whetten, Felin, & King,

2009). Thirdly, we report from a first empirical attempt to implement these principles in a participatory workshop. Consequently, the research questions is:

What are crucial design thinking principles that could inform a bottom-up organizational learning methodology to transform shared needs into viable satisfiers?

Following the action research paradigm, which calls for a strong theoretical foundation for organizational interventions (Eden & Huxham, 1996), we conduct a literature review and investigate different design thinking approaches to build a strong theoretical foundation for a methodology that shall be applied in small and medium-sized social systems. This reflects the phase of “action planning” (Susman & Evered, 1978).

## **2 Theoretical background**

### **2.1 Needs drive organizational learning**

Since Maslow’s idea that needs fuel human motivation transcended the field of psychology, it gained momentum in the management discourse (Wahba & Bridwell, 1976). Needs as the content of motivation, explain how individuals develop themselves, pursue goals and allocate personal and organizational resources. They "affect the direction, intensity, and persistence of activities during work" (Kanfer, Frese, & Johnson, 2017, p. 338). Needs are also crucial variables in organizational learning (Rebelo & Duarte Gomes, 2008). Their identification and satisfaction constitute “a change in the organization that occurs as the organization acquires experience”, which is followed by “a change in the organization’s knowledge that occurs as a function of experience” (Argote & Miron-Spektor, 2011, p. 1124). We demonstrated that organizations identify and address (shared) needs to motivate lasting organizational change (Kragulj, 2017).

### **2.2 Needs and satisfiers**

Identifying (shared) needs uncovers the motivational forces of (organizational) behavior. This allows to illuminate the drivers of change, which is crucial for organizational planning and action taking. Moreover, knowledge about needs explains why certain action are favored, planned or taken. This strengthens a joint understanding and a shared mental model. Developing and exploiting related knowledge enables organizational learning processes such as innovation, product design, strategy or vision development processes (Goffin et al., 2010; Kaiser, Feldhusen, & Fordinal, 2013; Kaiser, Kragulj, Grisold, & Walser, 2015; Ulwick & Bettencourt, 2008).

Moreover, needs are distinct from satisfiers, i.e., concrete means of need satisfaction. While needs are closely connected to the needful entity and sensible to the entity’s context, satisfiers are subject to continuous adjustment due to environmental influences such as technological or legal conditions. A need can be satisfied in many ways and does not prescribe any satisfier at first. Consequently, a focus on needs potentially extends the range of possible ways of satisfaction. Developing new satisfiers increases the number of viable alternatives and, in turn, decreases the dependence on a particular satisfier (Kruglanski, Pierro, & Sheveland, 2011). This weakens the commitment to particular satisfiers and gives a group the necessary freedom for joint decisions.

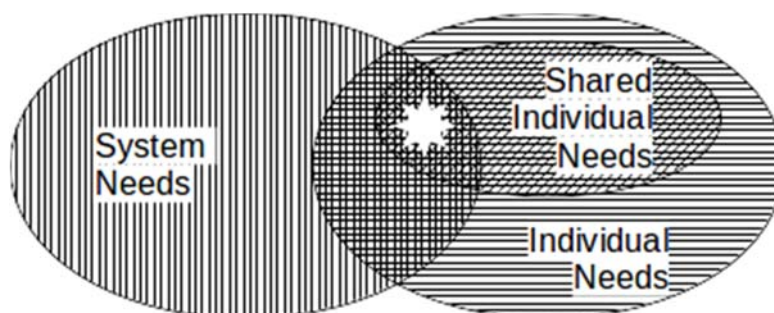
### 3 Building the ground for a need knowledge-based organizational learning methodology

In this section, we clarify the relation between individual needs, shared individual needs, and system needs and outline a knowledge perspective on the transformation process of needs into viable satisfiers.

#### 3.1 Whose needs? Needs on different levels

For the purpose of this paper, we follow a broad definition of needs, i.e., needs as instrumental necessities towards a purpose (Frankfurt, 1984; Kragulj, 2016b). This definition is not limited to humans, but includes social systems such as organizations, companies, cities or schools. We argue that any such entity can be motivated by necessities towards a purpose, i.e., needs. Even if we are not necessarily aware of them, agency enables us to balance and satisfy our needs (Thomson, 2005). Through their executives, organizations enact their agency and ensure the satisfaction of organizational needs. We refer to needs of a social system as *system needs*. They can overlap, differ or be contrary to the needs of its stakeholders. A stakeholder is any “individual [...] who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984, p. 46). Depending on a purpose, goals or context, individuals have different needs. Consequently, we cannot infer system needs from needs of individuals, as they may follow different purposes. We refer to the needs of stakeholders as *individual needs*. In line with psychological research, we can assume stable and common patterns in needs (e.g. Deci & Ryan, 2008; Maslow, 1970). Individuals share some of their needs with other individuals. Previous research demonstrated that individual needs in organizations are shared among 70 - 95 % of all stakeholders (Kaiser & Kragulj, 2016; Kaiser et al., 2016). We refer to these needs as *shared individual needs*.

Figure 1 illustrates the relation between these three categories of needs. Organizational learning processes should start with needs that are horizontally shared among entities, i.e., among the stakeholders of an organization, and vertically shared among the organization and its stakeholders to reach a high level of commitment and motivation. The star in figure 1 points at such needs.



**Figure 1:** Individual needs, shared individual needs, and system needs

#### 3.2 Three capacities to transform needs into satisfiers

We offer a theoretical lens to understand and structure need-based organizational learning processes. We apply a knowledge management perspective, and conceptualize the transformation of needs into viable satisfiers as a knowledge-intensive process. While

previous research focused mainly on the identification of needs (Altschuld & Watkins, 2014; Kaiser & Kragulj, 2016; Patnaik & Becker, 1999; Ulwick, 2002), we outline three capacities that are crucial for the process of designing viable satisfiers (Kragulj, 2016a):

1. The “capacity to identify needs” refers to the process of identifying (shared) needs of stakeholders and/or the organization. As people are hardly aware of their needs, “the satisfaction of needs might not be pursued due to lack of knowledge, not lack of urgency.” (Korolev, 2015, p. 27). Learning interventions shall raise awareness for identified needs and may also result in knowledge about the relative importance and interdependencies of these needs.
2. The “capacity to judge needs and satisfiers” refers to the process of judging the potentiality of satisfiers being able to meet needs. This reflects a subjective reasoning which establishes a match between needs and satisfiers (Von Hippel & Von Krogh, 2016). We decide for a concrete action or artefact. This is also the case in co-creation processes (Matthing, Sandén, & Edvardsson, 2004). Through the involvement of people concerned, ideas and proposals are continuously evaluated in terms of their corresponding needs, and are finally accepted or rejected (non-satisfiers).
3. The “capacity to design satisfiers” refers to the process of crafting potential satisfiers (Verganti, 2008). This includes methodological skills, technological know-how, and social skills. Usually, designers and domain experts can reinforce this capacity.

Innovation often boils down to the novelty of “the solution or the need or [...] a new marriage between both existing need and solution” (Terwiesch & Ulrich, 2009). Participative approaches to innovation (Maklan, Knox, & Ryals, 2008) combine all three capacities. This yields the potential to reach lasting results, as they are based on needs and involve stakeholders. Examples include co-creation approaches, which emphasize participative working with customers to enhance the (subjective) customer value (Pralhad & Ramaswamy, 2004). This enables companies to deeply understand and respond to customer needs.

### **3.3 Design thinking to cope with social dynamics**

“Needs and dissatisfaction with the current state, combined with a determination that some action must be taken” (Razzouk & Shute, 2012, p. 330) is the start of design thinking. We employ specific design thinking principles to bring the “capacity to judge needs and satisfiers” and the “capacity to design satisfiers” to life. Since design thinking is described as a heterogeneous and fragmented discipline with diverse streams of research (Johansson-Sköldberg et al., 2013; Kimbell, 2011), we conducted a literature review on design thinking to crystalize principles which could enhance these capacities.

We reviewed seminal contributions of high impact. On [www.scopus.com](http://www.scopus.com), we searched for the keyword “design thinking” in articles, abstracts, and keywords in the areas of social sciences and business, and received 763 results. To identify articles of high impact, we limited the results to conference papers, journal articles, and reviews that have been cited at least ten times and came up with 69 results (The search string used on June, 2 2017 reads as: ‘TITLE-ABS-KEY ( "design thinking" ) AND ( LIMIT-TO ( SUBJAREA , "SOC" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "re" ) )’). The results ranged from 1994 to 2015. We then exported the results from the database and went through all 69 articles by reading title and abstract. For an in-

depth inquiry, we identified 20 articles that met the inclusion criteria (topical relevance of the documents for the research question and the identification of paradigms, principles, and assumptions). We conducted a content analysis to find common patterns of paradigms, principles, and assumptions in these articles (Krippendorff, 2004).

We identified ten principles. These inform the development of a concrete method to design satisfiers based on (shared) needs. They emphasize methodological core assumptions commonly implemented in design thinking approaches and answer the questions whom to involve in such processes and what circumstances enable the success of an intervention. In detail, a design thinking intervention starts with human wants and needs. Consequently, methods to identify needs are of utmost importance in this step. Next, design thinking is a practical approach that is both, interventionist and transformative. It aims at tackling “real world” social problems characterized by complexity and uncertainty. As such, design thinking can be described as a social practice and is based on abductive reasoning. It unifies theory and practice and is a participatory approach that involves stakeholders. In design thinking, problems are solved from an interdisciplinary perspective and can be situated in the systems thinking discourse. As design thinking calls for a relaxation of rational in favor of intuitive cognitive processes, it balances analytic and creative thinking. Design thinking often includes experimental methods and several iterations trying to solve a problem or testing a prototype. It employs specific methods such as frame setting, sketching or visualization. It uses research methods from ethnography and other qualitative approaches. The detailed results of the in-depth analysis are presented in table 1.

**Table 1:** Design thinking principles identified in the literature

#	Principle	Description	Sources
1	Human centered	Design thinking starts from human wants, needs and values; it intertwines objective and subjective criteria; for a designed artefact, process or strategy, the end-user is the ultimate judge.	(Avital, Boland, & Lyytinen, 2009; Beckman & Barry, 2007; Brown, 2008; D'Ippolito, 2014; Dorst, 2011; Fraser, 2007; Glen, Suci, & Baughn, 2014; Melles, Howard, & Thompson-Whiteside, 2012; Razzouk & Shute, 2012; Seidel & Fixson, 2013)
2	Practical; interventionist; transformative	Design thinking is an approach that tackles uncertain “real world” and complex social problems, which are “ill-defined” and “wicked problems”; design thinking is widely applicable in domains such as strategy development, business models or policy making.	(Avital et al., 2009; Brown, 2008; Dalsgaard, 2014; Dorst, 2011; Fraser, 2007; Glen et al., 2014; Hobday, Boddington, & Grantham, 2012; Kimbell, 2012; Leavy, 2010; Melles et al., 2012; Razzouk & Shute, 2012; Stempfle & Badke-Schaub, 2002)

#	Principle	Description	Sources
3	Reflective practice and making sense of things	Design thinking is an active social practice; it is based on abductive reasoning; in design thinking practice, thinking and doing are intertwined; design thinking is theory in practice.	(D'Ippolito, 2014; Dalsgaard, 2014; Glen et al., 2014; Kimbell, 2012; Lloyd, Lawson, & Scott, 1995; Seidel & Fixson, 2013; Stempfle & Badke-Schaub, 2002)
4	Participatory and team based	Design thinking is a participatory approach and takes into account different stakeholders within social systems; solutions often emerge in teams.	(Brown, 2008; Dorst, 2011; Hobday et al., 2012; Melles et al., 2012; Seidel & Fixson, 2013; Stempfle & Badke-Schaub, 2002)
5	Interdisciplinary	Design thinking takes into account an interdisciplinary view on a problem; design thinking itself follows different discourses and epistemological roots.	(Avital et al., 2009; Dalsgaard, 2014; Dorst, 2011; Melles et al., 2012; Seidel & Fixson, 2013)
6	Situated, embedded and systems thinking approach	Design thinking takes into account the whole system, not only parts of it; it is a situated and embedded practice.	(Avital et al., 2009; Beckman & Barry, 2007; Brown, 2008; Dalsgaard, 2014; Hobday et al., 2012; Leavy, 2010; Melles et al., 2012; Razzouk & Shute, 2012)
7	Pragmatism; abductive reasoning; certain cognitive processes	Abductive reasoning, in opposite to induction and deduction, is the main way of reasoning in design thinking; cognitively, design thinking calls for a relaxation of rational reasoning and focuses on intuitive processes and heuristics; it includes visual thinking and balances analytic and creative thinking.	(Brown, 2008; Dalsgaard, 2014; Dorst, 2011; Fraser, 2007; Goldschmidt, 1994; Leavy, 2010; Lloyd et al., 1995; Öztürk & Türkkkan, 2006; Razzouk & Shute, 2012; Seidel & Fixson, 2013; Stempfle & Badke-Schaub, 2002)
8	Creative: discovery (solutions through finding) or making (synthesizing what is already known)	Design thinking relies on the creative capacities of humans; it tries to solve problems holistically and creatively; it uses constraints as springboards.	(Avital et al., 2009; Brown, 2008; D'Ippolito, 2014; Dorst, 2011; Fraser, 2007; Glen et al., 2014; Hobday et al., 2012; Melles et al., 2012; Razzouk & Shute, 2012; Seidel & Fixson, 2013)
9	Emergent; interactive; iterative; experimental	Prototyping includes many problems, which are seldom fully defined; often several rounds of trial and error are necessary to solve a problem; in design thinking, processes, problems, and solutions co-evolve in incremental steps forward; design thinking is exploratory and avoids necessities of choice	(Avital et al., 2009; Beckman & Barry, 2007; Brown, 2008; Dalsgaard, 2014; Dorst, 2011; Fraser, 2007; Glen et al., 2014; Hobday et al., 2012)



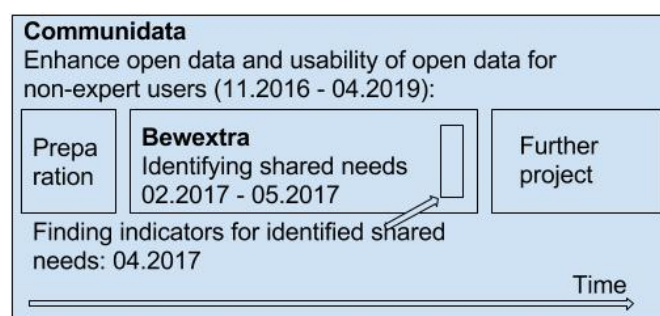
#	Principle	Description	Sources
10	Process-like; uses certain methods, tools, and techniques	Design thinking often follows three steps like “inspiration, ideation, implementation” or “user understanding, exploration, new strategies”; design thinking processes start with deeply understanding users, customers, and stakeholders with ethnographic methods such as “unfocus groups”; it uses the methods of sketching (visualization), imagery, prototyping and scenario development; design thinking works with frames and (re)framing situations: design thinkers try to change the frame for a given problem situation, often completely.	(Avital et al., 2009; Brown, 2008; Dalsgaard, 2014; Dorst, 2011; Fraser, 2007; Glen et al., 2014; Goldschmidt, 1994; Hobday et al., 2012; Öztürk & Türkkän, 2006; Razzouk & Shute, 2012; Seidel & Fixson, 2013; Stempfle & Badke-Schaub, 2002)

## 4 Communidata project

### 4.1 Overall description of the project

In this section, we outline how we implemented the design thinking principles identified in an action research project. The goal was to specify previously identified shared needs which is a prerequisite for subsequently developing viable satisfiers. In the following description, we indicate the implemented design thinking principles and give their numbers (see table 1) in squared brackets.

The overall aim of the ongoing project “Communidata” is to enhance the usability of open data and their accessibility for non-expert users [4]. It is a joint research project in cooperation with a Viennese district and led by the WU Vienna University of Economics and Business. Communidata consists of several consecutive steps [10] (see figure 2).



**Figure 2:** Timeline of the Communidata project

The first step covered the identification of shared needs of the citizens in the respective district [1]. This provides a need-based roadmap to determine in which crucial areas open data applications should help citizens to improve their lives [6]. The overall project started from the premise that there is a set of identifiable and widely shared needs of the population of the respective district. To identify these needs, we employed Bewextra (Kaiser, Fordinal, & Kragulj, 2014; Kaiser & Kragulj, 2016), a participative bottom-up approach to identify shared needs in social systems [1, 2, 3, 4, 5, 6, 7, 8, 10]. This methodology resulted in a catalogue of

12 hypotheses about shared and contextualized needs in the district (see table 2). These needs were validated by a subset of individuals living, working, and going to school in the respective district (survey participants; N = 122). The acceptance rate reflects the degree to which survey participants share these needs (see table 2).

**Table 2:** Identified needs and their acceptance rate

Need for ...	Acceptance rate
cleanliness	84%
positive recognition of the district	76%
aesthetics and beauty	79%
highly ecologically compatible mobility	76%
local supply	83%
security	81%
modernity and continuous development	77%
opportunities to meet and feel connected	77%
a supportive political frame	77%
good human relations	79%
education	80%
opportunities to spend spare and leisure-time	85%

#### 4.2 Workshop design and results

According to the scope of this paper, we focus on a follow up workshop that we conducted in April 2017. It shall be seen as the first phase of a comprehensive design thinking process in which identified needs are transformed into viable satisfiers. In particular, the workshop aimed at concretizing previously identified shared needs (see table 2) by developing indicators [1]. Fifteen multipliers of the district (social workers, the principal of the district, landscape planners, and members of the Austrian federal chamber of commerce) jointly developed indicators that allow to specify when a certain need is fulfilled.

As the results show, these indicators are either more objective, i.e. they are easily measurable and intersubjectively verifiable, or more subjective. In the latter case, indicators require some kind of formalization such as measuring through subjective self-assessment. Given the example of the “need for security”, table 3 depicts the resulting quotes of participants reflecting attributes that indicators should have.

These indicators make needs better measurable and bring them one step towards its satisfaction. While some can be easily addressed (those which are more objective), others require a deep engagement of the individuals and their experience in the design process.

**Table 3:** Indicators developed for the need for security (example)

Need for security	
Indicator	Attribution
“Punctuality in public transportation”	more objective
“If I do not have to think about the backpack on my shoulder when walking on the streets”	more subjective
“If I know where I can call in an emergency”	more objective
“People on the street look well-groomed and friendly”	more subjective
“There are no/less red light bars in the neighborhood”	more objective
“The streets in the neighborhood are well illuminated”	more objective
“No feeling of threat, If I am walking on the street”	more subjective
“If I know the people, I am meeting on the street”	more subjective

### 4.3 Reflection

Reflecting on the course and the results of the workshop, we elaborate on two observations. Firstly, formulating such indicators can be seen as the first step to concretize and operationalize (shared) needs. It is the first step of creating satisfiers based on (shared) needs. This approach closely follows design thinking principles. In so doing, need satisfaction becomes reasonably measurable. Such a workshop points at outcomes which viable satisfiers must provide in order to be effective in terms of (shared) needs.

Secondly, whereas (shared) needs are relatively general and free of personal attributions, indicators for need satisfaction are personally loaded with values and “points-of-view”. We can satisfy a very general need for mobility in many different ways. An example for such a value-laden indicator would be the “number of car-sharing places registered in the district” – reflecting values that prioritize green mobility and a shared economy (more liberal values) over car ownership (more conservative values). In this workshop, participants built the ground for a next iteration step in which participants design satisfiers that are able to fulfill these indicators. We assume that the resulting need-based satisfiers are most viable for the individuals concerned.

### 5 Conclusion and further research

In this paper we illuminated in principle, how to generate viable satisfiers within an environment of complex social dynamics based on (shared) needs. We focused on two capacities of need-based solution knowledge, namely the “capacity to judge needs and satisfiers” and the “capacity to design satisfiers” (Kragulj, 2016a). We assume that these capacities are crucial in the transformation process of needs into viable satisfiers within social systems. Based on a literature review, we identified ten design thinking principles that make these capacities effective. Our preliminary empirical findings suggest that a concrete method for need-based organizational learning should account for objective (easily measurable and

intersubjectively verifiable) and more subjective (some kind of formalization is required) indicators to ensure a high stakeholder commitment.

Further research should consider complementary literature on topics such as co-creation or open innovation. Moreover, researchers should pay attention to contextual factors moderating such design thinking processes and enabling conditions which are crucial for the implementation. We plan to extend our research and realize our findings in a concrete participatory method to design viable satisfiers based on knowledge about (shared) needs.

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# Project Management Evolution to Improve Economic Success of Infrastructure Projects

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**Abstract:** This document provides an overview of the infrastructure megaproject industry (IMPI), the financial implications of cost and schedule overruns, and the trend towards the future impacts these may have on the global infrastructure sphere. Definitions of project management and change leadership provide a framework for understanding the relevance to the subject matter. A sample of methodologies and best practices for change leadership and project management indicate the breadth of diverse approaches available in the industries. A cause analyses of megaproject overruns with accompanying solutions suggests areas of industry improvement, supported by first-hand experience by the author. The solution also indicates that change leadership should be included as a best practice methodology for Project Managers to utilize instead of a key influencing solution. The paper concludes that the IMPI must evolve to be able to deliver the infrastructure required in the future. This evolution will be through improving and expanding knowledge, experience and intellectual capital of public and private industry Project Managers while determining some next steps to progress the industry.

**Keywords:** Infrastructure, Megaproject Management, Project Management

## 1. Introduction

There is a knowledge gap in the infrastructure megaproject industry (IMPI) in the area of project management as it exists today. Past trends show on average, an 11% loss in major or megaprojects, across all industries, due to poor project performance. Analysis of past megaprojects in the infrastructure industry indicate project management as a contributing factor attributing to the losses. Project management relies upon methodologies, intellectual capital, knowledge, innovation, and experience to manage megaprojects. These foundations will be the global infrastructure project trend of the future. Current project management methodologies must change and expand to provide Project Managers with the required skills to succeed in the infrastructure industry. The projects will continue to evolve and grow to accommodate the infrastructure demands of cities and nations. These project management skills must expand beyond budget, schedule, quality, safety, and customer management to include knowledge and intellectual capital management, expanded life cycle integration, change management, operations and warranty management, and stakeholder management. This will require a change in the industry to leverage the already available intellectual capital

gained from successful projects, to improve megaproject delivery of infrastructure, and minimize productivity losses through expansion of the industry knowledge base.

## 2. Problem Statement

Megaprojects valuing over US\$1B in the global infrastructure industry are increasingly in the spotlight due to the scrutiny and public reporting of cost overruns and schedule delays. The consequences include negative financial results and damages to the reputation of major public and private organizations with the potential to impact nations on a global scale. This problem continues to be researched and documented without improvement.

## 3. Supporting Data

The global infrastructure megaproject budgets are estimated at 4% of the global gross domestic product per year (Flyvbjerg, 2014). The state of the global megaproject industry is well documented with research data indicating cost overruns in nine out of ten projects (Flyvbjerg, 2014). This can result in serious damage on national economies as demonstrated in Brazil with the hosting of the 2014 FIFA World Cup and the 2016 Olympics (Flyvbjerg, 2013).

In the results stated by the Project Management Institute (PMI, 2014; PMI, 2015; PMI, 2016; and PMI, 2017); megaprojects continue to show industry losses of more than 10% on average and as indicated in Table 1: Project Loss Trend. That equates to \$110 million loss for every billion dollars spent on projects. The loss is equalised across currencies, but can compound when projects encounter multiple currencies and exchange rates due to global economic impacts over the duration of a megaproject.

**Table 1: Project Loss Trend**

Year	\$ M Loss / \$1 B	Percentage loss
2014	\$109	11
2015	\$109	11
2016	\$122	12
2017	\$97	10
4 Year Average	\$109.25	11

Earlier analyses of project data found a similar conclusion of megaprojects failing to meet time and budget goals 85% of the time with an average schedule overrun of 70% and 60% overrun of budget. (Shenhar and Dvir 2007). Overruns of time or budget have been documented as high as 90% for infrastructure megaprojects (Banaszak, et al. 2017). Project ownership, public or private, is not a factor influencing the results and may be disregarded (Banaszak, et al. 2017).

The global infrastructure industry contains some of the largest megaprojects in either the planning stage or execution of the project life cycle process. In 2014, spending worldwide on infrastructure was \$4.2 trillion. By 2025 capital project and infrastructure spending is estimated to total more than \$9 trillion (PricewaterhouseCoopers, 2014). Current expenditure on infrastructure reflects a \$1 trillion shortfall against annual global investment demand, and



by 2030 there will be a \$14 trillion shortfall. Developed and emerging markets are experiencing a surge in demand in the infrastructure sectors including transportation, freight, communications, water, clean energy and stable power. There is also a shortage in companies and experienced Project Managers that can deliver these project demands (Arcadis, 2016).

Demand for infrastructure megaprojects will continue to increase, therefore so will cost and schedule overruns. The industry will have a shortfall of funds to cover the projects and skilled Project Managers to execute the megaprojects successfully. In order for industry to mitigate losses, strengthening project management is a core requirement.

#### **4. Methodology**

This paper utilises qualitative research to support the author's own project and program management experience in the global infrastructure industry. Due to confidentiality agreements, specific personal references will not be used. Observations about the industry, as experienced, have been supported by external and published sources from various fields of expertise to emphasize the extent of study that has been done and the magnitude of the industry challenge. Data was gathered from past global industry projects to extrapolate future trends and determine where project management needs to evolve to improve the state of the industry. Additional fundamental knowledge areas that will improve project management expertise include change leadership, innovation, business management, negotiation and commercial management.

#### **5. Definitions**

A traditional project is defined as "a temporary endeavour undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite beginning and end." (PMBOK guide, 2004) or "a temporary organization and process set up to achieve a specified goal under the constraints of time, budget and other resources." (Shenhar and Dvir 2007).

Megaprojects are defined as "large-scale, complex ventures that typically cost US\$1 billion or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people" (Flyvbjerg, 2014).

The action of project management, defined as "the application of knowledge, skills, tools and techniques to project activities to meet project requirements." (PMBOK guide, 2004) or, "Project Management is the set of managerial activities needed to lead a project to a successful end." (Shenhar and Dvir 2007).

Project success has varying definitions depending on methodology and industry. Project success can be measured "by product and project quality, timeliness, budget compliance, and degree of customer satisfaction" (PMBOK guide, 2004). This definition fails to include the impact or outcome of the result which the Diamond approach, developed by Shenhar and Dvir (2007), looked to address. The Diamond approach utilises a diamond shaped framework that includes four dimensions: novelty, technology, complexity and pace (NTCP). As part of NTCP, the diamond approach includes five dimensions of project success (Shenhar and Dvir 2007):

- Project efficiency.
- Impact to the customer.
- Impact on the team.
- Business and direct success; and
- Preparation for the future.

The PricewaterhouseCoopers LLP (2014, p.5) definition of infrastructure includes:

- 1) Extraction – Oil and Gas, natural resources;
- 2) Utilities – Power Generation, Electricity, Gas, Water, Telecoms;
- 3) Manufacturing – Petroleum refining, Chemical, Heavy metals;
- 4) Transport – Rail, Roads, Airports, Ports; and
- 5) Social – Hospitals, Schools.

Change in business and industry has been observed by Kotter to be increasing there are three fundamental reasons for change (Kotter, 2017):

- 1) To increase revenues/ profits or decrease costs
- 2) To become more effective of more efficient
- 3) Or both.

Kotter updated the “Eight-Stage Process of creating Major Change” (Kotter, 1996); the updated process is considered the standard for change management and leadership (Kotter, 2017).

For this paper, the PMBOK definitions are utilised and augmented by Shenhar and Dvir, with Flyvbjerg providing further detail as it pertains to megaprojects and the expanse of the infrastructure industry beyond typical projects definition. The infrastructure focus is on megaprojects in sectors interfacing with transportation, as it is the author’s area of expertise. The supporting data and conclusions will apply to all infrastructure industries defined by PricewaterhouseCoopers LLP. The process of change management and leadership will stand as stated by Kotter (above).

## **6. Project Management as Intellectual Capital**

Project Management is an intellectual capital commodity with its foundation being in knowledge and experience.

The industry is relatively young; starting in the 1950’s with military applications then dispersing to other industries as the positive affect and value of project management on delivery was realised (Shenhar, & Dvir, 2004). The outputs of project management are tangible and measurable. They include plans, reports, and schedules, tracking and monitoring elements and ultimately, a final deliverable or project goal. The ability to manage projects successfully comes from the knowledge and experience gained by the Project Manager within their specific fields, over time. This experience includes the ability to utilise gained knowledge on future projects by developing an internal repertoire of best practices and risk mitigation to innovate, create continuous improvement, and ultimately project success. Megaproject management takes this experience to a higher level of expertise requiring further evolution from current practices in order to reduce project loss and ensure successful global infrastructure project delivery.

Traditional project management, in theory and practice, references the following methodologies that were developed as guidelines for execution and successful management of projects (PMBOK p. 2, 142, 156):

- PMI/PMBOK Method (PMBOK guide, 2004);
- Agile, Adaptive Life Cycles, Change Driven, Scrum, Kanban;
- Waterfall;
- Prince2;
- Critical Path Method (CPM);
- Critical Chain Method (CCM);
- Precedence diagramming method (PDM);
- Activity-on-node (AON);
- Six Sigma, Lean; and
- Program Evaluation and Review Technique (PERT) or three point estimating.

Other methodologies include:

- NTCP Model, or Diamond Approach (Orhof et al. 2013); and
- Strategically managed, aligned, regenerative, and transitional (SMART), (Hartman, 2000).

This list of methodologies is not exhaustive but is an indication of the vast approaches and variations of techniques that exist within the project management industry. Another theory that the above list indicates is that one methodology does not align with all project types (Shenhar and Dvir 2007), as methodologies are developed in response to a need in the industry.

Understanding infrastructure megaprojects as defined earlier, provides an indication of the substantial scope and requirements, and emphasises that Project Managers must rely on a multitude of methodologies, in addition to experience, innovation and personal intellectual capital to drive a project to a successful delivery.

## **7. Change Leadership Best Practices**

Like project management, change leadership is evolving as an industry. Change leadership's management and focus is on organisational change and transition while incorporating appropriate project management methodologies. Change leadership "programs were six times more likely to succeed if they were structured around readily understandable themes (Blackburn et al. 2011)" comparable to the structure of Kotter's enhanced 8-Step Process as Figure 1: Accelerate: 8-Step Process (Kotter, 2017) demonstrates:



**Figure 1:** Accelerate: 8-Step Process (Source: Kotter, 2017)

From the author’s experience of organisational transformation and megaproject management there are seen to be parallels and applications of the change leadership methodologies that can be applied to megaproject management. Both rely on knowledge, experience, and intellectual capital applications from the Project Manager or Change Leader. Both are struggling, with cost overruns, delays and define success it’s as it relates to the initiative goal or outcome. McKinsey (2011) has published that “Only 30 percent of change programs succeed. The leading causes of failure are employee resistance and management behaviours that do not support the desired changes” (Blackburn et al. 2011). IBM has analysed change leadership and suggested the following solutions for improvement change project success (IBM Global Services, 2008):

- 1) Strive for a full, realistic awareness and understanding of the upcoming challenges and complexities, then follow with actions to address them.
- 2) Use a systematic approach to change that is focused on outcomes and closely aligned with *formal project management methodology*.
- 3) Leverage resources appropriately to demonstrate top management sponsorship, assign dedicated Change Managers and empower employees to enact change.
- 4) Allocate the right amount for change management by understanding which types of investments can offer the best returns, in terms of greater project success.

IBM’s (2008) published results indicated that out of over 1500 interviewed, only 41 percent of projects were considered successful. Of these successful projects only 20 percent indicated achievement of an 80 percent success rate. The more solutions that were utilized in the change leadership the higher the success rates recorded.

In the data review and analysis completed for this paper, the initial focus was for a convergence of change leadership and project management. Through this process, the author determined that change leadership would be a valuable process methodology to include in the successful delivery of megaprojects although not the only leading element of project success.

## 8. Megaproject Overruns: Cause Analysis

The magnitude of cost overruns for megaproject in infrastructure, as previously stated, are on-going as owners continue to award projects to meet the growing global infrastructure needs but don't change the way megaproject management is conducted. The knowledge base is established and unchallenged but there needs to be a change in the way megaproject management is executed. The author reviewed data of cost and schedule overruns in various industries, public and private ownerships, located in various global locations, and delivered under different contractual systems. The data included the infrastructure megaprojects listed below (Allport et al. 2008, Cantarelli 2011, Flyvbjerg 2014, Siemiatycki 2015):

- London: The Jubilee Line Extension
- The London Underground Public Private Partnership (PPP)
- Docklands Light Railway
- Channel Tunnel
- New York Subway Upgrades
- Paris Light Rail (RATP)
- Boston's Big Dig
- Toronto Spadina Subway Extension
- Toronto Union Station Revitalisation
- Toronto PRESTO fair collection card
- Boston Big Dig
- Denver International Airport

Of the project results data reviewed, consistent themes and conclusions emerged for causes of megaproject overruns of budget and schedule. The results are summarised as follows:

- 1) Lack of project management and controls including:
  - a. Poor organization, inadequate communication, flawed performance management, poor commercial and contractual management, limited talent management (Changali et al. 2015);
  - b. Projects led by Managers without experience (Flyvbjerg, 2017);
  - c. Lack of leadership, constraints on qualified resources (Patmore, 2017);
  - d. Leadership changing throughout the long project cycles leaving leadership weak (Flyvbjerg, 2017);
  - e. Lack on integration (Allport et al. 2008);
  - f. Only managing to time and budget constraints (McManus, 2016);
  - g. Inappropriate delivery methods (McManus, 2016);
  - h. Poor procedures adopted by project owners (Banaszak, et al. 2017); and
  - i. Technical Challenges including (Siemiatycki, 2015):
    - i. Scope changes;
    - ii. Handover Problems;
    - iii. Poor project reporting and performance monitoring.
- 2) Poor upfront planning (Shenhar and Dvir 2007, Changali et al. 2015, Banaszak et.al. 2017, Siemiatycki, 2015), in the form of:
  - a. Optimism bias and strategic misrepresentation (Flyvbjerg, 2014, Siemiatycki, 2015);

- b. Overly optimistic budgets, bad assumptions, aggressive value engineering and owners not questioning the process (Patmore, 2017);
- c. Incomplete preapproval studies, inaccurate forecasting, inflation (Siemiatycki, 2015);
- d. Poor project planning and execution (McManus, 2016); and
- e. Not including operations, maintenance or end use stakeholders and interface partners (McManus, 2016).

3) Insufficient Risk Management:

- a. Late identification and resolution of errors or risks (Patmore, 2017);
- b. Risk transference and isolation management without collaboration (McManus, 2016);
- c. Project delays, unforeseen events and no management plan (Siemiatycki, 2015); and
- d. Long planning horizons and complex interfaces (Flyvbjerg, 2017).

Secondary cited causes of project failure include:

- 1) Definition of success only follows the triple constraint model or iron triangle of: on time, within budget, within performance goals (Shenhar and Dvir 2007).
- 2) The notion that one type of project management methodology fits all types of projects and following text book methodologies will achieve project success (Shenhar and Dvir 2007).

Through the research process of the summarized themes and conclusions, the results for cost and schedule overruns indicate many generalised causes, but nothing specific and consistent. This broad range definition also provides insight into the complexities of project management, in that there isn't one element that is predictable in unsuccessful projects. This may be due to the term "project management" being too broad to use as an exact cause for megaproject overruns (Cantarelli, 2011). The solutions will be complex and multi-faceted. Ahiaga-Dagbui (et al. 2015) concluded that "cost overrun research has largely stagnated in the refinement and advancement of the knowledge area. It has largely been superficial and replicative. A significant paradigm and methodological shift may be required to address this perennial and complex problem faced in construction project delivery."

## 9. Solutions for Infrastructure Megaproject management

In researching the IMPI for causes for cost and schedule overruns, various solutions were suggested and include:

- 1) Project Management and Controls
  - a. The focus on strong theory and good data is intended to help bring the field forward academically and professionally (Flyvbjerg, 2017);
  - b. Provide training of government Megaproject Managers, as exemplified by the Major Project Leadership Academy, Oxford England (Flyvbjerg, 2014);
  - c. Developments in strategic management research, broadens the notion of stakeholder management to better consider pressing issues of future generations and the natural environment (Flyvbjerg, 2017);

- d. Owners need to improve procedures and help drive innovation vital to promoting change, stop scope creep, rework and delays through slow decision making (Banaszak et al. 2017, Allport et al. 2008, Omega Centre, 2012);
- e. Manage more than just time and budget and include the functional goals in the project success criteria. Include an independent assessor on behalf of the owner to monitor the project status on all requirements (McManus, 2016, (Omega Centre, 2012);
- f. Apply the appropriate delivery method for each project instead of the same for all capital projects (McManus, 2016);
- g. Provide a new delivery model for megaprojects aimed at securing innovation and flexibility in projects (Flyvbjerg, 2017);
- h. Openly sharing the megaproject status and holding stakeholders of involved businesses and agencies accountable (Flyvbjerg, 2014);
- i. Creation of an independent governing entity to oversee the effective management of large-scale projects funded and delivered by governments (Flyvbjerg, 2014);
- j. Employing lean construction tools for collaborative decision making and global sourcing of materials for availability and efficient pricing relying connected inventories (Banaszak et.al. 2017).

## 2) Upfront Planning

- a. Consider the projects' legacy to include long term benefits, skills development, economic improvement, knowledge expansion and building of capability in the industry (McManus, 2016);
- b. Involve operations and maintenance experts from the beginning of the project as these decisions will affect the total cost of ownership (McManus, 2016, Allport et al. 2008);
- c. Invest to improve performance and innovation so Engineering Procurement Construction (EPC) firms have incentive to depart "from tried and true" (Banaszak et al. 2017);
- d. Implement procedures to curb "Optimum bias" and "strategic misrepresentation" (Flyvbjerg, 2014).

## 3) Risk Management

- a. Relational Contracting includes pooling of delivery risk and sharing of profits or balancing of risks (Banaszak et al. 2017, McManus, 2016);
- b. The owner needs to define rules that force accountability upon bidders. Owners should also provide some predictability for future available funding. (Allport et al. 2008);
- c. Creative use of insurance by offering incentives to work to avoid claims (Banaszak et al. 2017);
- d. More attention to lessons learned on positive projects (Flyvbjerg, 2014).

## 10. Perspective: Inside the Infrastructure Industry

From a project management perspective inside the infrastructure industry, megaproject management needs to evolve to include integration management, change leadership, and project conception planning. This definition of a megaproject expands to include service operation and delivery while managing stakeholders, phasing interfaces, and adapting to real time risk management. Due to the long life-cycle of megaprojects, Project Managers require an understanding of technological advancements and external impacts that allow for continuous improvements. To achieve all of this, Megaproject Managers in the infrastructure industry will need to rely on years of experience, knowledge and intellectual capital gathered from previous projects to be able to deliver megaprojects. Despite all of the recognised skills, and the decades of experience, there are not any guarantees that the projects will be considered a success.

*The industry requires a motivational push to improve megaproject delivery.* Awareness of the project status in the developed nations is a first step in accountability. Another step is valuing megaproject management as a unique skill set supported by knowledge, innovation, and experience aligned with engineering, architecture and planning. These skills are critical for industry success. The industry needs Project Managers that are trained, through education and project experience in the public sector as owners. These skills are equally critical in the private sector, as project implementers. Having exposure to theory and in-process projects is critical to understanding the complexities of megaproject management. An understanding of people, commercial, contractual and integration management from concept to warranty completion is crucial.

From personal project experience on the London Underground Jubilee Line Extension, the London Underground PPP, the Dubai Light Rail Metro project, and various rail transportation projects in Ontario, Canada, the above-mentioned findings align with projects within the authors' local environment as reported in newspapers and corresponding news sites. The upfront planning requires re-evaluation on the governance and supported business cases to ensure the projects are based on accurate estimates and technical evaluation. Infrastructure planning struggles to succeed when based on political agenda instead of expert analysis and ridership demand. This can result in ineffective projects proceeding and leaving voids in other areas of infrastructure. News publications continue to report on project overruns, councils voting against the experts and consultant's findings. Millions are spent on countless studies in an attempt to achieve the answers or platforms provided in election campaigns.

Canada is expanding the Alternate Financing and Procure (AFP) model to utilise risk transference and allow for private funding of public infrastructure. This is still in its infancy and has experienced success and failures. It is not a solution of one fits all and AFP continues to need refining to determine the correct megaproject use for successful implementation. It is a system that continues to struggle with the success of on budget on schedule delivery. This is an example of developed cities and nations appearing slow to learn from the lessons learned from others. For instance, the Jubilee Line Extension as private partnerships (PPP) project was fraught with challenges and on structure, governance, risk alignment and goal definition (Allport et al. 2008). AFP's and PPP continue to be executed and continue to struggle with the challenges experienced.

The infrastructure sector is finding limited private firms capable of bidding of delivery of the megaprojects resulting in AFP's including PPP to bridge the resource and investment gaps



(Garemo et al. 2015). Alternate delivery structures such as PPP's, or variations of Design, Build, Finance, Operate, Maintain (DBFOM) are better at motivating project delivery goals but still focus on change notice and risk aversion which are included in the pricing. AFP's and PPP's tend to be slow to react, unequalled in skill to workload, and are not structured for efficiency in project delivery (Siemiatycki, 2015). PPP's have their limits including no guarantee in higher productivity, or successful project deployment, and operational success. The efforts required to deliver complex PPP projects are extreme. (Garemo et al. 2015). For PPP's to be effective, public governance needs appropriate structure and financing guarantees beyond yearly budgets, and election cycles (Garemo et al. 2015).

Developing and expanding the knowledge and intellectual capital requirements of Megaproject Managers will be the starting solution point improve project success. Oxford University has started the knowledge improvement process by providing educational and practical field training for government Megaproject Managers through the Major Project Leadership Academy, (Flyvbjerg, 2014). The megaproject industry needs to expand to international under graduate schools and include private business management, as cost and schedule overruns apply to both public and private infrastructure (Siemiatycki, 2015). The experience quotient must include multiple and different methodologies, and diverse project experiences to make megaprojects successful (Gallup 2012). To generate a certification for Megaproject Managers, the following requires consideration in addition to education:

- Project management experience and proven track record of project delivery prior to certification;
- Demonstrate an understanding of the project life-cycle from concept to operation, involving the urban planning, social (live, work, play), economic impacts, for society;
- A level of business acumen with an understanding of project impact to the success or failure to the owner, delivery organization and end user;
- The ability to innovate and implement continuous improvement;
- Commercial and contractual management and reporting;
- Negotiation experience of project contractual items and claims;
- Change leadership and application including a combination of the change solutions stated earlier through the life cycle of a program;
- Understanding of technological applications to project success and the correct implementation of these systems (example: 7D Building Information Modelling (BIM));
- The ability to streamline processes and avoid project waste with repetitive functions;
- Structuring projects with qualified people in the correct positions to deliver the project effectively; and
- Applied and proven stakeholder management.

## **11. Conclusion**

Project management is a relatively young industry, borne out of necessity and it continues to evolve. Where engineering and architecture have been subdivided into specific classifications including civil, structural, industrial, operational, institutional, commercial, or transportation, project management is in the midst of a divergence of skill sets depending on project type and industry application.

*“Breaking from the insanity of repeating unreliable project-delivery practices is crucial if the sector is to raise productivity and deliver projects on time and to budget. Yet right now it is clear that we do not have the incentives or structures in place to drive this change”* (Banaszak et al. 2017).

This paper concentrated on the Infrastructure industry with a focus on megaprojects. The findings indicate that, for the infrastructure industry, *one of the crucial areas of improvement to reduce continual losses is project management*. Specifically, *the experience and training of Project Managers in public and private infrastructure*. Project management alignment with change leadership is not enough to solve the documented project losses, and would not be the pivotal element to improve the overall success of megaproject delivery. With the other areas of expertise required for megaproject management success, change leadership will have a place in megaproject delivery in the operations and end user implementation. To this end, change leadership methodology shall be considered in terms of best practice to be included in megaproject delivery and not as a key influencing feature to a megaproject’s success.

Understanding the change leadership best practice methodologies for implementation on megaprojects is one area of a larger skill set required. Project management of megaprojects needs to evolve to go beyond the standard scope, cost, quality and customer management to include:

- Extensive applicable experience;
- Innovation and complex problem solving;
- People leadership;
- Enterprise risk management; and
- Expanded knowledge and intellectual capital of project delivery gained through education and practical experience.

*Project Managers of megaprojects need the ability to employ numerous project management methodologies and need the experience to recognise and implement the appropriate methodology for each stage in the expanded project lifecycle*. They also need to take into account the emotional needs of stakeholders and team members and not rely solely on the technical project management methodologies and processes. (Gallup 2012).

*“The soft stuff is hard”* (IBM Global Services, 2008)

To move forward with an integrated global project management process more work is required to evaluate the need for a recognized governance or certification and alignment of the standards across countries. How will this be planned, controlled, evaluated and monitored? Who will be the governing body to plan and control it? Will Oxford University’s program expand and align with leading educational institutions globally to spread the intellectual capital and continuous improvement for the industry? Is there enough motivation for public and private industry to embrace this change?

For infrastructure megaprojects, *the definition of a project needs to expand to align with the procurement models and lifecycle*. This will include the conceptual planning and business cases, as well as the responsibility for handover commissioning, and end user satisfaction and intended use. This aligns with expanding the definition of a successful project to include operations and the goal achievement of the end user.

To do this, owners need to share information, experience and lessons learned from successful megaprojects (Siemiatycki 2015). London's Crossrail megaproject as an example to provide best practices and improve project implementation. Other examples of successful projects include London's Docklands light rail, the Guggenheim Museum Bilbao and Paris-Lyon High Speed Rail projects (Flyvbjerg, 2014).

Expanding the conclusion, as stated by Youker, (2017) *"As the Project Management profession moves into working on many different types of projects we are going to have to move to a new level in the project management body of knowledge and develop extensions that define the differences in requirements and approach for different kinds of projects such as construction, new product development, and information systems."*

To mitigate the demonstrated cost and schedule overrun problem, a united global project management industry requires evaluation of the initiated solution and an expansion plan to address megaproject management in locations as led by the UK. *Planned and controlled expansion will be key* to reduce the loss factor, savings that can be applied to the anticipated infrastructure funding shortfall and allow implementation of infrastructure projects to meet the growing needs of developed and developing nations.

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## **Business Internationalization Inducing Factors - the importance of Knowledge and Relational Networks**

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**Abstract:** Companies are currently required to continually innovate and restructure their operations in order to respond to the requirements of national and international competition. Companies have to find new ways to develop competitive advantages and acquire new skills, resources and capabilities. Based on the opinions of different Portuguese entrepreneurs, this study seeks to determine the importance assigned to several factors considered as inducers of the internationalization process by companies that internationalized early in their life cycle. We developed an empirical study with 320 Portuguese international firms and used the statistical software AMOS for a confirmatory factor analysis. We propose a Theoretical Model in accordance to Human Capital Theory, International New Ventures Theory, and the Population Ecology Approach. We find evidence of the importance of Networks, Specific Skills of its workers, International Experience of its workers and Entrepreneurial Propensity and to Take Risks from workers and top management team.

**Keywords:** Internationalization, Networks, Knowledge, INV, SMEs

### **1 Introduction**

Companies' internationalization and its research is of increasing importance today. Internationalization has become, more than a matter of choice, a matter of survival in a changing world. According to Dana and Wright (2004), international business has for a long time been dominated by large firms with smaller firms tending to remain local or at most regional. The traditional theories of internationalization thus focused mainly on multinational and not on entrepreneurs with small firms. However, the development of the business world has been breaking all frontiers, with the increasing internationalization of firms regardless of their size, activity sector or geographical origin (Teixeira, 2003). There is also a growing need to understand internationalization in the context of entrepreneurship as much as it existed in the context of large multinationals. Knowledge of who, when and why firms become international have become an important research topic in the field of International Entrepreneurship.

Among the various forms of internationalization that have registered a higher growth stands out, according to Teixeira (2003), franchising, strategic alliances and other forms of cooperation, reflecting a change in companies way of competition that has been shifting from

direct competition to the collaboration, from the individual strategy to the network strategy. Integration into a network enables access to knowledge and a broad set of physical, technical, financial and reputational resources that favour adaptation to the various economic, political, legal and cultural dimensions of international business environments, facilitating the internationalization by reducing the psychic distance perceived by companies (Santos, Ferreira, & Reis, 2012). Nowadays, firms have to find new ways to develop competitive advantages what implies the acquirer of new skills, resources and capabilities (De Clercq, Sapienza, Yavuz, & Zhou, 2012). In many cases companies can gain access to these resources, including specific knowledge of the market (market-specific knowledge), through alternative forms of management such as industrial networks.

Recent empirical evidence (Bruneel, Yli-Renko, & Clarysse, 2010) provides important insights on the internationalization of new business, showing that younger firms are able to compensate for their limited experiential learning at company level, through learning based on previous experience of the management team and through inter-organizational relationships, also suggesting that the age and the size of the company should be analysed, but not as a restriction to the beginning of internationalization. On the other hand, Brito and Lorga (1999) and Simões (1997) consider that governmental and associative incentives have for most companies a positive effect in the beginning of internationalization.

A large number of scientific papers on the determinants of internationalization and, more specifically, on its relation to the success/failure of internationalization, are found in the literature on business internationalization. In this perspective the company is treated as a black box, as a set of factors that derive a certain result. In this work, on the other hand, an innovative study is presented on the perspective of the entrepreneur and the manager of the company, as well as his opinions on the internationalization problem, more specifically on the factors that contributed the most to make possible his company entry into markets beyond the domestic market, as well as its entrepreneurial initiatives of early internationalization. It is about the entrepreneur, the company characteristics, the market and the workers that this analysis is mainly focused.

Based on the literature review summarized below, it is important to know what factors have led to the internationalization of Portuguese companies, that is, to determine which variables act as inducers of the Portuguese companies' internationalization strategy. For example, verify if factors such as relational networks, the entrepreneur personal characteristics and skills, the international experience of its workers, or other variables such as company age and its size, incentives for internationalization, the physical and psychological proximity/distance can act as agents that enhance the company internationalization. Moreover, the objective is to find and confirm structural patterns among variables, that is, to know what latent factors are responsible for the behaviour of the manifest variables specified according to our theoretical model. The statistical techniques used will allow us to define the latent factors that represent the variables that enhance entrepreneurial internationalization, as well as to evaluate the quality of adjustment of this theoretical measurement model.

Based on the objectives outlined, the following research questions were summarized:

- Which variables are responsible for inducing internationalization of Portuguese companies?
- Which theoretical model best fits the observed correlation structure between the manifest variables (internationalization inducing factors)?

## 2. Literature review

Many of the theories that focus on business strategy and internationalization give great prominence to learning and knowledge not only as fundamental companies' characteristics but especially of its entrepreneurs and their collaborators. According to the Human Capital Theory, the availability of qualified human resources is fundamental for the performance of companies and has a positive effect on their internationalization. Also in the Population Ecology approach, entrepreneurs are portrayed as individuals capable of identifying opportunities and finding the resources to explore them. Embracing these perspectives, the International New Ventures Theory (INV) draw attention to the importance that these factors have to companies' early internationalization, against the so-called *Behavioral view of internationalization*. This theory addresses learning as central for the companies' internationalization, but above all it emphasizes the importance of Relational Networks as a way for companies to acquire knowledge about the external market, filling the organizational inexperience. Additionally it also emphasizes experience and individual knowledge as a way to recognize the importance of alliances and relational networks in the beginning of internationalization. It is clear, therefore, that the elements common to the most recent approaches to internationalization are the importance of Knowledge and Relational Networks, which we have chosen as the basic theoretical model for this work.

### 2.1 Relational Network Theory

According to the network theory, depending on the position occupied by a company in the network, this will define its range of opportunities and constraints and thus develop its strategies. Thus internationalization can be seen as the establishment and development of positions in relation to other partners belonging to foreign networks (Johanson & Mattsson 1988). Johanson and Vahlne (2009) report that these relationships have a strong impact on market selection, as well as entry mode because of the ease with which they identify and exploit opportunities. According to Rebocho (2010), cooperation networks undoubtedly favor the competitiveness of companies and have become an important instrument to support the internationalization of SME's and states that potentially conflicting relationships and divergent interests are seen by the parties as collaborative partnerships around a common goal. Networks provide companies with a set of resources and information about the market and customers, increasing the chances of survival and success. The contacts obtained in the network allow companies to have access to resources that they do not have and could not access otherwise. Santos et al. (2012) argue that networks are even more important for SME's lacking the human, technical and financial resources needed to internationalize their operations on their own. For Rebocho (2010) and Korsakienė and Tvaronavičienė (2012), SME's are characterized by their flexibility and adaptability and innovation, but establishing relationships in international markets requires more skills, management knowledge and long-term availability of human resources to develop an effective and consistent internationalization strategy. In particular, the smallest firms and those who are taking the first steps in internationalization need the resources and expertise to identify business opportunities abroad, potential partners, foreign business practices, etc.

### 2.2 Human Capital Theory

According to Javalgi and Todd (2011), human capital is central to economic growth and entrepreneurial opportunities. With regard to internationalization, human capital consists of knowledge, skills, talent and experiences used to provide value to the company. Most human



capital studies in the business strategy literature focus on human capital as a company resource but they can't find a direct causal link between human capital and companies' internationalization. Resource Based View- RBV states that the company specific features result in a sustainable competitive advantage, creating resources that are valuable, rare, inimitable and non - substitutable (Javalgi & Todd, 2011). The human capital resource includes the "training, experience, critical capacity, intelligence, relationships and individual perception of the managers and workers of a company" (Javalgi & Todd, 2011, p1005). For these authors, human capital theory suggests that companies with a higher degree of human capital developed through the availability of workers with higher education and personal experience achieve better performance. Summarizing, according to these authors, human resources are fundamental to companies and their study provide positive empirical support for the effect of human capital on the internationalization of SMEs.

### **2.3 Population Ecology Approach**

The motivation that drives entrepreneurs towards internationalization has also been assigned, as we have seen, to external forces. Proponents of the Population Ecology Approach argue that external forces, such as competition, drive the entrepreneur to look for other opportunities in foreign markets in order to survive. To gain a better understanding of the entrepreneur's decision to internationalize, we must understand his mind and entrepreneurial characteristics (Ibrahim, 2004). In fact, many schools of thought have offered studies on entrepreneurial characteristics. Most of them portray him as an individual driven by a number of environmental factors and also by personality traits. Research on entrepreneurship has identified a number of traits associated with entrepreneurs, such as the need for achievement, the propensity to take risks, the locus of control or self-confidence, and tolerance to contexts of uncertainty (Ibrahim, 2004). Family history has also been presented in the business literature to explain the motivations of the individual to start a business (Ibrahim, 2004). In the literature on entrepreneurship, entrepreneurs are portrayed as those individuals who are able to identify an opportunity and find the resources to explore it (Ibrahim, 2004; Ferhaber & Li, 2013). Thus, the entrepreneur's decision to venture abroad to analyse the market, detect new opportunities and organize the resources to exploit them should be valued as part of the entrepreneurial process (Oviatt & McDougall, 2005; Ibrahim, 2004).

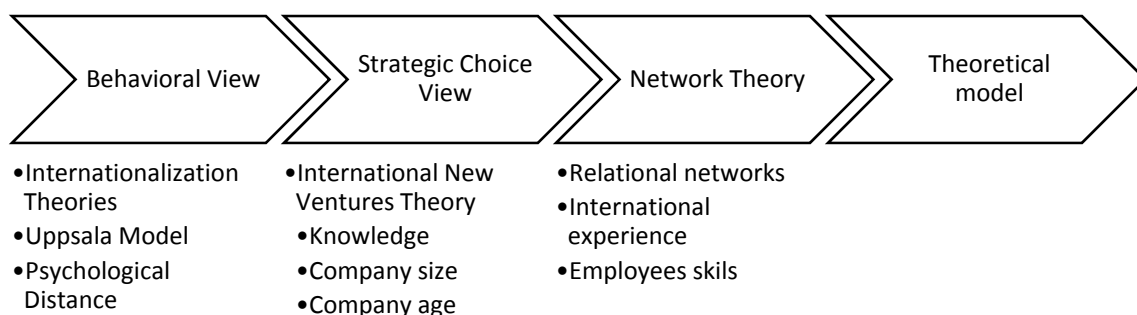
### **2.4 Theory of International New Ventures (INV)**

These perspectives and theories presented before are aggregate in the theory of International New Ventures (INV). Concerning the importance of learning and knowledge for firms with no great international experience, theories prior to the mid-1990's offered limited ability to explain how and for what reasons some companies were beginning to operate successfully across national boundaries "too early" in its life cycle, such as the so-called Born Global (Oviatt & McDougall, 2005; Knight & Cavusgil, 2004). McDougall, Shane, & Oviatt (1994) revolutionized thinking about the beginning of the internationalization process, challenging the broadly accepted stages perspective (stage theory) (Johanson & Vahlne, 1977, 1990) and conceiving internationalization process as slow and incremental. Research on INV challenged the idea that new or small businesses could not internationalize early or they would do so only by proceeding incrementally (McDougall et al, 1994; McDougall. & Oviatt, 2000). Since then, a growing flow of research into INV has sought to understand the causes, processes, and outcomes of the decision to enter foreign markets early. A common thread concerns the role

of learning and knowledge (Cumming, Sapienza, Siegel, & Wright, 2009; McDougall & Oviatt, 2000). Organizational knowledge was a central explanation for internationalization in original stage-based models (Johanson & Vahlne, 1977, 1990), but Oviatt and McDougall (2005) recognized that individual factors such as experiential knowledge of the external market (or international experience), can also influence the pace and the beginning of internationalization. Thus, knowledge plays a key role both for the stages perspective and for the INV approach, but it does so in a significantly different way. The stages-based perspective uses the behavioural theory of the firm to argue that the lack of organizational knowledge about markets outside the company prevents international entry and expansion (Johanson & Vahlne, 1990). To this perspective, De Clercq and Sapienza Crijns (2005, p. 409) call the Behavioural view of internationalization. On the other hand, the INV perspective emphasizes the role of individual knowledge (Oviatt & McDougall, 2005) to argue that international entrepreneurs do not need organizational experiences, routines or early entry skills to enter their first external market. On the contrary, the past experiences of founders and other key managers can replace such shortcomings. The individual organizational knowledge about the markets outside the company can thus help the company to "jump" the incremental processes suggested by the stages approach (Oviatt & McDougall, 2005). To this approach, De Clercq et al. (2012, p. 410) call the Strategic choice view. The growing popularity of this new perspective on INV has created a body of literature on the problem of the beginning of internationalization.

## 2.5 Theoretical model

Based on the literature review of the most significant internationalization theories we established the theoretical model on which this empirical study will be based and which can then be represented by the following scheme:



**Figure 1** - Theoretical model (elaborated by the authors)

## 3. Methodology and Results

Based on our literature review we intend to evaluate entrepreneurs' opinions, in order to determine which variables they consider as enhancers of their firms internationalization. It is important to know how the companies were able to achieve internationalization or, more specifically, to know the factors that allowed or facilitated the process of internationalization of their company's operations. For this purpose, a questionnaire was elaborated: "Factors that contribute to the effectiveness of corporate internationalization ", and sent by e-mail to the responsible for the internationalization of exporting firms and also firms that intend to export, of the AICEP-Portugal Global database. To validate the form and content of the questionnaire, the instrument was pre-tested in a set of four companies involved in international business to

detect possible failures. To confirm the relevance of the variables drawn from the literature review, we used interviews with specialized researchers.

There were 320 responses, of which 186 are from companies operating in the services sector, 129 in the industrial sector and only 5 agricultural companies. It can also be noted that 86% of responding companies are SMEs, according to the Eurostat definition - "Structural Business Statistics" (have fewer than 250 workers). Finally almost half of respondents companies can be considered early internationals or INV, as internationalized at most at six years of age (De Clercq et al., 2012).

Given the nature of the database to be explored and the objectives of the research, we began by analysing the data through an Exploratory Factor Analysis to measure the variance and covariance among the variables, following the recommendations of Malhotra (2007). Afterwards for the inferential analysis was performed a Factorial Confirmatory Analysis. The objective was to confirm the structural patterns, that is, to know if the latent factors found in the Exploratory Factor Analysis are responsible for the behaviour of the manifest variables specified according to our theoretical model. This technique allowed to fit a (theoretical) measurement model to the correlational structure observed among the manifested variables.

### **3.1 Exploratory Factor Analysis (EFA)**

It's intended to estimate the common factors and structural relationships that link factors (latent variables, to be determined) to the variables manifest in the study (Factors considered as possible "enhancers" of Business Internationalization).

#### **Statistical Analysis (EFA)**

The relational structure of the enhancing factors of companies' internationalization was assessed by Exploratory Factor Analysis (EFA), using the matrix of variance and covariance not the original variables but their orders (rank) as in Maroco (2011). The factors extraction was done by the main components method followed by a Varimax rotation. Common factors retained were those with an eigenvalue higher than 1, in accordance with *Scree Plot* and the percentage of retained variance, according to Maroco (2011).

Considering these results and the weak "factorial weights" of the variables "Territorial Proximity" (0.431) and "Incentives / support to internationalization" (0.371), it was decided to eliminate these variables. Thus, with the eight final variables, a new Exploratory Factor Analysis was elaborated.

In order to evaluate the validity of the AFE, we used Bartlett's sphericity test, which rejects the null hypothesis with an associated significance level of 0.000. Other methods were used as the KMO adequacy coefficient, with the classification criteria defined in Malhotra (2007). The KMO coefficient for the sample presents a value of 0.619 that is considered above the desired ( $>0.500$ ), and can be considered as "reasonable" (Malhotra, 2007). However, high values (between 0.5 and 1.0) indicate that factorial analysis is adequate (Malhotra, 2007), with a explained variance percentage of about 66%

MSA- (Measure of Sampling adequacy) was also analyzed to for each of the variables trough anti-picture matrices for the variance-covariance and for correlations. MSA values are greater than 0.5 for all variables suggesting that all can be used. All analyses were performed with SPSS software (v. 20, SPSS, Chicago, IL).

## Results

According to the results, the correlation structure of the enhancing factors of business internationalization is explained for three latent factors. The following table summarizes the factor weights of each variable in each of the three factors, the commonality of each variable (percentage of variance of each variable explained by extracted common factors) and the % of variance explained by each factor.

**Table 1** Weights of each variable factor in the three factors retained, and commonality and variance explained

	Rotated Component Matrix			Commonalities
	Rescaled			
	Component			
	1	2	3	
<b>Age</b>	-.002	.117	<b>.863</b>	0.759
<b>Dimension</b>	.089	-.026	<b>.830</b>	0.697
<b>Specific Skills of its workers</b>	-.073	<b>.802</b>	.011	0.649
<b>Workers International Experience</b>	.139	<b>.664</b>	.135	0.478
<b>Entrepreneurial Propensity and To Take Risks</b>	.120	<b>.731</b>	-.034	0.550
<b>Linguistic Proximity</b>	<b>.855</b>	-.050	.110	0.745
<b>Cultural Proximity</b>	<b>.886</b>	.045	.114	0.800
<b>Networks</b>	<b>.665</b>	.359	-.160	0.597
<i>Variance Explained</i>	28.82%	19.03%	18.10%	
<i>Variance Explained Accumulated</i>	28.82%	47.85%	<b>65.95%</b>	

Elaborated by the authors (Source: Output SPSS)

The first factor presents high factor weights of Linguistic proximity, Cultural proximity and Networks and explains about 29% of the total variance. The second factor, with high factor weights of the Specific Skills of its workers, Workers International Experience and Entrepreneurial Propensity to Take Risks, explains 19% of the total variance. In the third factor stands out the Companies' Age and Dimension, explaining 18.1% of the total variance. In the three global factors explain 65.95% of the total variance. Thus, the first factor we designate as "Distance"; the second by "Knowledge"; and the third by "Company characteristics". Additionally, all commonalities are high, indicating that the retained factors are appropriate to describe the latent correlation between the structure of the internationalization enhancing factors.

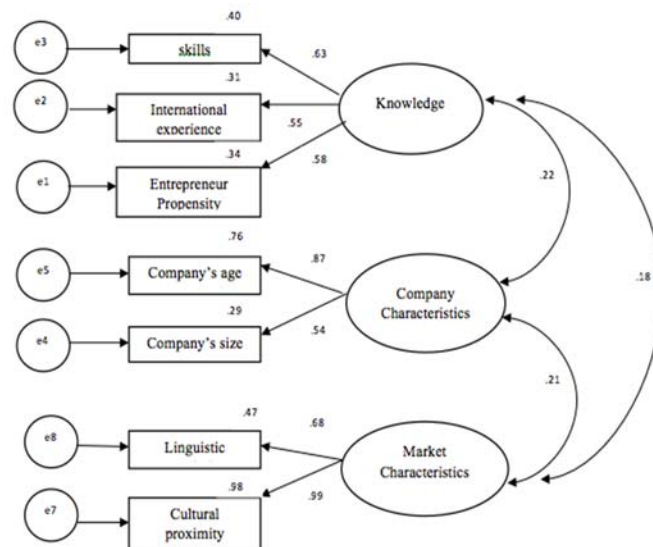
### 3.2 Confirmatory Factor Analysis (CFA)

The factor validity of the three dimensions considered in the EFA has now been evaluated through a confirmatory factor analysis with software Amos (v. 20, SPSS Inc., Chicago, IL) as described in Maroco (2014). The composite reliability and extracted average variance for each factor were evaluated as described by Fornell and Larcker (1981) and also in Maroco (2014). The existence of outliers was assessed by the square Mahalanobis distance ( $MD^2$ ) and normality of the variables was evaluated by the asymmetry coefficient (SK) and kurtosis (ku) uni- and multivariate analysis. No variable was Sk values and Ku indicators of violations of the distribution Normal ( $| Sk | < 3$  and  $| Ku | < 10$ , see Maroco, 2014). Some observations showed  $DM^2$  values suggesting that these observations were outliers at the confirmatory factor analysis was done without these observations. The overall quality adjustment factor model was made according to the ratios and the respective reference values described in Table 4.1 from Maroco (2014) as follows:  $X^2/df$ , CFI, GFI, RMSEA, P [ $rmsea \leq .05$ ] and MECVI. The quality of the local adjustment was assessed by factor weights and the individual reliability of the items. The model adjustment was made from the change rates (greater than 11;  $p < .001$ ) produced by Amos and based on theoretical considerations.

#### Results

The tri-factorial model of the Inducing Factors of Business Internationalization adjusted to a sample of 320 companies revealed a poor quality of adjustment ( $X^2/df = 3.173$ , CFI = 0.924, GFI = 0.963, RMSEA = 0.083, P [ $rmsea \leq .05$ ] = 0.015 and MECVI = 0.294). After eliminating six outliers observations, and removing the contact network item in the host country, whose modification index suggested a strong correlation of the error with a different factor than the one initially suggested (Knowledge), it was possible to obtain a good adjustment ( $X^2/df = 1.674$ , CFI = 0.981, GFI = 0.984, RMSEA = 0.047, P [ $rmsea \leq .05$ ] = 0.513 e MECVI = 0.172) in support of the Factorial validity of the presented model. The composite reliability of the factors proved to be adequate, with 0.72 for Knowledge, 0.77 for Company Characteristics and 0.89 for Market Characteristics. The Average Extracted Variance (AEV), an indicator of the convergent validity of the factors, was also adequate, being 0.5 for the Knowledge, 0.64 for the Characteristics and 0.81 for the Market Characteristics.

Figure 2 presents the values of the standardized factor weights and the individual reliability of each of the items in the simplified model. The discriminant validity of the factors was evaluated by comparing the AEVs with the squares of the correlation between factors. The values of  $AEV_c = 0.5$  and  $AEV_{ce} = 0.64$  are higher to  $r^2_{c, ce} = 0.05$ , so we can state that the two factors (Knowledge and Company Characteristics) have discriminant validity. In a similar way, it is possible to demonstrate the discriminant validity of the factors Company Characteristics and Market Characteristics, and Market Knowledge and Characteristics, whose squared correlations (respectively,  $r^2_{ce, cm} = 0.04$  e  $r^2_{c, cm} = 0.03$ ) are considerably lower than the AEV values of each of the factors (0.64 e 0.81 respectively).



**Figure 2:** Tri-Factorial Model of the Factors Inducing Business Internationalization

Own elaboration (Source: Output AMOS) ( $\chi^2/DF = 1.674$ ,  $CFI = 0.981$ ,  $GFI = 0.984$ ,  $RMSEA = 0.047$ ,  $P [RMSEA \leq .05] = 0.513$  E  $MECVI = 0.172$ )

Removing the variable Contact Network in the Host Country may, in principle, seem to suggest that this is a variable of less importance for entrepreneurs and therefore this conclusion contradicts the results obtained for the sample (descriptive analysis). However, the variable was removed from the model due to the fact that it presents a correlation (although weak) also with another of the latent factors, the "Knowledge", and also presents a factor weight relatively low (0.48). However, this result can be interpreted in a completely opposite way to that initially suggested, because, as observed in the sample, that is one of the variables with higher modal value and lower variance, confirming that the vast majority of business assigns high importance to this variable.

This result may well mean that both the entrepreneurs who drive more attention to the factor "Knowledge" as those who care about the "physical and psychological distances" attach great importance to the Network variable.

#### 4 Conclusions

From the results of CFA we were able to confirm the structural patterns found, that is, ensure that the three latent factors defined in the EFA are those that represent for Portuguese entrepreneurs the Enhancing Factors of Business Internationalization. And also evaluate the quality adjustment of this theoretical measurement model as Very Good.

Thus, the theoretical measurement model, adjusted for the observed correlation structure between the variables defining the inducing factors of business internationalization can be shown from the following factorial structure: Variables relating to knowledge (Skills; International Experience and Entrepreneurial Propensity); Company Characteristics (size and age) and Market Characteristics (Linguistic Proximity and Cultural Proximity).

Thus it is confirmed that the structure model is consistent with the International New Ventures Theory and the Network Theory. Furthermore, the common elements to the latest

approaches to internationalization, such as the importance of Knowledge and Relational Networks, approaches that we choose as the basis theoretical model for this work, appear for Portuguese companies as the most important inducing factors of internationalization.

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# On the Role of the Organizational Predictive Mind in Change Processes

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**Abstract:** We build on recent approaches in cognitive science and cognitive neuroscience which view the brain as a “prediction machine” stating that predictions of future states is based on past experiences. We show how this approach can be applied to the context of organizations. We develop the notion of the “organizational predictive mind” (OPM). This term allows us to combine scattered ideas from organizational theory and organizational learning under one holistic perspective. We propose two kinds of OPM: The “radical OPM” sheds light on how organizations influence the cognitive and behavioral mechanisms of their actors, and the “metaphorical OPM” explains how organizations as a whole behave in complex environments. Central to the notion of the OPM is the claim that organizations behave in cycles of self-fulfilling hypotheses, which hinders their capacity to change and innovate. We will explore how the concept of organizational unlearning can help to overcome these implications.

**Keywords:** organizational predictive mind, organizational cognition, organizational change, innovation, predictive coding, unlearning

## 1 Introduction: Cognitive foundations of organizations

How do organizations influence cognitive processes of their actors? To what respect can we say that organizations “think”? Grounded in pioneering works of Simon (1955) and March and Simon (1958), research on “managerial and organizational cognition” (MOC) explores the cognitive foundations underlying organizational behavior and activities. While the field is broad and has diverse foci, Porac (2015) argues that one early premise has been the idea that how managers think is not isomorphic with the environment in which an organization is embedded. Rather, how managers perceive and think depends, at least in part, on the internal structures of the organization; the organization and its actors have some reciprocal

relationship, and it has even been argued that organizations themselves can be seen as cognitive structures (Porac, 2015).

Studies in MOC circle around the idea that there is no optimal and purely rational decision making but the relationship between organizations and actors brings about various factors that influence thinking, reasoning and acting. Porac (2015) and Huff and Eden (2009) point out that a common theme is to see how classical management theories are compatible with findings from psychology and neuroscience. MOC acknowledges various research topics in the context of management, such as the role of uncertainty in decision making, emotions, the impact of values on organizational sense-making, etc. (e.g. Foss & Lindenberg, 2013; Kahneman & Klein, 2009). For a general overview of topics and themes, see Huff et al. (2016).

In this article, we will review and integrate the “predictive mind framework” into the research of MOC. Suggesting that the brain is a prediction machine drawing on Bayesian Inference, the framework has been recently introduced into the scientific discourse in cognitive science and cognitive neuroscience. Our motivation for this attempt is the following: the predictive coding framework is a rather broad theory that allows researchers to combine findings and approaches from several disciplines under one unifying model (e.g. psychology, philosophy, aesthetics, linguistics, innovation research, etc.) (Clark, 2016; Hohwy, 2013; Ransom, Fazelpour, & Mole, 2016). By borrowing this theory from the cognitive sciences and cognitive neuroscience (Oswick, Fleming, & Hanlon, 2011), we seek to provide a fresh and holistic perspective on debated topics in the fields of organizational theory, organizational learning, and knowledge management.

We will propose two variants of an “organizational predictive mind”. Both will highlight that organizations behave in cycles of self-fulfilling hypotheses and over time, they build up inertia or “organizational lock-ins” (Sydow, Schreyögg, & Koch, 2009). This, in turn, will explain why organizations have difficulties in implementing profound change processes or come up with radical innovations.

This paper is structured as follows. In the following section, we will provide a brief overview of the predictive mind theory in the cognitive sciences and cognitive neurosciences. Subsequently, we will develop two variants of an “organizational predictive mind” (OPM), namely the “metaphorical OPM” and the “radical OPM”. Finally, we will discuss implications of our concept. In particular, we will explore how organizational unlearning can help organizations to overcome the implications of the OPM, to initiate profound change and innovation.

## **2 Predictive mind in cognitive science and cognitive neuroscience**

For the purpose of this paper, we will provide a brief review and highlight the most salient features of the “predictive mind theory”, also referred to as “predictive processing” or “predictive coding” framework. A comprehensive review can be found in Clark (2013) and Hohwy (2013).

The predictive mind framework (PMF) departs from the classical idea that the brain is a passive organ that waits to be activated by external stimuli (Engel, Maye, Kurthen, & König, 2013). Rather, the brain is seen as an active “machine” that is in the process of “ongoing, input prediction” (Clark, 2013, p. 187). To predict and make sense of experiences, the brain draws on what it has experienced in the past. In that regard, PMF states that our central nervous system is a “Bayesian inference machine” and what we see, feel and hear is driven by *top-down* processes, which are dependent on our past experiences. Central to PMF are two neural pathways that have been found in core structures of the brain (Matthews and Cetnarski, 2015). They are organized into cortical hierarchies, where each hierarchical level is responsible for different processing.

One pathway is the “backward connection”. It runs top-down from higher to lower cortical levels. The idea is that the brain has priors and hypotheses at higher cortical levels which are projected onto lower cortical levels to predict and organize incoming sensory signals (Clark, 2016; Hohwy, 2016). The higher the level, the more do the models depend on larger temporal and spatial scales (Clark, 2013). Another pathway is the “feedforward-connection”. It runs bottom-up connecting incoming sensory signals and lower cortical areas with higher cortical areas. This pathway carries prediction errors, that is, all information that did *not* fit into the predictions of higher cortical areas.

Put simply, the working mechanism of these two pathways is as follows: Based on probabilities of what might be happening in the environment, a hypothesis is selected and propagated from higher to lower levels so that it is matched with the actual incoming signals. The prediction errors, that is, anything that could not be predicted within the hypothesis, travels back to higher cortical areas. Prediction errors are either “explained away” while going through different hierarchies, or they change hypotheses or models at higher cortical levels (“learning/adaptation”). The latter aspect seems crucial. However, the brain rather tries to hold on to the generative models it has already constructed (Clark, 2016; Friston, Thornton, & Clark, 2012), and it has two strategies to do so. On the one hand, it can *ignore* evidence that is contrary to its expectations and predictions. On the other hand, it can take actions that *bring about* its guesses. It is not only that our cognitive operations predict what is happening but also our behavior *enacts* these predictions. From that point of view, the predictive mind theory provides a unifying framework to look at cognition and action and how they interrelate. The brain aims at keeping the model constant and at “selectively sampling the world and thereby changing the input” (Hohwy, 2012, p. 4). In a way, the brain can design *self-fulfilling prophecies* such that we select actions based on our generative models, which in turn, work in favor of and confirm these generative models (Clark, 2016). It follows that we make sense of the world “given of what we know” (Hohwy, 2013, p. 149).

While PMF is perceived as a promising framework that receives confirmation by various fields, such as psychology, neuroscience, philosophy, linguistics, aesthetics, and others (e.g. Dikker, Silbert, Hasson, & Zevin, 2014; Kesner, 2014; Ransom et al., 2016), we argued that it also has severe (negative) implications for innovation and knowledge creation since individuals are bound to their existing knowledge and perception structures (Grisold & Peschl, 2017). In the

following, we will make the attempt to explore the implications of the predictive mind framework in the context of organizations.

### **3 Organizational Predictive Mind**

Applying the predictive coding framework to the organizational context has interesting implications for how organizations behave and develop. In this section we will develop the concept of the *organizational predictive mind* (OPM). To do so, we focus on three aspects that are essential for the predictive coding framework; (1) cognition, (2) action, and (3) the prediction error. These aspects will allow us for developing two variants of an organizational predictive mind, namely the “metaphorical OPM” and the “radical OPM”. Both will be discussed in the following.

#### **3.1 The “metaphorical OPM”**

Following Cornelissen et al. (2008) and Tsang (E. W. Tsang, 2017) who argue that metaphors can be useful for management and organization theory, because they shift the attention of researchers to phenomena that are neglected otherwise, we apply the mechanisms of PMF on organizations as a whole. Thereby, we integrate existing research topics under one approach and furthermore, we get a fresh perspective on the challenges (and possibilities) involved in change and innovation processes.

##### **3.1.1 Top-Down hierarchies in organizations**

We showed that one neural pathway in the PMF is the top-down pathway which projects already existing models and hypotheses to sensory signals. Similar to the top-down projections in the brain, which are propagated from higher to lower cortical levels, we can say that management levels in organizations are creating models and hypotheses about the business environment. These models entail predictions and orders on how to behave (Huff et al., 2016) and they are projected from top management down to lower hierarchical levels where middle managers and workers realize the orders of the respective higher level. Over time, these assumptions and expectations become part of the organizational culture (Starbuck, 2017).

##### **3.1.2 Organizational routines enacting organizational beliefs**

Organizations develop behavioral patterns that are in line with the organizational culture, that is, their assumptions and expectations. These patterns can be seen as “*organizational routines*” (Pentland, Hærem, & Hillison, 2011), which are repetitive and interdependent patterns of actions that are carried out by multiple actors across an organization (Feldman & Pentland, 2003). Similar to the idea that PMF brings about actions to confirm predictions, organizational routines can be seen enactments of expectations because they are patterns of actions that maintain stability and reduce novelty and uncertainty (Becker, 2004; T. Felin & Foss, 2011).

### 3.1.3 Hierarchical ignorance of prediction errors

Central to the predictive mind framework is the prediction error. It serves as a proxy for sensory information because it provides feedback on signals that could not be predicted by top-down predictions (Clark, 2013). In the organizational context, we can say that the top management, projecting its models to lower hierarchical levels, receives prediction errors in the form of events that did not match the predictions. In other words, when actors in an organization run into situations where their behavior results in negative experiences, they should report to the higher management level, which reports it to the next one, and so on. As shown in the previous section, prediction errors in the predictive mind framework do not necessarily lead to modifications of patterns and hypotheses existing in higher levels; they can be ignored while the brain keeps its models in place. This also applies to organizations where negative experiences in lower hierarchical levels are not necessarily reported to higher hierarchical levels. In practice, even the opposite can happen because organizations provide incentives “for lower level employees to tell managers what they want to hear and to leave out information that signals that there is uncertainty about the effectiveness of a strategy or conveys other negative feedback (Huff et al., 2016, p. 12); similarly, Fang et al. (2014) stress that there is a “tendency to distort or *sugarcoat* negative information in communicating to one’s bosses” (p. 1187, italics added) (also see Milliken & Lam, 2009). Thus, keeping the analogy of PMF, we can say that organizational structures *produce cycles of self-fulfilling hypotheses* where existing assumptions and beliefs are sought to be reproduced and conflicting information is ignored or “disarmed”.

To summarize, the metaphorical OPM enables us to see why innovations are hard to achieve because the longer an organisation persists, the stronger it relies on what has worked in the past and the more it becomes rigid and immune towards conflicting information and hence, novelty. In analogy to the claim that the PMF relies on mechanisms standing against one’s ability to be radically innovative because knowledge is projected which has been proven successful in the past (Grisold & Peschl, 2017), the metaphorical OPM explains why it is so hard to bring about change in organizations. On the one hand, organizations use structures and patterns that provide stability but hinder change. On the other hand, triggers that are necessary to initiate change processes, might not reach higher hierarchical levels. In order to overcome this implication, we would have to break this cycle of self-fulfilling hypotheses. Before we will elaborate in section 4 on how we can address these implications, we will turn to another variant of the OPM.

### 3.2 The radical OPM

Building upon the premises from the preceding sections, we can propose a radical interpretation of the OPM. Here, we focus on the direct consequences that an organizational context has on the cognitive mechanisms of individual actors. Emphasizing on the “micro-foundations of organisations” (Felin, Foss, Heimeriks, & Madsen, 2012), we take into account that an organization provides scripts, mental models or paradigms (Paoli & Prencipe, 2003), which influence the cognitive models of its actors such that the predictions align and become more similar. Over time, actors do not only see the world as it should be from what they have experienced so far, but their perceptions incorporate probabilities of how the world should

be with respect to what the *organization* has experienced so far. Likewise, patterns of actions synchronize with how other actors behave.

In the following, we discuss the idea of “radical OPM” in more detail.

### **3.2.1 Organization as a frame for thinking and perceiving**

What and how individuals think depends on internal dynamics taking place inside the “black box” of cognition (Thagard, 2014) as well as on external dynamics. Organizations offer a “frame” for actors to interpret the world. This frame emerges from the organization’s history, norms, values, premises, culture, and ideologies. While some authors state metaphorically that an *organization* learns (e.g. Huber, 1991; Mirvis, 1996), it is the *individual actor that makes experiences and learns on the organizations’ behalf* (Argyris & Schön, 1978, 1996; Tsoukas & Mylonopoulos, 2004; Wang & Ahmed, 2003). Organizational learning is realized by the actors of an organization where learning occurs within a “paradigm”; it is cumulative in the sense that new experiences build on older ones (Garud, Dunbar, & Bartel, 2011).

Following Weick (1979) or Tsoukas and Chia (2002), actors in an organization align in the sense that they have a common perception and understanding of the world. Garud, Dunbar and Bertel (2011) argue that this leads to acts of categorizations, where individuals recognize patterns and perceive similarities and differences. With the aim to reduce cognitive workload, situations and events can be classified and thus, they evoke “consistent and specific organizational responses” (p. 588). Such mechanisms serve organizations as “simplifying heuristics” so that they can reduce uncertainty - and increase predictability (Mirvis 1996, p. 17).

From a predictive mind perspective, this means that the priors and hypotheses that individuals have, are influenced by what the organization has experienced and what models it has brought forth. They are the grounds for the generative models that are projected onto the environment. Mechanisms to stabilize are enacted across the “brains” of the members of an organization; individuals think *by* themselves but *for* the collective. In short, we can say that the cognitions, and hence, the predictions of individuals are strongly influenced by the organizational frame in which the individual is embedded (and vice versa).

### **3.2.2 Organizational Routines as reinforcing patterns of actions**

As argued before, organizations establish regularities and form “organizational routines” (Feldman & Pentland, 2003). While actors carry out repetitive actions, routines reduce uncertainty and ambiguity by providing a set of well-defined responses to environmental cues (e.g. Weick, 1979). Since routines are always enacted with respect to successful outcomes in the past (Üsdiken et al., 2011), they follow the intention that some process will be realized and/or outcome achieved. From a predictive coding perspective, we can say that routines are “*embodied predictions*” as members have expectations of what will happen once a routine is enacted.

Thus, routines can be understood as patterns of “varying stability” (Tsoukas & Chia, 2002). On the one hand, we can say that routines have endogenous capabilities; they are not determined by environmental conditions and there is a space of possibilities (“Spielraum”) for how they

will develop (Felin & Foss, 2011), and actors can deviate from standard procedures (Mertens, Recker, Kohlborn, & Kummer, 2016). For example, Pentland et al. (2012) show that variations can occur due to different factors, e.g. actors prioritize some action patterns over others. At the same time, routines evolve with respect to previous experiences—they are continuations of what has worked so far. They cannot be seen as separate from the organization's history (Becker, 2004; Choi, 2011; Sydow et al., 2009). Thus, routines are stable because they reinforce what actors expect.

In essence, the paradox of “varying stability” is what PMF proposes on the cognitive level. While there seems to be a degree of freedom resulting from a range of hypotheses that are possible, the overall choices are continuations of what seems most likely with respect to the organism's history.

### **3.2.3 The “prediction error” in organizations**

Building on the argument that “organizational thinking” becomes manifested in the heads of individual actors, we can argue that the prediction error is the feedback actors receive when their top-down predictions do not correspond with the current state of the environment. Individuals do not necessarily react to prediction errors; it can be more efficient to ignore counter evidence and stick to models that worked well in the past (Friston et al., 2012; Grisold & Peschl, 2017). This can hold for the organizational context as well. It has been argued that organizations give rise to “functional stupidity” as members of an organization eventually refuse “to use intellectual resources outside a narrow and ‘safe’ terrain” (Alvesson & Spicer, 2012). In other words, in many cases organizations provide an environment that supports a lack of reflection, reasoning and justification. While functional stupidity may have positive consequences (e.g., maintaining and strengthening organizational order, subordinating them to acceptable forms of leadership and management, etc.), it limits the thoughtful- and mindfulness in organizations (e.g. awareness for relevant changes in the environment). In order to induce intrinsic change, we have to overcome functional stupidity by permitting prediction errors; they can give rise to “frictions provoked by doubt and reflection” (Alvesson & Spicer, 2012, p. 1196).

In short, organizations are ensembles where multiple actors collaborate and there is a limited degree of freedom for what actors can do. Their joint patterns of actions reinforce their mental models. It follows that actors, as parts of organizations, do not think for themselves; rather, they think for the collective. Postulating a radical OPM, we suggest that the actors and the organizational level influence and strengthen each other such that the organization and its actors “drift away” in their own world view. From such a perspective it is obvious why organizations can generate incremental innovations at most—more radical innovations would be a contradiction to how an organisation and its members influence each other.

## 4 Implications

### 4.1 OPM and change

Applying the predictive mind framework to organizational settings suggests interesting implications for organizational change and development. The mechanisms that we described in the previous sections underline and offer an explanation why both variants of OPM are opposed to change processes and innovation.

Taking a metaphorical perspective on OPM, we see that organizations develop patterns of stable actions that bring about what higher hierarchical areas predict and expect. However, counter-evidence might not be propagated back from the lower hierarchical areas. Indeed, it can be the case that management receives positive feedback even though actors have encountered problems. It follows that an organization enacts predictions while it is unable to see potentials or even necessities to change.

Taking a radical perspective on OPM, we see that organizations exert influence on how actors perceive, think and act. By enacting routines in an organization, actors realize “organizational expectations” and over time, their models align such that their predictions incorporate the organizational point of view. This in turn, hinders the ability of actors to see new potentials for change and innovation.

In both cases, we can identify one key issue that hinders an organization’s capacity to change and innovate, namely previous experiences and knowledge that is already present. In the metaphorical OPM, the problem might arise from long standing assumptions of managers that have previously led to success but might be irrelevant today. In the radical OPM, actors create knowledge about the organization and its context, which hinders them to think and act in an unbiased manner. Thus, when we want to enable change and radical innovation in organizations, we need to decrease or eliminate the influence of these underlying knowledge structures. How can we do so? This is the question we pursue in the sections to come.

### 4.2 Unlearning to reduce the influence of the OPM

The intentional effort to “get rid of” existing knowledge in organizations is referred to as “organizational unlearning”. In the following, we will provide a brief review of the concept and see how it can help us to overcome the implications of OPM.

#### 4.2.1 Organizational unlearning in the context of OPM

The idea that organizations should unlearn dates back to the 1980s. Researchers reasoned that knowledge could eventually become irrelevant or even hindering for organizations. This provided the grounds for research on organizational unlearning (Hedberg, 1981; Lähteenmäki, Toivonen, & Mattila, 2001).

The concept is controversial (Howells & Scholderer, 2016). Part of the ongoing confusion is caused by the question how unlearning should be defined, and what it actually is. Some scholars assert that unlearning occurs when knowledge is being *discarded*, *eliminated*, or *removed* (Pralhad & Bettis, 1986; Tsang & Zahra, 2008 and many more). However, when we



want to overcome the implications of the OPM, these definitions appear shortsighted because we cannot remove knowledge in a literal sense (Hislop, Bosley, Coombs, & Holland, 2014; Visser, 2017).

So, what is our take on unlearning in the context of the OPM? To answer this question, let us first see what learning means. In our perspective, to learn implies to establish regularities and stability and to construct knowledge over time (Piaget, 1977). However, in a classical perspective (proposing knowledge to be an object), one can say—metaphorically speaking—that learning involves *adding up* or accumulating knowledge (Cowan, David, & Foray, 2002; Orlikowski, 2002). Thus, unlearning has to be seen as “discarding” or “eliminating” knowledge.

However, in an OPM perspective, this notion is not adequate because it is based on a different epistemology: results from cognitive science and neuroscience (Engel et al., 2013; Mumford, 1992) suggest to go for a constructivist epistemology (Glaserfeld, 1995; Riegler, 2012). Knowledge, then, is a *process* rather than an object, it results from *constructions*. Hence, learning can be conceived of as a continuous process of *adaptation*. Thus, we can say that unlearning is about “weakening” existing knowledge rather than throwing it away. In the context of OPM, we suggest that unlearning it is about *reducing the influence of old/existing knowledge* on cognitive and/or behavioral processes over time (Grisold & Kaiser, 2017). Following this definition, we can say that individuals or organizations will gradually refrain from using specific knowledge and, over time, and, by that, the probability decreases that inadequate knowledge will be enacted.

How can such a definition help us to overcome the implications of the OPM and enable intrinsic change? When we reduce the influence of old knowledge on our cognition and behavior, we also increase the level of uncertainty and instability; it is about “non-predictability” and “non-regularity”. By muting our top-down models, we attune to bottom-up stimuli that do not fall into our predictions; thus, by realizing processes of unlearning, we attune to prediction errors that can potentially alter the way we perceive, cognize, and behave. We embrace a state of *openness* to see what we have *not seen* (yet) and to do what we have *not done*.

In the following, we will explore how we can realize unlearning for the metaphorical and the radical OPM.

#### **4.2.2 Unlearning in the metaphorical OPM**

Following the notion of a metaphorical OPM, we can say that there are two dimensions which interplay and prevent change and innovation. There are the cultural aspects of an organisation, that is, the belief and value systems, and the routines that enact these beliefs and values. At the same time, there are feedback mechanisms, which do not represent what is actually going on the environment, that is, if the predictions are correct. Thus, organizations give rise to circles of self-fulfilling hypothesis. Therefore, we need to disrupt this cycle of self-fulfilling prophecies. We must reduce the influence of existing knowledge so that an organization can “open up” and detect events and/or environmental features that are strange, unexpected, or even contradictory, as they can be the starting point for change. As argued before, the problem is that organizations rely on existing and established knowledge.

Thus, in order to initiate processes of unlearning, we need to ask: “*What is it that keeps old knowledge exerting influence on organizational structures?*”

We propose that in order to unlearn, we can focus on two on the reinforcing dynamics that keep OPM in place. How can we unlearn by means of *reinforcing* dynamics?

We can target structures that stabilize the organizational values by means of culture, values and viewpoints. One example for doing so is to change “corporate language”. Language and knowledge are closely related – we know what we can tell, and we can tell what we know. Routines, practices, and the like, may be expressed through specific words and phrases (e.g. Allen, 2012). It follows that changing the language, removing phrases, etc. may facilitate the unlearning process as the influence of old knowledge is being reduced.

Scholars in various fields, including the cognitive and the organisational sciences, highlight that learning is a *situated* process (Swart et al., 2011; Wilson & Floglia, 2011). Central to this idea is that learning activities are embedded in the environment, and in turn, knowledge is enacted with respect to the environment. Regarding interventions, this opens up a wide field. For example, architecture is linked to how people interact with the environment - changing architectural features in an organisation might reduce the influence of old knowledge and employees might be able to unlearn (see also the concept of Enabling Spaces (Peschl & Fundneider, 2012, 2014)). This could mean that organizations move to other places, change the architecture of their offices or modify artefacts that are involved in the enactment of routines.

#### **4.2.3 Unlearning in the radical OPM**

OPM in the radical sense means that members of an organization align their cognitive models so that they perceive and interact with the environment in a way that is *in line* with the organization. When realizing unlearning on this level, we must make sure that the standard way of perceiving is disrupted so that prediction errors can be detected. They, in turn, trigger change of internal models. Unlearning in that respect implies that we reduce the influence of our models on our cognition and behavior. How can we enable such a process? In Grisold and Peschl (2017), we propose that there are two dimension that we can target on; we can unlearn (1) our perception structures, or (2) our knowledge structures. For each of these dimensions, we suggest three concrete strategies. We will provide a brief review of the following.

When we want to change perception structures, we have to take into account that perception is an active process; to a large extent, we do not perceive the world as it is, but as it should be. On the one hand, we can aim at enabling “sensing and cultivating” environmental unfamiliar features by means of *mindfulness*. On the other hand, we argue that when “changing perspectives”, we challenge the standardized way of our perception by focusing on different aspects. Finally, by “seeking other’s perspective”, we can see the world through the eyes of others, that is, by applying different premises, assumptions and expectations to our environment

When we unlearn our knowledge structures, we prevent the self-progressing cycle of knowledge and perception we can “reflect on future constructions”, we can create awareness

for beliefs and assumptions that will be build on current knowledge. Thereby, we can remain open to prediction errors in the future. A third way to modify knowledge is to “construct viability” where we suggest to follow hunches and turn them into fitting knowledge structures.

### **4.3 Discussion and future research in the OPM**

From our considerations follows that one of the goals for inducing change and unlearning is to overcome the implications of the organizational predictive mind (OPM). As a general strategy we argue that organizations should apply what we refer to as *organizational mindfulness*. In general, this means that it is necessary to establish organizational routines that do not only stabilize organizational behaviors, but that systematically challenge them on an individual and organizational level. On an individual level this involves concrete skills of (personal) reflection, observation, critical thinking, etc. For an organizational level this means that there have to be organizational structures in place that allow for collectively challenging organizational routines and perspectives in the world. This has crucial implications for innovation and change processes.

We have to be aware that these processes of organizational mindfulness do not stay at the surface of an organization. That is why, we suggest to implement not only “quick fixes” or superficial changes in behaviors, but to start the whole process from the very core of the organization. Organizations have to start “from-the-inside-out” by challenging organizational premises, mindsets, as well as core beliefs. Such a strategy will be the foundation for profound and sustainable organizational mindfulness. In practice, this can be an extremely challenging task because all the “mindless” mechanisms, which we have reviewed in this article, provide an organization with efficiency and stability. However, when overcoming these implications, the whole organization will be more open, more reflected, more responsive to changes in the environment, as well as more future-oriented and capable of proactively behaving and innovating.

We have shown that the OPM offers an interesting perspective on how organizations and its actors behave. However, while we focused here on the development of this concept, we did not compare it with existing concepts in the organizational studies. For example, some of the ideas we propose here are related to the concept of “dominant logic” (e.g. Kor & Mesko, 2013). Future research should focus on how the OPM can contribute to existing concepts, and vice versa, existing concepts can extend the OPM.

## **5 Conclusion**

We applied the “predictive mind theory” from the cognitive sciences and cognitive neurosciences to the organizational context. We developed two kinds of the “organizational predictive mind” (OPM). The “metaphorical OPM” explores how organizations as a whole can be seen as prediction machines which project their assumptions and beliefs on their environment. The “radical OPM” focuses on organizational structures that influence how their actors think and act.

Both kinds of OPM produce cycles of self-fulfilling prophecies. In order to overcome them and realize profound change, organizations and their actors need to unlearn, that is, they need to reduce the influence of their existing knowledge on cognitive and behavioral processes over time. For both kinds of the OPM, we provided strategies and tools that allow for doing so.

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## Higher Education Skills for Entrepreneurship

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**Abstract:** This article analyses the concept of skills and also investigates the skills developed in higher education entrepreneurial courses. The relevance of this research is based on the approach to theories of skills development and the main purpose is to identify the skills developed by the students from entrepreneurship courses and create a model to propose entrepreneurship skills need in the future to be in a competitive market.

The identification of the skills, it was made through a literature review based on a document analysis of the papers about entrepreneurship studies in the last three years. In order to verify if these skills are developed in the higher education entrepreneurship courses, a survey online was conducted with the students.

The research problem considered the analytical dimension of skills development anchored to the following research questions: What were the skills identified in the research studies? What were the level of skills development in the high education entrepreneurship courses? What were the relationships between the perceived skills development and various factors such as gender, bachelor course, and age, and what are the lessons learnt in order to propose a theoretical model to develop skills in higher education entrepreneurship courses?

This study is centred on the research of more relevant work skills which can contribute to increase the competitiveness of the markets.

**Keywords:** skills, students, higher education, entrepreneurship



## Endomarketing: An approach to motivate employees and enhance leadership

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**Keywords:** Endomarketing; Internal Marketing; Leadership; Leadership Behavior; Work Motivation

In a world where a *snack culture* (Anderson, C. 2008) reigns, not only in the social media, but everywhere, in every places, companies have also adapted to this reality. In the last years, we have been witnessing huge and rapid changes in life style in societies, therefore in companies. However, most companies cannot keep up these huge changes and are becoming obsolete, especially regarding communication with their employees.

Thus, companies have invested a lot in cost cutting, quality and operational improvements, in other words, the perception of what it takes to gain competitive advantage, in this highly competitive globalised market, is constant. Even those companies, that are considered experienced in growth, nowadays, are experiencing a slowdown. However, the reason for there to be a threat to growth (lagged or stationary) is not because the market is saturated. It's because there has been faulty management (Levitte, 2006).

Everyday new ideas, new business models are born, follow the life style of our society, however, sometimes companies have difficulty in acknowledging their values, their culture and above that, their employees. To be competitive nowadays, there is a need to determine more than just the mission, vision, objectives and goals. It is also fundamental to know how to practice these concepts in a strategically way (Santos, 2004) to achieve established goals.

The companies establish their goals, and spread that information to their employees. Everything start - in companies - using leadership. All information's are passed through the hierarchy. Thus, allocating challenges (objectives) to all employees, regardless of the role they play. Yet, goals are not always achieved, not because they are always difficult to attain.

There are a number of reasons why employees do not set goals, yet it is necessary to know, in one hand, whether employees understand them, on the other, whether they are motivated to achieve them.

Thus, before selling a product or service to their customers, companies need to *convince* their employees to "*buy it*"! The Endomarketing comes as a link between the client, the product and the developer. And "*selling*" a product, an idea or a marketing positioning, becomes as

important to the employee as to the client. It means to make him an ally in the business and responsible for the success of the company.

Endomarketing can have this effect. When companies use an informal survey of employees, the whole process of Endomarketing starts. With data collected and analyzed, the major problems are identified (in most cases, these problems are not seen by the managers of companies, or can be neglected by them), and makes it possible for firms to prepare actions through the Endomarketing process, to improve or correct the problems identified.

Endomarketing is a word created by Saul Bekin and patented by him in 1995. Endomarketing is understood as marketing focused on the employees of a company. It aims to mobilize them with a view to the necessary alignment to achieve the objectives and goals of the organization. The Endomarketing is a very young area of knowledge and is supported by other areas of expertise such as management, sociology, psychology, and fundamentally in Marketing (Costa 2010).

Beyond the view of Bekin (2004), will be related to their theoretical assumptions, Endomarketing concepts and also other marketing authors, like Berry & Parasuraman (1991), Grönroos (2004) and Theodore Levitt (2006) as Internal Marketing.

This paper evaluates and justifies the contribution of Endomarketing capabilities as guide factors to motivate the employees, also enhance leadership in companies. It is based on analysis of various theories on the subject of Leadership, also Leadership behavior, Internal Marketing and Work Motivation. Therefore, the structure of the research was based on references to the theoretical framework, as well as a study that resulted in a research work, which was based on data collection, a questionnaire composed of three different research instruments: the first data collection tool we used, was a questionnaire developed by Bass and Avolio, which has as its original nomenclature: *Multifactor Leadership Questionnaire 5x Leader Form (Multifactorial Questionnaire Leadership - 5th version; Leader's perspective)*, called MLQ; the second instrument was the questionnaire developed by Charles A. O'Reilly under the nomenclature: *Communication Dimensions And test-Retest Relays*; lastly the third tool we use in this study is: *Multi-Moti - Multi-Factorial Scale of Motivation at Work*. This study was applied in a chain of gyms in Lisbon. The choice of this organization was intentional, since it is a new business model.

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# Intellectual Capital and Asset Dynamics

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Value creation is increasingly based on leveraging intangibles, but firms lack knowledge and skills on identifying, measuring and managing their intellectual capital. Also the existing academic literature on knowledge-based value creation seems to have concentrated on either IC stocks of firms or their management mechanisms (cf. Kianto et al. 2013). To produce a more complete picture of the tenets of organizational performance in the knowledge economy, this track examines both issues: IC stocks and knowledge management practices.

# Flourish or Perish: An Empirical Study of the Telecommunication Equipment Vendors from an IC Perspective

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**Abstract:** This study aims to discuss the success of the top five telecommunication equipment vendors from empirical study about the relationship between intellectual capital and financial performance. The data was derived from the annual reports of the global top five telecommunication equipment vendors from 2005 to 2014 fiscal year on their websites. Value added intellectual coefficient (VAICTM) approach is adopted as the proxy measurement of intellectual capital of the investigated firms. The hypotheses analysis and testing were conducted with multiple linear regressions. VAICTM has positive relationship with financial performance of these telecommunication equipment giants. Positive association exists between human capital efficiency (HCE) and profitability as well as productivity. Structural capital efficiency (SCE) plays a key role in influencing the financial performance of the investigated firms. It is essential for the firms in the telecommunication industry to improve their structural capital to gain more competitive advantages in the global market. To the best of the authors' knowledge, this is the first study investigating the success of the global top five telecommunication equipment vendors from the perspective of intellectual capital.

**Keywords:** Intellectual capital, firm performance, telecommunication equipment vendor, value added intellectual coefficient

## 1 Introduction and background

Since the first telephone was invented in 1870s, telecommunication industry has provided a huge momentum for the progress of our society with the continuous development of the state-of-the-art telecommunication technologies. Behind the boom of social media and online business, it's the telecommunication equipment vendors that offer the fixed and wireless network technologies to keep consumers online. According to Forrester Research, the global investment on telecommunications equipment is as large as \$379 billion (Anonymous, 2016). However, the market of telecommunication is fiercely changing all the time. Some firms have grown up from infants to giants, while some names of the giants perished forever in the telecommunication industry, merely can be found in the history.

The competition of telecommunication industry is cruel and bloody, especially when Huawei Technologies Co. Ltd (short for Huawei hereinafter) and Zhongxing Telecommunication Equipment Corporation (ZTE) joined in the game during 1980s (Zhang, 2013). Nortel, with more than 100 years history, who had ever been the largest telecommunication solution

vendor in the world, initiated creditor protection proceedings and sold out all its business units in 2009 due to long-term huge operation deficit (Silver, 2009). To confront the fierce competition, the Western telecommunication equipment vendors started business acquisition and mergence strategy (Amesse, Latour, Rebolledo, & Séguin-Dulude, 2004). In 2005, Ericsson acquired a British telecommunication equipment vendor- Marconi (Wilson, 2005). In 2006, Nokia and Siemens merged their telecommunication business and founded Nokia Siemens Networks (NSN) (Milne, 2006). In the same year, the French telecommunication company- Alcatel and the American telecommunication company-Lucent were merged as Alcatel-Lucent (A&L) to defend their marketplace (Abboud & Silver, 2006). But unfortunately, even the mergence could not save these two companies from crisis on account of poor business performance in the past years. In 2013, Nokia bought all the shares of Siemens and named the company as Nokia Solutions and Networks. In 2015, Nokia initiated acquisition process of A&L and it closed the deal in 2016 (Schechner & Shayndi, 2015).

On other hand, the Chinese companies- Huawei and ZTE have swiftly grown up and played a critical role in the global telecommunication industry. In both 2013 and 2014, Huawei outperformed Ericsson and achieved the first place in the telecommunication market in term of sales revenue. Though the intense competition is for living or dying, the competitive situation was almost fixed among these five telecommunication equipment vendors related to sales revenue recently (Pang, 2015), as shown in Table 1. In addition, as the demand for higher bandwidth, faster speed and larger coverage of mobile Internet, it was predicted that Alcatel-Lucent, Ericsson, Huawei, Nokia and ZTE would dominant the long-term evolution (LTE) infrastructure market during 2014 to 2018 (Anonymous, 2013).

**Table 1** Sales revenue of the top five telecommunication equipment vendors 2010-2014

	2010	2011	2012	2013	2014
No.1	Ericsson	Ericsson	Ericsson	Huawei	Huawei
No.2	A&L	Huawei	NSN	Ericsson	Ericsson
No.3	Huawei	A&L	Huawei	A&L	A&L
No.4	NSN	NSN	A&L	NSN	Nokia
No.5	Motorola	ZTE	ZTE	ZTE	ZTE

Source: (Pang, 2015)

Nevertheless, in retrospect to the development of telecommunication equipment vendors, it is essential to investigate the reasons of success or failure of them. But only few studies related to this topic were commenced, such as success of Chinese telecommunication vendors due to their innovation capability (Fan, 2006), the success of Huawei depending on its strong entrepreneurial leadership (Luo, Cacchione, Junkunc, & Lu, 2011), bust of Lucent attributed to loss of wireless market (Lazonick & March, 2011), failure of A&L caused by culture difference and high labor cost (Nordick, 2016). The studies about the success or failure of these firms, especially, from the intellectual capital (IC) perspective, remains blank. To fill this research gap, this study aims to reveal the relationship between financial performance and intellectual capital of the world top five telecommunication vendors with VAIC<sup>TM</sup> methodology.

Followed with introduction, literatures concerned VAIC<sup>TM</sup> method and firm performance are reviewed meanwhile hypotheses are formulated in this section. While research methodology is introduced in the third section and empirical results are analyzed in the following section. Then the findings of this study are discussed in the penultimate part, and the final section

draws the conclusion of our research with recommendations for telecommunication vendors and scholars for future.

## 2 Hypothesis development

It was in 1980s that intangible assets were thought as critical elements for performance of organizations (Castilla Polo, 2007) when scholars such as Teece (1986) published the article *Profiting from technological innovation*, suggesting how to deal with the value of technological innovation and bring it to market; Itami and Roehl (1987) released the book *Mobilizing Invisible Assets* emphasizing the significance of intangible assets in Japanese organizations. Sveiby (1989) published the book *The Invisible Balance Sheet*, proposing the tripartite division of knowledge capital. In 1991, Stewart (1991) was the first one who used intellectual capital (IC) in literature (Huang, 2014) and published the article *Brainpow'* in *Fortune* magazine called attention of organizations to contribute their success with intangible assets, especially concerned with the employees. At the same year, Leif Edvinsson from Skandia, a Sweden insurance and financial service firm published the world's first IC annual report to visualize and identify the hidden intangible values of the firms as well as apply them for better knowledge management and business success (Sullivan, 2000).

IC can be defined as the total knowledge from its members and practical processes of an organization, which is intangible but can create organizational value (Roos, Roos, Dragonetti, & Edvinsson, 1997). Though there are several approaches to measure and report the IC (Petty & Guthrie, 2000), such as the balanced scorecard (Kaplan & Norton, 1992), intangible asset monitor (Sveiby, 1997); the Skandia value scheme (Edvinsson, 1997; Edvinsson & Malone, 1997); and the intellectual capital accounts (DATI, 1998), it is still difficult to compare the firms' performance with IC benchmarks, especially when these firms adopt different IC reporting schemes. In addition, firms could probably veil the real IC status to keep their competitive advantages.

Though IC measurement is still not a standardized activity (Bontis, Dragonetti, Jacobsen, & Roos, 1999), Ante Pulic (2000) proposed value added intellectual coefficient (VAIC™) method to measure and monitor the value efficiency of firms by applying the financial figure from the annual report for better IC management. VAIC™ offers a unified quantitative and straightforward measurement for the intangibles without any subjective rating since the data can be collected from annual reports of research subjects. It integrates the traditional financial measures, which is more familiar and understandable in business. It also produces benchmarks for different industries and regions for the business development in terms of IC (Chan, 2009a).

To disclose the relationship between intangible assets and financial performance, many empirical studies were conducted. Chen, Cheng, and Hwang (2005) investigated 64 Taiwan firms with their performances data from 1992 to 2002 and found that the relationship between intangible assets and organizational performance was positive so that organizations owned higher IC efficiency yielded better profitability and revenue growth at present and the following years. The coherent results were also revealed from different regions globally. Liu and Yuan (2008) studied 98 IT listed companies of mainland China and concluded that the association of intangible assets and financial performance was significantly positive. Zéghal and Maaloul (2010) analyzed 300 British firms and found that VAIC™ was also positively

associated with stock market performance. Clarke, Seng, and Whiting (2011) studied 1,676 firms in Australia and found that there was a direct relationship between VAIC<sup>TM</sup> and Australian firm performance; while Pucar (2012) explored 134 firms in EU and discovered that intangible assets had strong influences on the export performance only for some sectors, such as food and beverages as well as manufacturing of furniture and wood products. Komnenic and Pokrajcic (2012) conducted a research for 37 multinational firms in Serbia and found VAIC<sup>TM</sup> was positively related to the firm performance. 22 large pharmaceutical firms in India were analyzed by Vishnu and Kumar Gupta (2014) and similar results were obtained as above scholars mentioned.

On contrast, Firer and Mitchell Williams (2003) conducted a study with 75 South African firms and found that the relationship between VAIC<sup>TM</sup> and firm performance was generally limited and mixed, which could not conclude that the correlation between intangible assets and financial performance was significant. Mehralian, Rajabzadeh, Reza Sadeh, and Reza Rasekh (2012) researched 19 Iranian pharmaceutical firms and found that only physical capital strongly impacted on the profitability of these firms without any significant evidence for HC and SC. Yet Maditinos, Chatzoudes, Tsairidis, and Theriou (2011) surveyed 96 firms in Greek and discovered that only HC and financial performance was significant. Furthermore, Chan (2009a, 2009b) and Chu, Chan, and Wu (2011) obtained mixed results by investigating all companies of Hang Seng Index of the Hong Kong Stock, which indicated that physical capital sustainably played a significant role in Hong Kong and companies still relied on tangible resource to enhance their performance.

As for prior studies, the relationships among VAIC<sup>TM</sup>, VAIC<sup>TM</sup> elements and financial performance of firms were varied and mixed. Both significantly positive and insignificant dependencies were discovered. To reveal the association between IC and financial performance of these top five telecommunication vendors, a research model with hypotheses as shown in Figure 1 is developed. All the hypotheses bellowed are expected to be positive.

H1a: There is a positive relationship between VAIC<sup>TM</sup> and profitability.

H1b: There is a positive relationship between VAIC<sup>TM</sup> and return on equity.

H1c: There is a positive relationship between VAIC<sup>TM</sup> and productivity.

H2a: There is a positive relationship between CCE and profitability.

H2b: There is a positive relationship between CCE and return on equity.

H2c: There is a positive relationship between CCE and productivity.

H3a: There is a positive relationship between HCE and profitability.

H3b: There is a positive relationship between HCE and return on equity.

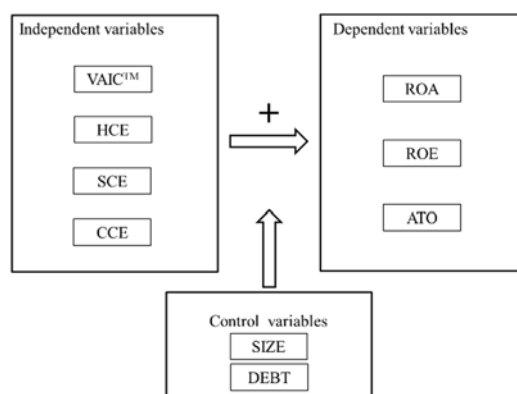
H3c: There is a positive relationship between HCE and productivity.

H4a: There is a positive relationship between SCE and profitability.

H4b: There is a positive relationship between SCE and return on equity.

H4c: There is a positive relationship between SCE and productivity.





**Figure 1** Research model: Relationships of intangible assets and firm performance

### 3 Research methodology

#### 3.1 Data and sample

The data was derived from the annual reports of the world top five telecommunication vendors from 2005 to 2014 fiscal year on their websites. Huawei started publishing its annual report from 2006, but its data related to staff expenditure was not released from 2006 to 2008, therefore the data of rest six years was selected for our research. As for A&L and Nokia, the years with loss were removed from the sample. As for the Ericsson and ZTE, all the data was available from the past one decade. In total, 35 fiscal year observations were collected to test the proposed model.

#### 3.2 Measurement of the variables

##### 3.2.1 Independent variables

In the present study, VAIC<sup>TM</sup>, HCE, SCE and CCE are set as independent variables. To calculate VAIC<sup>TM</sup>, it is necessary to identify value added (VA) first. According to Pulic (2000),  $VA = OUT - IN$ , OUT is revenue referring to the whole income from all the products and service sold to the marketplace. IN is expense, represents all the expenditures that an organization spends for everything except labor cost. We adopt the same formula as Chan (2009a) and Komnenic and Pokrajcic (2012) to calculate VA, thus,

$$VA = P + E + D + A,$$

Where: P = operating profits, E = total employee expenditure, D + A = depreciation and amortization.

From the idea of Pulic (2000), human capital (HC) can be represented by the payroll costs in the annual reports; therefore, the human capital efficiency (HCE) can be calculated by:

$$HCE = VA/HC$$

HCE is used to indicated how much value added has been received per money unit invested for employee. The higher HCE, the higher efficiency of employee's value created in the specific period.

While in the VAIC<sup>TM</sup> method, SC can be obtained by deducting HC from VA, namely,

$$SC = VA - HC$$

Then, SCE can be calculated as:  $SCE = SC / VA$ , SCE shows the share of SC in the created value. The higher SCE, the higher share of SC is in value creation of an organization.

From the standpoint of Pulic (2000), the value of a firm is created by physical, financial and intellectual capital, so the final procedure in VAIC<sup>TM</sup> is to calculate capital employed (physical and financial capital included) efficiency (CEE), therefore:  $CEE = VA / CE$ , where: CE is the book value of the net assets.

CEE refers to how much new value has been received per invested unit of capital employed. The higher CEE, the higher efficiency of tangible assets employed occurred in the calculated period.

At last, the VAIC<sup>TM</sup> can be obtained by:  $VAIC^{TM} = HCE + SCE + CEE$

VAIC<sup>TM</sup> reveals the organization value creation efficiency. The higher the VAIC<sup>TM</sup> coefficient, the better management has utilized the company's potential, namely, more value is created with the same amount of resources.

### 3.2.2 Dependent and control variables

To conduct the empirical analysis in this research, three dependent variables, namely, return on assets (ROA), return on equity (ROE) and asset turnover (ATO) are selected to measure the financial performance of the firms.

ROA = net income/total assets. ROA indicates the ratio of net income to book value of total assets, which is used to measure the profitability of a firm;

ROE = Net income/shareholders' equity. ROE indicates the ratio of net income to total shareholder equity, which measures the profit that directly attributes to shareholders.

ATO = Total revenue/total assets. ATO indicates the ratio of total revenue to book value of total assets, which gauges the productivity of a firm.

The size of firm and the leverage rate may affect the dependent variables, therefore, size of the firm (SIZE) and firm leverage (DEBT) are set as control variables.

SIZE = nature log of book value of total assets

DEBT = Total debt/total assets

### 3.2.3 Regression models

Multiple linear regression analysis is adopted to test the research framework with 4 models. Each model is comprised of 3 hypotheses. The first model with three equations examines the relationship between VAIC<sup>TM</sup> and financial performance when firm leverage (DEBT) and firm size (SIZE) are controlled. Controlling firm leverage (DEBT) and firm size (SIZE), Model 2-4 test the associations between VAIC<sup>TM</sup> components and the financial performance.

H1:

$$ROA = \beta_0 + \beta_1 VAIC^{TM} + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (1a)$$

$$ROE = \beta_0 + \beta_1 VAIC^{TM} + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (1b)$$

$$ATO = \beta_0 + \beta_1 VAIC^{TM} + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (1c)$$

H2:

$$ROA = \beta_0 + \beta_1 CCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (2a)$$

$$ROE = \beta_0 + \beta_1 CCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (2b)$$

$$ATO = \beta_0 + \beta_1 CCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (2c)$$

H3:

$$ROA = \beta_0 + \beta_1 HCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (3a)$$

$$ROE = \beta_0 + \beta_1 HCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (3b)$$

$$ATO = \beta_0 + \beta_1 HCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (3c)$$

H4:

$$ROA = \beta_0 + \beta_1 SCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (4a)$$

$$ROE = \beta_0 + \beta_1 SCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (4b)$$

$$ATO = \beta_0 + \beta_1 SCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon \quad (4c)$$

#### 4 Empirical Results

The descriptive statistics of data is shown in Table 3. Variance inflation factor (VIF) is used to measure the multicollinearity of the data, which should be within 1 to 10 (Marquardt, 1970). All the value of VIF is within the required scope as shown in the Table 4- Table15.

**Table 2** Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
VAIC <sup>TM</sup>	1.728	6.665	3.181	1.109
HCE	1.121	5.665	2.104	1.082
SCE	0.108	0.823	0.440	0.184
CEE	0.126	1.324	0.637	0.283
ROA	0.007	0.193	0.069	0.053
ROE	0.018	0.430	0.172	0.118
ATO	0.604	1.818	0.929	0.259
DEBT	0.438	0.810	0.601	0.112
SIZE	9.955	18.493	13.420	3.054

According to Table 4, Table 5 and Table 6, H1a, H1b and H1c are supported, which proves that the positive relationships between VAIC<sup>TM</sup> and profitability, return on equity and productivity. In addition, the equations for H1a, H1b and H1c can explain 38.3%, 27.4% and 22% of the variance in terms of firm profitability, return on equity and productivity, respectively.

**Table 3** Regression results of profitability model-independent variable: VAIC<sup>TM</sup>

H1a: ROA = $\beta_0 + \beta_1$ VAIC <sup>TM</sup> + $\beta_2$ DEBT + $\beta_3$ SIZE + $\varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	5.179***	NA
VAIC <sup>TM</sup>	0.470	2.909**	1.439
LEV.	-0.248	-1.514	1.474
SIZE	-0.629	-3.783***	1.523
Note: ***Denotes significant at $\alpha=0.001$ level; **Denotes significant at $\alpha=0.01$ level; Adjusted R <sup>2</sup> =0.383; F-value=8.024***			

**Table 4** Regression results of ROE model-independent variable: VAIC<sup>TM</sup>

H1b: ROE = $\beta_0 + \beta_1$ VAIC <sup>TM</sup> + $\beta_2$ DEBT + $\beta_3$ SIZE + $\varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	3.085**	NA
VAIC <sup>TM</sup>	0.392	2.236*	1.439
LEV.	0.144	0.813	1.474
SIZE	-0.693	-3.842	1.523
Note: ***Denotes significant at $\alpha=0.001$ level; **Denotes significant at $\alpha=0.01$ level; *Denotes significant at $\alpha=0.05$ level; Adjusted R <sup>2</sup> =0.274; F-value=5.270**			

**Table 5** Regression results of productivity model-independent variable: VAIC<sup>TM</sup>

H1c: ATO = $\beta_0 + \beta_1$ VAIC <sup>TM</sup> + $\beta_2$ DEBT + $\beta_3$ SIZE + $\varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	6.245***	NA
VAIC <sup>TM</sup>	0.494	2.719*	1.439
LEV.	-0.242	-1.315	1.474
SIZE	-0.455	-2.436*	1.523
Note: ***Denotes significant at $\alpha=0.001$ level; **Denotes significant at $\alpha=0.01$ level; *Denotes significant at $\alpha=0.05$ level; Adjusted R <sup>2</sup> =0.220; F-value=4.201*			

However, H2 is not supported due to the insignificant empirical results in the model as shown in Table 7, Table 8 and Table 9, which implies that there is not significant relationship between CEE and financial performance of the investigated firms.

**Table 7** Regression results of profitability model-independent variable: CEE

H2a: ROA = $\beta_0 + \beta_1$ CEE + $\beta_2$ DEBT + $\beta_3$ SIZE + $\varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	2.067*	NA
CEE	0.183	.710	2.930
LEV.	-0.166	-.866	1.619
SIZE	-0.298	-1.007	3.850
Note: *Denotes significant at $\alpha=0.05$ level; Adjusted R <sup>2</sup> =0.227; F-value=4.321*			

**Table 8** Regression results of ROE model-independent variable: CEE

H2b: $ROE = \beta_0 + \beta_1 CEE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	0.846	NA
CEE	0.263	0.989	2.930
LEV.	0.179	0.907	1.619
SIZE	-0.316	-1.038	3.850

Note: \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.182$ ; F-value=3.528\*

**Table 9** Regression results of productivity model-independent variable: CEE

H2c: $ATO = \beta_0 + \beta_1 CEE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	2.317*	NA
CEE	0.341	1.208	2.930
LEV.	-0.201	-0.959	1.619
SIZE	0.029	.091	3.850

Note: \*\*\*Indicates significant at  $\alpha=0.0001$  level; \*\*Indicates significant at  $\alpha=0.01$  level; \*Indicates significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.078$ ; F-value=1.955

Nevertheless, not all the regression results support H2. H2a and H2c are support due to significance of the variables. Positive relationships exist between HCE and profitability as well as HCE and productivity with the explanatory strength of 33.2% and 14.9%.

**Table 10** Regression results of profitability model-independent variable: HCE

H3a: $ROA = \beta_0 + \beta_1 HCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	5.342***	NA
HCE	0.427	2.341*	1.696
LEV.	-0.196	-1.171	1.419
SIZE	-0.668	-3.653**	1.805

Note: \*\*\*Denotes significant at  $\alpha=0.001$  level; \*\*Denotes significant at  $\alpha=0.01$  level; \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.332$ ; F-value=6.636\*\*

**Table 11** Regression results of ROE model-independent variable: HCE

H3b: $ROE = \beta_0 + \beta_1 HCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	3.287**	NA
HCE	0.377	1.720	1.696
LEV.	0.191	1.068	1.419
SIZE	-0.732	-3.621**	1.805

Note: \*\*Denotes significant at  $\alpha=0.01$  level; \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.230$ ; F-value=4.386\*

**Table 12** Regression results of productivity model-independent variable: HCE

H3c: $ATO = \beta_0 + \beta_1 HCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept		6.212	NA
VAIC <sup>TM</sup>	0.420	2.040*	1.696
LEV.	-0.181	-0.962	1.419
SIZE	-0.502	-2.362*	1.805

Note: \*\*\*Denotes significant at  $\alpha=0.001$  level; \*\*Denotes significant at  $\alpha=0.01$  level; \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.149$ ; F-value=2.978\*

Furthermore, significant and positive relationships are discovered between SCE and firm financial performance indicators from Table 13 to Table 15, which support H3a, H3b and H3c. Moreover, the predictive capability of SCE for ROA is the highest in all models with the explanatory power of 44.9%. As for ROE and ATO, 32.8% and 32% of the variance are explained for each model.

**Table 13** Regression results of profitability model-independent variable: SCE

H4a: $ROA = \beta_0 + \beta_1 SCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	5.564***	NA
SCE	0.547	3.633***	1.397
LEV.	-0.178	-1.196	1.374
SIZE	-0.718	-4.395***	1.647

Note: \*\*\*Denotes significant at  $\alpha=0.001$  level; \*\*Denotes significant at  $\alpha=0.01$  level; \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.449$ ; F-value=10.225\*\*\*

**Table 14** Regression results of ROE model-independent variable: SCE

H4b: $ROE = \beta_0 + \beta_1 SCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	3.276**	NA
SCE	0.468	2.815**	1.397
LEV.	0.200	1.216	1.374
SIZE	-0.773	-4.284***	1.647

Note: \*\*\*Denotes significant at  $\alpha=0.001$  level; \*\*Denotes significant at  $\alpha=0.01$  level; \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.328$ ; F-value=6.539\*\*\*

**Table 15** Regression results of productivity model-independent variable: SCE

H4c: $ATO = \beta_0 + \beta_1 SCE + \beta_2 DEBT + \beta_3 SIZE + \varepsilon$			
Independent variable	Standard Coefficient	t-statistic	VIF
Intercept	NA	6.775***	NA
SCE	0.603	3.610**	1.397
LEV.	-0.173	-1.042	1.374
SIZE	-0.562	-3.097**	1.647

Note: \*\*\*Denotes significant at  $\alpha=0.001$  level; \*\*Denotes significant at  $\alpha=0.01$  level; \*Denotes significant at  $\alpha=0.05$  level; Adjusted  $R^2=0.320$ ; F-value=6.337\*\*

## 5. Findings and discussion

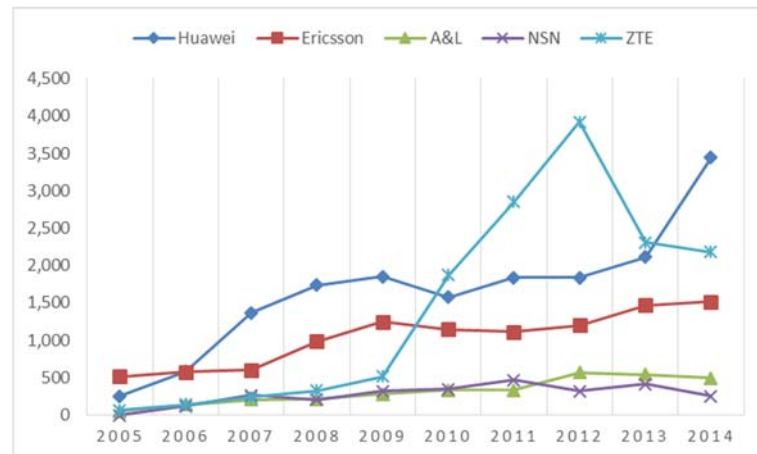
In alignment with prior studies, VAIC<sup>TM</sup> is positively associated with firm financial performance, namely, ROA (Clarke et al., 2011; Zéghal & Maaloul, 2010), ROE (Clarke et al., 2011) and ATO (Liu & Yuan, 2008), which reveals that VAIC<sup>TM</sup> is capable of predicting the firm performance. By contrast, unlike the study of Chan (2009b); Chu et al. (2011) Komnenic and Pokrajcic (2012), the relationship between CEE and financial performance from the investigated firms is insignificant. Therefore, it appears that the development of these firms does not mainly depend on the capital employed.

Furthermore, HCE plays a vital role in increasing ROA (Komnenic & Pokrajcic, 2012) and ATO (Komnenic & Pokrajcic, 2012; Shiu, 2006) according to the empirical evidence from H3a and H3c, but insignificant correlation between HCE and ROE is also revealed, which partially proves the positive relationship between HCE and financial performance. It indicates that the more effective of humane capital in terms of creating value, the better profitability and productivity will be achieved for the firms. Nowadays, the telecommunication industry, is much more knowledge intensive than it was in the past. The unprecedentedly rapid technological revolution needs a large number of talents. This discovery explains the huge expenditure on employee training and development of these firms on enhance the capability and effectiveness of the staff. For instance, Ericsson initiated knowledge and competence management program to enable knowledge sharing and individual improvement (Baladi, 1999). In addition, Huawei established Huawei University in 2005 to facilitate the growth of employees. A&L also opened corporate university to keep its competitive advantages (Anonymous, 2009). Huawei and ZTE also recruited the global talents by establishing international research and development (R&D) centers. As of 2014, Huawei had established 16 global R&D centers, and ZTE had founded 19 R&D centers to appeal the talents in the world wide.

As for SCE, the positive interdependency with ROA (Chan, 2009b; Firer & Mitchell Williams, 2003), ROE (Chan, 2009b) and ATO is found from the existing empirical evidence. Moreover, compared with all the independent variables, SCE is the most effective element to predict the financial performance with the highest adjust R<sup>2</sup> in the tested equations. It demonstrates the importance of SCE for the success of these telecommunication equipment vendors, since higher portion of SC in creating value, the higher possibility of achieving outstanding financial performance the firms. In addition, it also visualized the investment strategy of the telecommunication equipment manufacturers, because innovative technology, one important indicator of SC, is the unique competitive advantage in the telecommunication industry, which takes up a large portion of the budget of the investigated firms. After analyzing the annual reports of all these investigated firms in the fiscal year of 2014, it was found that more than 10% of their revenue was spent on R&D for the development of advanced technologies and products.

Furthermore, these advanced technologies are protected from infringement in the form of patents. As one of the important components of SC, patents also reflect the innovation capability of a firm. According to world intellectual property organization (WIPO), Huawei ranked the top on patents application for the last two consecutive years and ZTE filled the third place of the list (WIPO, 2016). From the data of WIPO from 2005 to 2014, the patents application of Huawei and ZTE increased dramatically. Meanwhile, the performance of Ericsson was steadily growing, but the number of patents application of A&L and NSN were

far behind Huawei with rather constant pace, as shown in Figure 2. The data of patents application also reflects the current expansion or shrink of these five large companies.



**Figure 2** Number of patent application from 2005 to 2014

On the other hand, these companies also adopted legal means to maximize their profitability, since the lawsuit of intellectual property infringement is a common occurrence in the telecommunication industry. For instance, in January 2011, Huawei filed a lawsuit in Federal court of Chicago for the risk of infringing its intellectual property due to the acquisition of Motorola Mobility and Motorola Solutions initiated by NSN (Gross, 2011). In April, a truce was struck between the two sides. As a result, Huawei received a one-time compensation for use of its technology from Motorola and granted the mergence of Motorola and NSN (Cheng & Raice, 2011). At the same year, Ericsson sued ZTE against infringing on GSM and 3G patents in Europe, but later both of them reached an agreement that ZTE would pay royalties to Ericsson in 2012 (Ricknäs, 2012). Besides the battle field in the court, licensing intellectual property to each other to achieve reciprocal situation is a normal strategy in telecommunication industry. For example, Ericsson believes that licensing of intellectual property rights is essential impetus for Ericsson's growth and satisfying return on R&D. In 2002, Ericsson and Huawei signed patent license agreement on mobile technology (Ericsson, 2002) and the both extended it in 2016 (Ericsson, 2016). They both deemed the intellectual property agreement was beneficial for the development of telecommunication industry and innovation encouragement.

## 6. Conclusion

To the best knowledge of authors, this is the first research that analyzes the success of the top five telecommunication vendors from intellectual capital perspective. It also verifies the capability of VAIC<sup>TM</sup> in predicting firm financial performance. In addition, positive associations of HCE and firm financial performance are partially proved. Finally, significant relationship existing between SCE and financial performance is testified.

Besides theoretical contribution, this study also offers some implications for the firms in the telecommunication industry. Under the hypercompetitive business environment, it is critical for the firms of the telecommunication industry to improve the capabilities of the staff. Training and development programmes, knowledge management programmes, corporate universities are good entry points for individual's growth. On the other hand, international talent recruitment can help the firms to enhance their capabilities. Moreover, satisfying



reward and compensation management system should be designed to remain the talents in the firms. Therefore, global vision on the human resource management is imperative in the globalized market.

To improve the profitability, productivity and return on equity, the firms are suggested to transform their HC into SC, especially on the technology innovation, which can offer these telecommunication vendors a huge competitive advantage. Furthermore, it is beneficial to join the intellectual property alliance with the large telecommunication vendors, such as Ericsson, Huawei, which can save the R&D cost and avoid intellectual property infringement.

This research also has its limitations, which can be addressed for future study. The VAIC™ approach was not considered as a valid approach to measure IC (Stähle, Stähle, & Aho, 2016), thus, new methods of IC measurement based on the financial data sheet would be developed to retest our hypotheses. Furthermore, the relationship between HCE and ROE is not significant, it needs to be investigated into details for the reasons. According to the study, SCE is positively related to financial performance. In this study, only one of the indicator of SC: patents are examined. Although it's not easy to quantify all the elements of SC, such as information management systems, management processes, it is still necessary to verify the role of SC from other indicators on facilitating the success of telecommunication equipment vendors in the future.

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# The Co-Creation-Wheel, Instrument for Successful Innovation Networks in Knowledge Economy

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**Abstract:** This paper presents the instrument 'Co-Creation-Wheel', a guideline and reflection tool to stimulate innovative co-creation at the workplace and to support professionals in innovation networks. Co-creation can be regarded as a collective process where people or organizations together generate and develop new products, processes or services in contact with users. The instrument is based on four studies, of which two are large-scale inter-organizational case-studies between business - government - universities, on the relation between organizational innovation, social capital and knowledge productivity. The instrument exists out of an inner and outer circle with a core, in color, illustrating four organizational and communicative dimensions, twelve team factors of co-creation and 5 external conditions. The Co-Creation-Wheel proves to be a comprehensive and inspiring model, showing the main factors of the social dynamics of the processes within co-creation networks, an underdeveloped area. Next to the details of this instrument, the paper describes applications of the Co-Creation-Wheel in different organizational fields and shows illustrations of its function, especially steering, reflection and evaluation of collaborative innovational practices.

**Keywords:** co-creation, innovation, network, intellectual and social capital, collective knowledge

## 1 Introduction

In order to create added value, today's organizations need to respond to the technological and social changes in order to stay ahead of the global competition. In this process of constant innovation human resources are a factor of utmost importance (Kessels and Poell 2004). More and more, innovations require multidisciplinary and even inter-organizational approaches, as single organizations often do not have the resources and employees to face these challenging and complex innovations. These approaches are a challenge for professionals in innovation networks, since they need to collaborate intercultural with others outside their cultural domain, with other values, jargon and different perspectives (Sheehan et al. 2014; Riggolizo and Amabile 2015).

Co-creation has become one of the promising answers to bridge the differences. Although the term is mostly used in the business domain (Prahalad and Ramaswamy 2000; Sanders and Stappers 2007), recently the concept appears also in the management field. Co-creation can

be regarded as a collective process where people or organizations together generate and develop new products, processes or services (Ind and Coates 2013). The social dynamics of the processes within co-creation networks, appears to be an underdeveloped area, as was discussed several times by scholars at international conferences (UFHRD Edinburgh 2014; IHRM Cracow 2015; ICMLG Amsterdam 2016). In particular, the presence of supportive conditions, the required competences and the contribution of managers to innovative co-creation, appeared to be topics that need further elaboration (De Cieri 2014).

With this paper we present the instrument the 'Co-Creation-Wheel', a model on success factors for co-creation in inter-organizational and intercultural innovation teams, validated by experts from science and practice. It is a comprehensive model that demonstrates multiple organizational and communicative dimensions and factors of co-creation. It is based on the results of four studies, two of them large-scale inter-organizational case-studies between business, government and universities, on the relation between organizational innovation, social capital and knowledge productivity. The model intends to serve as a guideline and reflection instrument for managers and employees in innovation projects.

The paper describes shortly the studies which resulted in the instrument The Co-Creation-Wheel, and shows the model and its application in innovation practices in different organizational fields. It demonstrates also the function of the instrument 'Co-Creation-Wheel', how its usefulness could be improved, and how management can enhance innovative capabilities of employees and can improve the workplace culture to realize the success factors of inter-organizational innovation by co-creation.

## **2 Approach and Methodology**

The Co-Creation-Wheel is a result of a literature study, two empirical studies, aiming at large-scale innovation processes between the university sector, government and businesses and a design and validation study. Their intention was to collect relevant empirical knowledge about innovation processes in teams and organisations.

The theoretical basis of the Co-Creation-Wheel is the theory about social capital, innovation and co-creation. Earlier research of scientists indicated that 'social capital' is an enhancing factor for innovation (Coleman 1990; Paldam 2000). Therefore our research addressed the relation between large-scale innovation processes and social capital in so-called University-Industry Partnerships.

Four studies have been carried out to meet the objective: firstly a literature review on the relation between social capital and innovation, then two case-studies of large-scale innovation projects between university and business sectors, and finally a validation study on the instrument we developed targeting innovating practitioners, the 'Co-Creation-Wheel'.

The *first study* presents a literature review about social capital and innovation (Ehlen 2012). It also develops a research framework for the other three empirical studies. This literature review focused on professional education, non-profit organisations, and knowledge organisations and reports on peer-reviewed, empirical research about social capital and

innovation during almost a century, the period 1916 until 2014 (Ehlen et al. 2013). We found strong evidence of the influence of the concept of social capital on innovation in a broad range of social sectors and socio-economic sciences. The concept Social capital refers to relationships, to active connections and/or social networks that result in increased value or productivity and involves mechanisms through which knowledge can be transferred from one to another. Especially the three-dimensional model of Social Capital by Nahapiet and Ghoshal (1998) presents clearly how the dynamics of Social Capital facilitate the exchange of knowledge and result in creation of new collective knowledge. The three dimensions, which play an important role in the process of combination and exchange of knowledge, and so in creation of collective knowledge are: the structural dimension, the relational dimension and the cognitive dimension. Mechanisms are among others: network ties, appropriate organization, trust, norms, shared language and narratives.

*Study two* is an exploration of an inter-organisational three-year innovation project, with features of an University-Industry Partnership (Ehlen et al. 2016). The goal was to observe, gather and analyse the innovation activities of the participants at different levels, in order to measure the output and to discover ways to sustain the innovating professionals. The setting of the project is innovation between eight Leisure businesses and eight Educational institutions (Limburg Leisure Academy), aimed to improve vocational and higher education for the Leisure sector. The social capital model of Nahapiet and Ghoshal was applied to design the research framework for this multi-case study.

Three research questions: Which social capital dimensions stimulate the innovation process? What is the output of the innovation process for participating organisations and professionals? How can the innovating professionals be supported from a social capital perspective? A mix of mostly qualitative methods and instruments was used. Findings: All dimensions appeared to be important but each played a different role during the various project phases.

*Study three* provided the opportunity for some replication by studying a second large-scale innovation project in the subsidized Health Care sector. Universities, educational institutions and the regional government were involved (Ehlen et al. 2014a). We applied also the concept of 'knowledge productivity' in order to describe these activities (Kessels 2001, 2004; De Jong 2010). The research questions: Which knowledge-productive activities lead to improvement or innovation for the organisation? Which knowledge-productive activities lead to new capabilities among the professionals? Which dimensions of social capital stimulate these knowledge-productive processes? Which external conditions stimulate social capital and knowledge-productivity? The participants were interviewed, extended with document-analysis. Findings: a model of 'eight steps to sustainable knowledge productivity', as guideline for HRD-professionals; all four dimensions of social capital contributed to knowledge productivity; eighteen indicators were found, four external conditions proved to be stimulating.

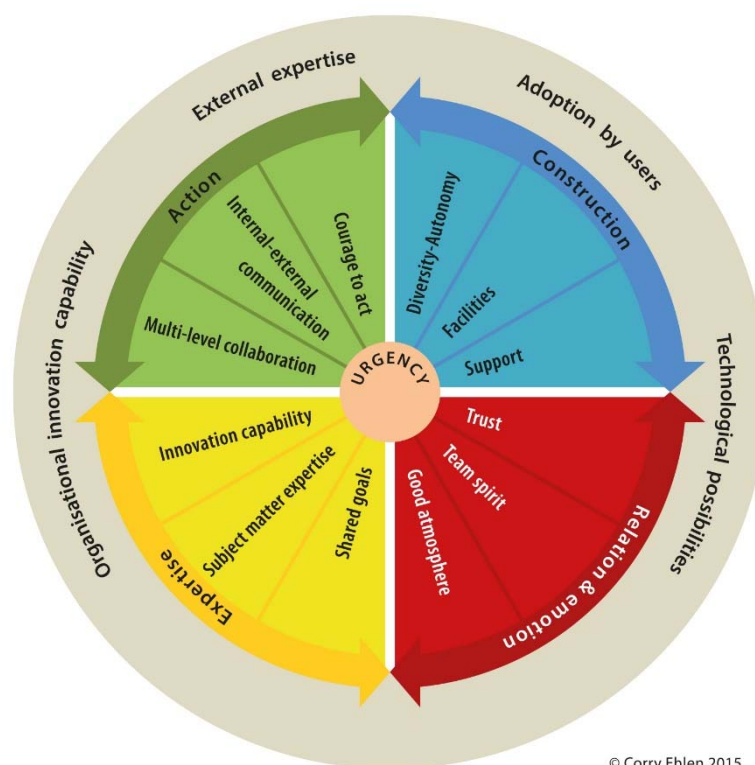
*Study four*: The insights in these three studies resulted in the design and validation of a model of mechanisms for successful innovation: the 'Co-Creation-Wheel', a systematic graphical representation of the main mechanisms for successful innovation. Four questions were

leading: Which mechanisms and dimensions of the ‘Co-Creation-Wheel’ do experts discern as important? Which interdependency between the mechanisms and dimensions can be discerned? Which actors and activities are important in co-creation processes? What is the value of the ‘Co-Creation-Wheel’ for practice and future research?

The findings of the validation study demonstrated that all four dimensions played a role in effective co-creation processes, and their function highly depends on the context of the innovation practice and the actors involved. External conditions were added by the experts of the validation study. All dimensions influence each other and need a minimum quality. All twelve mechanisms of the internal circle of the ‘Co-Creation-Wheel’ proved to be important for successful co-creation (Isaksen and Ekvall 2010)

The main outcome of these four studies was the revised ‘Co-Creation-Wheel’, a holistic and systemic presentation of mechanisms, suitable as intervention instrument in innovation practices. It provides a framework for the integration of individual, group and organisational characteristics (Ehlen et al. 2014b, 2015).

### 3 Design of the instrument Co-Creation-Wheel



**Figure 1** The Co-Creation-Wheel

To make the instrument usable for the practitioners, the ‘Co-Creation-Wheel’ (Figure 1) is designed according to specific design principles (Van Aken and Andriessen, 2011). This resulted in the use of 4 colors, to emphasise each dimension, in the use of only three elements



per dimension, and the use of a core, an inner- and outer circle as attractive form. Also in the use of the acronym CREA, to emphasise the four dimensions Construction, Relation-emotion, Expertise, and Action.

C - onstruction = the structure of the innovation practise

R - elation-emotion = the relation – emotion dimension mainly in the team

E - xpertise = the cognitive dimension mainly in the team

A - ction = the design and implementation activities in the innovation practise

Each dimension is specified with three elements or mechanisms.

*Construction:*

Elements of this dimension are: autonomy, facilities and support. These elements have to be constructed to an inviting and powerful innovation environment.

*Relation - Emotion:*

Mechanisms of this dimension are: trust, team-spirit and good atmosphere. These mechanisms are conditions for an inspiring and safe innovation team.

*Expertise:*

Mechanisms of this dimension are: shared goals, subject matter expertise and innovative capability.

*Action:*

Mechanisms of this dimension are: collaboration, communication, courage and decisiveness to act.

In the core is the starting point for co-creation: *urgency*

In the outer circle are the *external conditions*: organisational innovation capability, external expertise, technological possibilities, adoption by users.

## **4 Application of the Co-Creation-Wheel in practice: The Co-Creation-Wheel is spinning**

### **4.1. Application Co-Creation-Wheel with specified elements**

To apply the Co-Creation-Wheel in practice as guideline, intervention or evaluation instrument, each element can be specified again in sub-elements. For instance:

**Autonomy**

- working according individual passion and motivation
- freedom to experiment
- ownership of the method and the results

**Facilities**

- enough time
- enough finance, material and ICT
- suitable work conditions

### Support

- support of the management
- support of colleagues
- support of future clients

### Trust

- based on integrity between co-innovators
- between management and innovators
- confidence in the feasibility of the task

### Team spirit

- connectivity
- individual interest is subordinate to team goal
- co-operative leadership

### Good atmosphere

- fun to be together
- pleasure
- relaxed work atmosphere

### Shared goals

- agreement about goals,
- between stakeholders, innovators, levels
- shared values

### Subject matter expertise

- the right expertise and skills for the job
- multi-disciplinary diversity
- a combination of different viewpoints

### Innovation capability

- ability to create new combinations of knowledge
- ability to design
- ability to think in a user-oriented way

### Collaboration

- between innovators and initiator/grant-giver
- between innovators and internal and external networks
- between innovators and future users

### Communication

- transparent communication with internal stakeholders
- transparent communication with external stakeholders
- constructive communication in the innovation team

Courage and decisiveness to act

- focus on results
- be boundary crossing
- dare to take unusual decisions

#### **4.2 Application of the Co-Creation-Wheel with a questionnaire**

The participants in innovation settings can eventually use a questionnaire, as tool, to reflect on the elements of the 'Co-Creation-Wheel' in relation to their innovation practice. Each manager or team of an innovation practice can choose their own questionnaire to specify the instrument 'Co-Creation-Wheel'.

Here is given an example of questions of some elements out of each dimension of the Co-Creation-Wheel:

##### *Autonomy*

Are you motivated for this innovation?

Do you feel owner of the method?

Are you free to experiment and design products?

##### *Trust*

Do you have trust in each other's integrity and expertise?

Is there trust between management and innovators?

Does the team trust the feasibility of the task?

##### *Subject matter expertise*

Do you have the right subject matter expertise for your task?

Is there the right combination of expertise in the team?

Do you use external expertise?

##### *Courage to act*

Is the team result-oriented?

Is there courage to think out of the box?

Is the team able to implement the results together with the users?

#### **4.3 Settings where the Co-creation-Co-Creation-Wheel has been applied**

Over the last 2.5 year the Co-Creation-Wheel has played a role in many innovation settings, international, and in different societal domains. See [www.cocreatata.nl](http://www.cocreatata.nl).

Ten of them have been selected and described more specifically in chronological order.

1. Project 'Co-Creation and supply chain integration' of SME's, regional government and Zuyd University, Heerlen, The Netherlands (2015).
2. Project 'The Macondo Lab, Co-creation between Industry-Government-University', at Universidad Simon Bolivar, Barranquilla, Colombia (2015).

3. Steering committee of a long-term innovation project 'Customer Service', at a Health Care Insurance Company, The Netherlands (2015, 2016).
4. Project 'Co-creative leadership' in leadership training of headmasters of schools of the Archdiocese Kigali, Rwanda (2016).
5. Training workshops with the four first Co-Creation-Coaches in The Netherlands (2016).
6. Round Table 'Innovation Strategy' of a Water Company, The Netherlands (2016).
7. Conference 'Moving together', of the 'Pact Care and Welfare', Arnhem, The Netherlands. Keynote speech and large-scale game 'The power of co-creation' (2016).
8. Reflection project with CoPs (communities of practice) of 30 Professional Development Schools in The Netherlands (2015-2017).
9. Lecture 'Co-creation of organizational innovation' and workshop 'Valorization of the Co-Creation-Co-Creation-Wheel' at the Institute of Economics of the Ural Branch of Russian Science Academy, and at the Ural State Economic University and the Ural Federal University. Ekaterinburg, Russia. (2016)
10. Crowd-scan with the Co-Creation-Co-Creation-Wheel of the innovation power of the participants of Congress 'Social makes Healthy', Utrecht, The Netherlands (2017).

## **5 Functions and usefulness of the Co-Creation-Co-Creation-Wheel**

At these settings research has been done with two research questions. Data has been gathered by observation and interview.

*Research question 1:* Which function does the 'Co-Creation-Wheel' have in the different innovation practices?

To give an impression of the findings, we present some of them:

Setting 2: The starting Living Lab 'Macondo-Lab' in Barranquilla had organized a meeting with European experts on co-creation and with local enterprises, staff and teachers to discuss the principles of co-creation between government, enterprises and education. The Co-Creation-Wheel was presented by the designer of the Wheel. The coordinator of the Macondo-lab adapted the elements of the Co-Creation-Wheel to the starting Macondo-lab. After this presentation the elements of the Co-Creation-Wheel and the co-creation that had to be realized, were discussed.

Setting 3: The 'Co-Creation-Wheel' has been presented at the start of an innovation project of a large national Health Care Insurance Company in the steering committee. The function was to get inspiration to start-up. After the presentation by the designer of the Co-Creation-Wheel, the committee discussed 2.5 hours about the application of the dimensions and elements of the Co-Creation-Wheel in the new innovation project. Later on in the project the elements served as evaluation items.

Setting 8: The instrument is used as guidance and evaluation instrument by 30 CoP's in the field of primary education. There have been organized training meetings for each CoP. At each meeting, the instrument is presented by the chair, a lecturer, via a web-lecture of the designer of the instrument. Later on each participant was given a picture of the Co-Creation-Wheel and a questionnaire. Each member filled out the questionnaire individually. The questions were discussed with the members of the COP. Finally the answers were presented to the other CoP's and discussed. Half a year later a digital scan has been sent to each CoP, to evaluate the co-creation process with the elements of the Co-Creation-Wheel.

Setting 10: All participants of the Congrestival made a joint scan of their co-creation power, using an electronic questionnaire of the Co-Creation-Wheel. The results were presented directly at a big screen. This served as an introduction and a quick reflection with the Wheel.

*Research question 2: Did the practitioners add contributions to the 'Co-Creation-Wheel' to improve the usefulness of the instrument?*

Setting 1: All 5 entrepreneurs decided to use the Co-Creation-Wheel as a reflection instrument in their businesses. They requested an A3 format, to be able to present it at the wall of their office, or as discussion paper. Filling in the co-creation-chart gave them a fast insight into the innovation power of their business.

Setting 2: The starting Macondo-lab wanted to use the Co-Creation-Wheel as it was. Despite the differences in culture between Colombia and Europe, all the elements were recognized as important. Especially the element trust was appreciated. Of course the presentation materials and the Co-Creation-Wheel were presented in Spanish.

Setting 3: The members of the steering committee of the new innovation project were inspired by the Co-Creation-Wheel and used the plastic A3-picture of the Co-Creation-Wheel in their discussion of the start-up of the innovation project. They found the Co-Creation-Wheel very useful as it was, especially the combination of inner team elements and outer conditions. They used it later on also in their own organization.

Setting 8: All participants found the Co-Creation-Wheel a very useful evaluation instrument, which presented many elements they had experienced as important. It also showed elements which they had not realized, but identified them now as important as well. Most of them wanted to use the instrument later on in their CoP for further evaluation and for discussion with more colleagues in the organization, as a self-guidance HRD instrument. The instrument gave them 'words' to tell their experiences. They did not find 'missing elements'. The presentation of the Co-Creation-Wheel and the questionnaire were found very useful.

### **5.1 Conclusion about the functions and usefulness of the Co-Creation-Wheel**

The instrument serves different purposes, such as inspiration and ordering, reflection, evaluation and guiding. None of the users wanted to add items or change something else of the Co-Creation-Wheel.

To enhance its usefulness, it proves good first to present the instrument as a whole, before using it in a group or by individuals. Using different languages and different presentation forms increases its practical usefulness internationally. The usefulness can be improved by adding a tool-box to the instrument. Such as a questionnaire with the elements of the Co-Creation-Wheel, a quantitative spider chart, a poster or plastic sheet. Some participants asked for a card game and a handbook in their own language. The 'Co-Creation-Wheel card game' is under development as well a handbook for practitioners about co-creation and the instrument Co-Creation-Wheel.

The author meanwhile has developed a digital scan of the Co-Creation-Wheel, which is suitable for bigger teams and for a quick comparison of the innovation power of teams in an organization. This digital scan is appreciated mostly by young professionals or teams working with ICT-tools.

## **6 Originality and value of the study**

This study presents the design and the application of the Co-Creation-Wheel in innovation practices, since its origin. The results show that this instrument can be used in different ways in different innovation practices in many fields.

With some more tools it would become possible to use the Co-Creation-Wheel not only as an inspiring reflection and evaluation instrument for team members, but also as a scan, to provide a quick and easy overall view of an innovation practice to managers or principals. In that way the Co-Creation-Wheel also can serve as a coding instrument in analyses of innovation practices.

Its social implication, its value and originality, is the emancipatory function of the Co-Creation-Wheel, because the Co-Creation-Wheel enhances the competences and the knowledge of the innovators and can as such be seen as a self-HRD-instrument (Poell 2012ab). As limitation of the study has to be mentioned the short time horizon of the tests until now.

## **7 Implication for future practice and research**

The instrument Co-Creation-Wheel proves to be an easy to use, inspiring and multi-functional instrument for innovation teams. It makes it possible to quickly scan innovation processes in teams and organizations. The elements of the Co-Creation-Wheel give words to the intangible processes, which helps to get insight in what happens. That makes it easy to share experience and tell narratives. The seventeen elements of the Co-Creation-Wheel can be divided in sub elements, which can function as codes to analyze data in future scientific research.

## **8 Conclusion and Discussion**

The findings show that the Co-Creation-Wheel is a very useful instrument for practitioners in different innovation practices. Application is appreciated in different fields and innovation

settings in Europe, in Latin America, Asia and Africa. No contributions are necessary in the content of the Co-Creation-Wheel.

The instrument serves different functions: inspiration and start-up instrument, reflection and evaluation instrument during a long term innovation project, and guiding instrument during innovation activities. It proved useful to first present the theory and the Co-Creation-Wheel as a whole before using the instrument in discussion and in relation to the real practice. Presenting the Co-Creation-Wheel in different languages and formats improves its usefulness.

The results promise that innovation teams can be self-guiding during the innovation process with the help of the Co-Creation-Wheel.

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## The FRIENDship Program: Sampran as a Center of Innovative Leadership Development in Thailand

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**Abstract:** This paper presents the case of Sampran Riverside as a partner in executing the FRIENDship program in a style aligned with multiple intelligences. Inequality, societal differences, and uncertainty are current challenges. Researchers propose a FRIENDship leadership program to strengthen social-ability, resilience, and mental agility, drawing from the rich experiences of the past in Thailand and grounded to four theories: (a) social identity theory, (b) theory of multiple intelligences, (c) sufficiency economy philosophy, and the 4Ps of innovation. The researchers examine how (a) multiple intelligences can be blended in a sustainable and innovative leadership development program in Thailand, and (b) how such an intervention takes place in Thailand.

**Keywords:** FRIENDship leadership program, FRIENDS, multiple intelligences, Sampran Riverside, social identity, sufficiency economy philosophy, 4Ps of innovation

### 1 Introduction

Changing climate, ageing population, rising income and wealth disparity, increasing polarization of societies, and profound social instability continue to be top perceived risk-trends around the world (World Economic Forum 2017). Profound income inequality exist, evidenced by eight people owning the equivalent wealth of the poorest half of the world (Hardoon 2017). Such inequality has sparked widespread protests (Bendor et al. 2015; Stiglitz 2011, 2013).

Income inequality brings about a higher occurrence of social issues due to perceived societal differences (Grijalva 2011; Rodgers 1979; Wilkinson and Pickett 2006, 2009) that could divert resources and create more uncertainty (Alesina and Perotti, 1996); politics (Lasswell 1936). The competition for and use of resource in complex organizations (e.g. Perrow 1972) affect the distribution of resources to the extent that it is noticed as a social science problem (Pondy 1970). This distills to social comparison and social influence on decision making (Festinger 1954; Thompson and Tuden 1959), as noted by Pfeffer et al. (1976).

Social norms provide a means to safe response socially for individuals (Cialdini 2001; Cialdini and Goldstein 2004). Social influences modify perception (Germar et al. 2014). At the same time, group social identities influences group processes (Postmes and Haslam 2005). In other words, social comparison influences the way we perceive and think (Suls et al. 1991; Van der Zee et al. 1998, feel (Fließback et al. 2007) and act or behave (Gerrard et al. 2005; Yadin 2015),

positively or negatively, as noted in the works of Bendor et al. (2015) and Van der Pligt and Vliek (2017). However, influences are not equally effective, argues Levine and Tindale (2015); it depends on the individual's self-categorization (Abrams and Hogg 1990; Turner 1991) towards a particular group, want for positive social identity (Tajfel and Turner 1986) and wish to mitigate or reduce uncertainty (Hogg 2007). On the other hand, self-uncertainty produces undesirable behaviors and even group or organizational extremism (Hogg and Adelman 2013; Hogg et al. 2007).

Volatility, uncertainty, complexity and ambiguity are current challenges, requiring new skills for performance (Bennett and Lemoine 2014; Johansen and Euchner 2013), and new leadership development aimed at creating social capital, better social relationships, adaptive ability (Turnbull and Noble 2014), influencing social goodness, learning through real life experiences real-time via interaction with technology, and creating development programs relevant to the future (Kaewpijit 2016; Mak et al. 2016).

A clear ingroup identity also facilitates collective action (Kelly 2003), from resistance to outgroups (Abrams and Hogg 1990) to greater effectiveness of ingroups in exerting social influence (e.g. Clark and Maass 1988; Martin 1988). Such a social situation could promote different intelligences (Weller, 1999) beyond the primary (Gardner 1983), enhancing team building efforts and improving team efficacy and effectiveness (Green et al. 2005; Martin 2001; Weller 1999). At the same time, the social situation should bring about appreciation and connection to nature, enhance connections with self and others, and activate other senses and potential (Gardner 1983); providing a chance to experience different perspectives of social interaction and bringing back the humanity side of connection in a digital world (Mak et al. 2016)

The researchers, based in Thailand, would like to contribute to the Asian body of knowledge, and introduce useful knowledge from Thailand to the world, while updating and adding to the body of existing knowledge.

Therefore, the purpose of this study is to develop an innovative leadership development program that strengthens the social-ability, resilience, and mental agility of individuals for today's challenges, drawing from the rich experiences of the past in Thailand. In the development process, two research questions shall be answered, (a) discovering how multiple intelligences can be blended in a sustainable and innovative leadership development program in Thailand, and (b) how such an intervention takes place in Thailand.

## **2 Theoretical Framework**

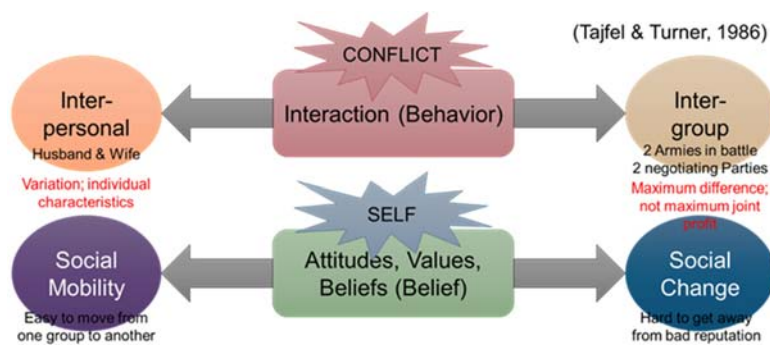
Underpinning theories involved in this study include (a) social identity theory, (b) theory of multiple intelligences, (c) sufficiency economy philosophy, and (d) the 4Ps of innovation.

### **2.1 Social identity theory (SIT)**

Social identity theory (SIT) was developed to explain (a) intergroup conflict enhancing in-group identification and positive attachment, (b) omitted in-group identification, and (c) neglected processes of creating and sustaining group identity, and the effects on in-group and intergroup behavior (Tajfel and Turner 1979).

Interaction between individuals operated on a continuum (Hornsey 2008; Tajfel and Turner 1979, 1986). One end of the continuum describes interaction based on “interpersonal relationships and individual characteristics” (Tajfel and Turner 1986, p. 8). The other end describes interaction based on “membership in various social groups or categories” (Tajfel and Turner 1986, p. 8).

The individual’s belief system is another continuum within SIT (Tajfel and Turner 1986). One end of the belief continuum describes social mobility, where movement of individuals between groups is possible (Tajfel and Turner 1986). The other end describes social change, where social status prevents movement to other groups (Tajfel and Turner 1986).



**Figure 1:** Two continuums as gaps within realistic conflict theory that social identity theory filled (Tajfel and Turner 1979, 1986)

Figure 1 shows a graphical representation of the interaction and belief-system continuums described in SIT.

Four linked concepts in social identity theory form the basis of (a) in-group relations (that of ties and affection), and (b) importance of the group (that of identity and meaning central to an individual) central to this study; these are,

- (a) Social categorization, where groups of individuals devoid of personal interests will act to preserve or maximize the benefit (meaning) to the group (Tajfel et al. 1971; Tajfel and Turner 1979, 1986).
- (b) Social identity, where social categorization “creates and defines the individual’s place in society” (Tajfel and Turner 1986, p. 16) and individuals maintain self-esteem by making comparisons to others (Tajfel 1974; Tajfel and Turner 1986).
- (c) Social comparison, where comparisons are to maintain or achieve higher status (Tajfel and Turner 1979, 1986).
- (d) Positive distinctiveness, where the reactions to low group status include individual’s ability to leave (physically or psychologically) the group, redefining how status is measured or how groups are compared, and direct competition with out-groups to raise status (Tajfel and Turner 1979, 1986).

## 2.2 Theory of multiple intelligences

Gardner (1983, 1999) posited eight intelligences that individuals utilize, individually or collectively, to solve problems in the social setting they are situated in (Gardner 1983, 1999, 2006a, 2006b). These eight intelligences, based entirely on empirical findings (Gardner and Moran 2006) are shown in Table 1.

**Table 1:** Gardner's eight intelligences (Davis et al. 2011, p. 3)

Intelligence	Description
Linguistic	An ability to analyze information and create products involving oral and written language such as speeches, books and memos
Logical-Mathematical	An ability to develop equations and proofs, make calculations, and solve abstract problems
Spatial	An ability to recognize and manipulate large scale and fine-grained spatial images
Musical	An ability to produce, remember, and make meaning of different patterns of sound
Naturalist	An ability to identify and distinguish among different types of plants, animals, and weather formations that are found in the natural world
Bodily-Kinesthetic	An ability to use one's own body to create products or solve problems
Interpersonal	An ability to recognize and understand other people's moods, desires, motivations and intentions
Intrapersonal	An ability to recognize and understand his or her own moods, desires, motivations and intentions

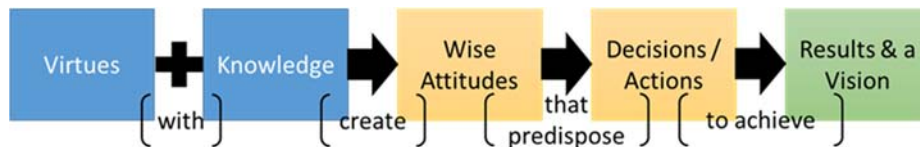
Individuals possess a unique profile of these intelligences, displaying different levels of strengths in each of the eight; not even identical twins have the exact same profile (Davis et al. 2011).

## 2.3 Sufficiency economy philosophy

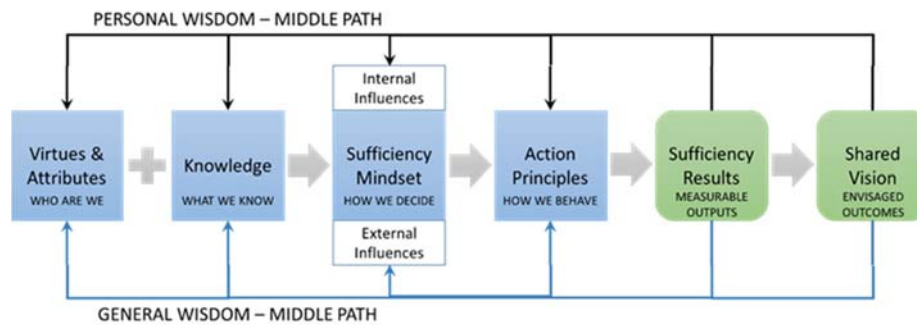
His Majesty the late King Bhumipol Adulyadej of Thailand bestowed upon the Thai nation an approach of middle path on December 4, 1997 in his royal speech given on the occasion of his birthday (Suwanraks, 2000), known as the Sufficiency Economy Philosophy (SEP). The SEP has been the guiding principle for Thai people since the Eighth Economic and Social Development Plan (NESDB 2011) and is a topic widely written about by scholars (e.g. Mongsawad 2010; Mongsawad and Thongpakde 2016).

Sufficiency Economy ... requires the application of knowledge and ethics in the forms of accurate knowledge, care and giving, mutual assistance, and collaboration ... to create bonds which closely link people from all sectors and boost positive creative force leading to unity, balanced and sustainable development... (Hongsrnagon 2009, p. 2).

Bergsteiner and Piboolsravut (2016) summarized all critical attributes of the SEP Model into simple to understand graphics, as shown in Figure 2 and Figure 3.



**Figure 2:** The simplified Sufficiency Economy Philosophy process model as described by Bergsteiner and Piboolsravut (2016). Adapted from Bergsteiner and Piboolsravut (2016, Figure 3.2, p. 46)



**Figure 3:** The Sufficiency Economy Philosophy Model as described by Bergsteiner and Piboolsravut (2016). Adapted from Bergsteiner and Piboolsravut (2016, Figure 3.7, p. 52)

### 2.4 The 4Ps of innovation

“The 4Ps approach helps companies in three principal ways: focusing effort, managing interdependencies and enlarging choice” (Francis and Bessant 2005, p.180). Innovation is situational; reframing or an alternative view of the market position or context and through a different lens / point of view provides a different identity (Tidd and Bessant 2013). The 4Ps of innovation are listed in Table 2. Of particular interest is P4 with regards to values, beliefs, and social setting of an organization, within which shifts and redistribution of power and structure could be brought about with a different view point (Abrahamson 1991).

**Table 2:** The 4Ps of innovation (Tidd and Bessant, 2013, p. 24)

“P”	Description
Product	Changes in the things (products/services) which an organization offers
Process	Changes in the ways in which they are created and delivered
Position	Changes in the context in which the products/services are introduced
Paradigm	Changes in the underlying mental models which frame what the organization does

### 3 Conceptual Framework: FRIENDS and FRIENDship

Five key words, (a) intelligences, (b) synthesis, (c) creation, (d) respect, and (e) ethics (Gardner 2006c) formed an important cornerstone for this study. The researchers phrased these as multiple intelligences enabling synthesis and creation rooted in respect and ethics and framed

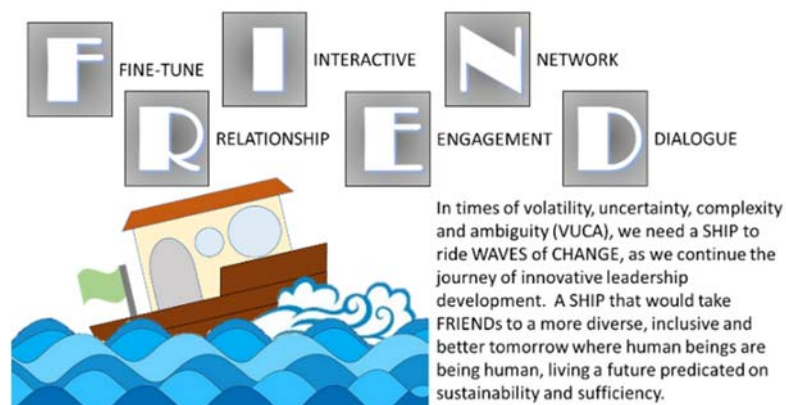
it as the guiding principle. Drawing from the literature, the researchers conceptualized an activity-based learning program designed to (a) trigger the participants’ different senses and intelligences, (b) help participants build a group / team / organizational identity and establish social norms, (c) instill sufficiency economy principle, and (d) target innovation of paradigm and position context that clarifies purpose and meaning of the team.

Here, the researchers propose the FRIENDship framework, of fine-tuning relationships in an interactive, engaged network of dialogue to build an organization that carries through waves of change. This framework encompasses activities modelled after multiple intelligences.

Figure 4 shows the activities, collectively known as FRIENDS, and the corresponding desired outcome of the FRIENDship framework. Incidentally, the spatial and linguistic layout of FRIENDS and FRIENDship convey the alphabets “I” and “L”, which could be interpreted as “innovative leadership”, or “innovative learning”, or similar. Figure 5 shows the intention of the FRIENDship program.



**Figure 4:** Participants learn together through a series of activities to achieve the objectives of the program; FRIENDS and FRIENDship



**Figure 5:** The FRIENDship program as envisioned by the researchers: Fine-tuning relationships in an interactive, engaged network of dialogue

#### 4 Research Methodology and Method

An exploratory study of a pilot FRIENDship program was conducted with a phenomenological research approach, based on epistemological position that data is contained in the perspectives of the researchers, organizing support staff and participants involved (Groenewald 2004; Patton 2015). The first researcher was the primary designer of the program while the third researcher involved as part of the organizing staff. Table 3 describes the tools and data collected and Table 4 lists trustworthiness considerations (Patton 2015)

**Table 3:** Description of tools and data collected

Tool	Data Captured	Captured By Who	Contributors
Flip-Chart	Themes emerging from discussions	Participants	Participants
Photographs / Videos	Interaction activity (example: game)	First and third author (as participant-observer)	Participants

**Table 4:** Trustworthiness considerations (Patton 2015)

Consideration	Check	Who
Credibility	Member checking	Went back to participants to make sure meaning was captured correctly based on field notes
	Debrief	Daily wrap-up session to check accuracy of information
Dependability	Triangulation	Check between first author and third author Check between first / third author with second author
Subjectivity	Reflexivity	First and third author self-reminder / cross-reminder of bias / role

#### 5 Sampran Riverside: Realizing FRIENDship

Sampran Riverside is a famous ecotourism destination located in the Nakhon Pathom province near Bangkok since 1962 (Sampranriverside 2012). Sampran Riverside hosts a variety of activities like river cruises, farmer's market (Talad Sookjai), local organic farm tours, Sookjai organic farm tour with outdoor cooking, and Thai arts and crafts workshops and performances (Thai Village Center). Sampran Riverside thus was chosen as the researchers' partner in collaborating the FRIENDship program.

This section documents artefacts that contribute to answering the research questions in this study. That is, (a) discovering how multiple intelligences can be blended in a sustainable and innovative leadership development program in Thailand, and (b) how such an intervention takes place in Thailand.

##### 5.1 Fun @Thai Village

Participants are taken to the Thai Village Cultural Center for team-based activities through traditional Thai games, bamboo dancing, garland making, and traditional pottery; connecting interpersonal, intrapersonal, musical, bodily-kinesthetic, and spatial intelligences.





**Figure 6:** Participants and researchers playing traditional Thai games and learning Thai dancing at the Thai Village Cultural Center. Photographs are researchers' own

## 5.2 Rest & Relax

Participants learn to do a few yoga moves and let them share their feelings from playing yoga; connecting to intrapersonal and bodily-kinesthetic intelligences.



**Figure 7:** Participants learning YOGA. Photographs are researchers' own

## 5.3 Imagineering: Thing2Think

During the Sookjai organic farm tour, participants are asked to collect fruits, vegetables or anything useful to build an art-work or symbolic object. They are also required to explain the significance and reason / purpose of the object. This appeals to linguistic, spatial, interpersonal, intrapersonal, logical-mathematical, and naturalist intelligences.



**Figure 8:** Creations and impressions by participants using fruits and vegetables gathered from Sookjai organic farm tour. Photographs are researchers' own

## 5.4 Ensemble: Merry Melody

Participants have to compose and sing a song about leadership during the river cruise tour to Don Wai floating market and Wat Rai Khing temple. This connects to musical and naturalist intelligences.





**Figure 9:** Live performance of song compositions by participants on a river cruise. Photographs are researchers' own

### 5.5 Night of Festivals

Participants are given tokens to play games and researchers are stationed at the game counter. These games were played during the childhood periods of the participants and the tie-back to history evoked thinking and reflection of life experiences; intrapersonal intelligence.



**Figure 10:** Participants and researchers playing “temple festival” games at dinner. Photographs are researchers' own

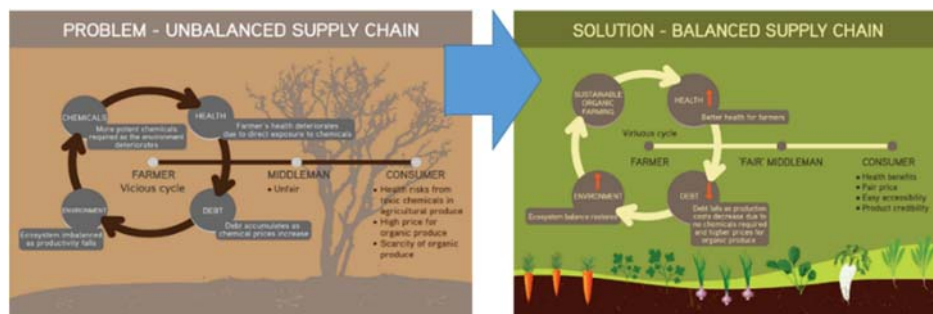
### 5.6 Deliciously Organic

Participants are asked to pick fruits and vegetables from the garden to cook a meal with a team during a half day visit to the organic farm. This activity appeals to naturalist intelligence.



**Figure 11:** A field trip to the organic farm; picking the vegetables in the garden and cooking a meal with the produce. Photographs are researchers' own

## 5.7 Sustainability and Sufficiency



**Figure 12:** Success of Sampran Model from an unbalanced supply chain into a balanced supply chain. (Managing director, private presentation, 23 July 2016). Used with permission

## 6 Recommendations for future research

The FRIENDS framework is a newly proposed activity-based learning program as well as an innovative leadership development, based on the past experiences in Thailand. There is much research needed to help advance leadership theories, given the complexity of change processes of today from a social system perspective (Dugan 2017), as well as developing mental complexity for the future (Kegan and Lahey 2009). As this is a pilot study, more research with this platform is needed to strengthen the program.

## 7 Implications for practice

The FRIENDS framework creates a positive outcome by facilitating better understanding of self and others, encouraging mutual support, and bringing alternative forms of enhancing self-awareness through activating dormant senses and skills. Such a platform would help human resource development professionals develop a new development aimed at creating shared value and “expanding the total pool of economic and social value” (Porter and Kramer 2011, p. 65) and enhancing goodness and social needs of today’s world.

## 8 Conclusion

The purpose of FRIENDS leadership development framework is an approach to face today’s social issues and challenges such as inequality, volatility, uncertainty, complexity and ambiguity, and to strengthens the social-ability, resilience, and mental agility of the individuals. There are four main supporting theories: Social identity theory, Theory of multiple intelligences, Sufficiency Economy Philosophy (SEP), the 4Ps of innovation in creating conceptual framework of the FRIENDship. This framework has been designed as an activity-based learning program modelled after multiple intelligences to (a) trigger the participants’ different senses and intelligences, (b) help participants build a group / team / organizational identity and establish social norms, (c) instill sufficiency economy principle, and (d) target innovation of paradigm and position context that clarifies purpose and meaning of the team. The authors have presented how the FRIENDship program has been executed at Sampran Riverside in Thailand, as a partner and center of leadership development.

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# Knowledge Management

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In the last decades knowledge became a strategic resource for business and managing knowledge constitutes a challenge for practitioners as well as for researchers in the field. Knowledge Management is a new field of research and although there are many international journals and conferences dedicated to this phenomenon it still needs efforts and creativity to discover the laws which govern its complexity and dynamics. This stream aims at being a forum of sharing our new ideas and research results about knowledge and knowledge management.

## KM in companies - an empirical study

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**Keywords:** Knowledge Management (KM), Intellectual Capital (IC), Human Resource Development (HRD), Economics (Eco), Social Policy (SP), Traditional Management (TM)

### Purpose

The idea behind the paper is to present results from an ongoing empirical study of intangibles. We assume that there are six complementary perspectives to look at the phenomena of intangible assets namely, Knowledge Management (KM), Intellectual Capital (IC), Human Resource Development (HRD), Economics (Eco), Social Policy (SP), Traditional Management (TM). All those perspectives have authors and theories and studies and results that differentiate them.

Table 1 summarises the six perspectives. Each perspective is mainly used by a specific type of agents (column 1); those agents face specific problems (column 2); in order to solve the problems (column 3) they must work with precise variables (column 4) and use defined assessment methods that are based in theories (column 5). The main authors about each perspective are listed in column 6. What is decisive for your study is that companies are faced with the different problems, and use different variables and assessment methods and theories. The purpose of the paper is to know which one of the theories / perspectives is felt as more important by European companies.

In previous research, authors established the six perspectives and evidence has been found about them in the scientific literature and in the main primary data statistics published in recent years. In this paper we go one step further and make an empirical study on European companies.



Perspective	User	Problem	Variables	Assessment Methods	Main theories and authors
Social Policy	Public administrator	Public good	Expenses, number of supported persons	Progress reports	EC (2010).
HR Economics	Human Resource Economist (Micro or Macro)	Market or Asset. Impacts on individuals, organizations or in the society	Supply demand price quantity. Wages, employment, productivity. exports. Income	Micro: Control Group Macro: Supply and demand methods. Input Output	Becker, 1993; Heckman, Smith and Lalonde, 1999.
Management / Accountability	Private Manager Traditional Accountant	Spending money	Profits	Return on investment (ROI) or ROE	Fits-zen, 2000
HRD science	HRD expert	Developing people	Reaction Competences/learning behaviour, company outcomes.	Interviews, Questionnaire, Participant – Observer	Kirkpatrick, 1959
Intellectual Capital	New Accountants	Strategy	Asset  Return of the asset: Market value minus book value Strategic value	Balanced Scorecard; Skandia Navigator; Tobin Q; Pulic VAIC.	Kaplan and Norton, 1994 Edvinsson and Malone, 1993 Tobin, 1969 Pulic, 1995
Knowledge Management	Knowledge Manager	Knowledge creation	Knowledge, and the Knowledge Cycle	Knowledge sharing, transfer, creation, renewal dynamics, learning and unlearning	Nonaka and Takeuchi, 1995 Kianto, 2007 Cegarra Navarro and Moya, 2009 Edwards, 2011

### Design/methodology/approach

During March, April and May 2017 a questionnaire on the six perspectives will be put online and companies will be invited to answer it. We will use a 5-point Likert scales and six list of questions regarding each one of the constructs that are included in the broad definition of Intangibles (KM, IC, HRD, Ec, SP and TM).

### Originality/value

This methodology puts in evidence the value that European companies give to each one of the perspectives according to which Intangibles are being analysed. Scholars with established credentials consider that KM is more preached by authors than practiced by companies. With this study we discover what is the perspective, between the six possibilities, that in 2017, matters more to companies in Europe

## Practical implications

The outcomes of the application are important both for practitioners and for researchers. For practitioners, the study describes the current understanding of the managers about the main perspectives used to manage Intangibles. Each practitioner may compare with the results of the study and draw some conclusions on what and how to adjust. For researchers, the study is very interesting because they can reflect about the use of their work and about the importance companies give to it.

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## **Knowledge management models to be implemented within the university**

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**Abstract:** Throughout this paper we try to provide argumentation for a couple (a series) of knowledge management models suitable for improving the overall activity of a university. Within the first section of the paper we document what we understand and promote it is a knowledge management model. We realize this by analyzing the conceptual components according to the speciality literature and we present the implementation stages for each distinct knowledge management model. We discuss aspects like benefits and costs, advantages and difficulties, opportunities and threats for each model of knowledge management. The second part of the paper focuses on presenting the impact/importance of applying these models to business activities but mainly to research and development activities which are being developed within a university. The main role of knowledge management models within any organization is to provide the right knowledge, at the right moment and to the right purpose in order to best serve the scope of the organization. In the case of universities, the effective knowledge management is crucial for improving the quality and performance of education and research, for motivating the best teachers and researchers, for innovating the educational curricula, for increasing the number of inventions and finally for rising the university into the world-wide rankings. According to our systematic research, any knowledge management model implies a specific set of rules and strategies of implementation which we shall discuss in paper section number three. After engaging to implement new knowledge management strategies the organizations start facing barriers and obstacles which according to their experience might be easier or more difficult to overcome. Within our paper we shall refer also to some solutions of dealing with these challenges. Throughout the section of discussions and conclusions we try to provide some insights and more simplified connections about the essential aspects of a knowledge management model and overview the opportunities of implementing it. Within the final part of the paper we point out the benefits of a university when there are implemented correspondingly the principles of knowledge management. Actually, knowledge management represents a way of doing things - developing a business, implementing a project, or running an institution.

**Keywords:** knowledge management, knowledge dynamics, organizational learning, strategic thinking, organizational integrators

## Rethinking 'Knowledge' in '*Knowledge Economy*'

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**Abstract:** This is a concept paper. Noting a lack of coherence in the use of the notion of 'knowledge' in the compound 'knowledge economy', the paper turns to the contributions of Joel Mokyr, Karl Sveiby and Nico Stehr for inspiration for a more integrated theoretical perspective on both 'knowledge' and the 'knowledge economy'. Building on the dynamic concept of knowledge as espoused in the work of the referenced authors, the paper then proposes a knowledge typology for visualising the knowledge economy in a systematically coherent manner. This is based on a dynamic conceptualisation of knowledge as being the capacity to act. In this way the knowledge economy may be seen as a distributed system of knowledge where human intelligence is fused with intelligence of a non-human origin. Unlike in hitherto standard economic theory where labour and capital are assumed to be the core drivers of economic life, the typology shows the centrality of (fused) knowledge.

**Keywords:** knowledge economy, dynamic knowledge, distributed knowledge, the capacity to act, knowledge fusion

### 1 Introduction

This is a concept paper.

The question is: how can we best conceptualise the Knowledge Economy (KE) to explain why and when the addition of 'knowledge' to economy is inherently necessary. The key to this endeavour lies in a renewed attention to the notion of knowledge, rather than trying to picture the KE by patching together empirical snapshots.

At first glance, it seems natural to extend Knowledge Management (KM) theory into economics. This turns out to be futile. The original triggers for the Knowledge Management (KM) discourse lie in immediate practical experience and needs. Hence, academic conceptualisation in this area has always been a secondary enterprise, despite valiant efforts by academics such as Brown and Duguid, Firestone and McElroy, Nonaka and Von Krogh, Max Boisot, Becerra-Fernandez and Sabherwal, and in a more popular mode Dave Snowden. Managerial and organisational objectives, leave little scope or desire for in depth (and often tedious) engagement with the millennia old and mostly very complicated discourses on knowledge. At best organisations, managers and KM practitioners focus on their immediate environments. Consequently KM academia is populated by a large volume of case studies with mostly restricted generalisability, at the expense of higher order conceptualisation.

If one insists on finding a “standard” conceptualisation of knowledge in KM theory, it is in the widely assumed, but hazy, theory that knowledge is – somehow (even this is vague) – a derivative of information and/or data. How naive and logically unconvincing such a position is, is best illustrated in the excellent chapter by Capurro and Hjørland (2003) when they deal with the confusion surrounding the notion of ‘information’ and its “fairy tale” usage in computer science and cognate disciplines as a proxy for knowledge.

If we cannot find support in KM theory, it is only marginally better in existing KE discourses. Since these are not triggered by immediate practical pressures, most publications show at least a comparatively higher level of intellectual and scholarly rigour (aided, no doubt, by the fact that Economics itself has a conceptual history of more than 250 years). Moreover, since economies encompass all facets of life, a far broader spectrum of commentators voice their perspectives on the KE and display a range of knowledge concepts that are more nuanced and more diversified than the narrowly focused – managerially constrained - knowledge concepts in KM. In fact, it is noticeable in literature how little correspondence there is in KE discourses with popular KM theories. But this exacerbates the problem this paper wants to address. It means that the objective of systematic coherence is even further away.

Is it possible to construct a unified view of the KE? This paper answers the question in the affirmative. The key, though, is to pay more attention to what is clearly a neglected question – both in the area of KM, and in the KE debate. It is the perpetual, and serially superficialised, question: what is knowledge?

It is impossible in this paper to discuss the long and delicate history of reflections on knowledge. Therefore, axiomatically, a choice is made for a dynamic and systemic knowledge concept. A brief summary of three prominent voices along these lines is given in support, whereafter a typology of the KE is presented.

But first an even more brief overview of selective literature is required.

## **2. A brief selective literature report**

A search in the major academic databases of only peer reviewed articles between 2010 and 2017 featuring “knowledge economy” in the title, rendered 23 339 entries (out of a total of 543 854). A drastically reduced selection of these were reviewed for this paper in order to identify the operative notions of knowledge in the KE discourse. By far the majority are case studies in which, in most cases, the operative notion of knowledge was either human cognition and skills, or computation, or a combination of both.

The remaining articles did contain attempts to theorise at higher levels of abstraction. But these turn out to be more along the lines of trend analysis or regional profiling. For the purposes of this paper it will suffice to mention Švarc and Dabić (2015) who provide a useful overview of the evolution of the concept in Europe, pointing out early roots in the works of Bell, Machlup and Drucker. But it was the European Council in Lisbon (2000) which gave the KE an institutional and strategic status. Since then it has become part of popular thinking and the source of a flood of publications, inspiring countries as unlikely as Kenya and Rwanda.

Powell and Snellman (2004) come to the conclusion that three general strands of inquiry can be discerned: sociological, economic and managerial. Updating this somewhat dated typology Švarc and Dabić (2015) point out that, at least in the official consciousness of Europe, there has been a conceptual mutation from a “knowledge-based economy rooted in science intensive industries” to a “service economy where knowledge is understood ... as service or creative activity”. (I suggest this shift is most likely a reflection of the impact that cloud based mobile digitisation has had on economic opportunities. However, with the recent introduction of the notion of a “4<sup>th</sup> industrial revolution” there may be a swing back to a science oriented view).

It remains to amplify the above with two more observations of my own from the literature scan. One, there is a clear and increasing focus on human capital. (In fact the revision of Bloom’s Taxonomy in 2001 is most probably a result of this). This trend is also notable in the latest evolution of the intellectual capital debate where the notions of social relational and natural capital have been added. Two, unlike in the past where human (soft) and technique (hard) were deemed to be in mutual opposition, there is a broadening of the notion of technique so as to include and cut across both computation and management, across both the machine and the human.

Although conceptually more sophisticated, the KE discourse does not offer an integrated view of the KE nor is there a theoretically clear and consensually shared notion of knowledge. In fact, very much like KM, discussion of assumptions about knowledge is avoided.

It is to the question how to conceive of a dynamic and systemic view of knowledge that we now turn.

### **3. Systemically useful knowledge – Joel Mokyr**

Joel Mokyr (2004) does not offer a comprehensive framework for the KE. However, he develops a brilliant conceptual schema of ‘useful knowledge’ and then proceeds to analyse the historical origins of the KE. His schema is still as valid today as it was in 2004. One of the reasons is that the KE lies in the extension of the fundamental technological reorientation brought about by the science and industrial revolutions. We are as much in that slipstream today as a decade ago, further manifestations of the KE notwithstanding.

The theory of useful knowledge posits a continuum between  $\Omega$  (O) and  $\lambda$  (L) knowledge, which Mokyr overlays with Polanyi’s distinction between tacit and explicit knowledge. O knowledge may be roughly equated to episteme, i.e. propositional knowledge, whereas L knowledge may be seen as techne.

Propositional knowledge is described as: “... the observation, classification, measurement, and cataloguing of natural phenomena, as well as the establishment of regularities, principles, and “natural laws” that govern these phenomena and allow us to make sense of them.” (p 5) It follows that O knowledge is in essence prescriptive.

L knowledge is more complicated. "Techniques are the fundamental unit of the technological knowledge set. They are sets of executable instructions or recipes for how to manipulate nature..." (p 10). L knowledge is, therefore, partly a sub-set of O knowledge but expressed in the form of *competence* (a term taken over from Polanyi to denote the actual execution of the prescriptive instruction). Therefore, "...instructions in the L set, like all knowledge, reside either in people's brains or in storage devices....But unlike O knowledge, a great deal of the L knowledge is stored in the artefacts themselves". (p 10/11)(My italics) The difference between O and L is not a difference in knowledge, but the difference between *discovering* and *inventing*.

None of this must be seen as descriptions of single individuals. The key point in Mokyr's schema (as in Polanyi's) is the non-divisibility of knowledge whatever the particular manifestations may be. This means that propositional knowledge is a *systemic* property of humanity. This he calls the *epistemic base*, and what use a society makes of it depends on the depth and "tightness" of the epistemic base in that particular society. In this instance society means any meaningful grouping of people (such as the "scholarly community" for example). Both O and L are encompassing concepts. They express what society knows, either propositionally or in technical application.

It all comes down to how society manages the interplay between O and L. It is the tacit knowledge of society which is to be made explicit in society as a whole. What needs to happen is that society manages the competence to deploy a technique; but such competence is dependent on the extent and quality of the epistemic base.

However, what gets successfully deployed is a small fraction of knowledge. Much in O is speculative or experimental; much in L is not successful. What remains is useful knowledge.

Mokyr's notion of "useful knowledge" comes close to the actual knowledge in operation in the KE. In the typology presented in this paper, Mokyr's knowledge picture of the systemic nature of knowledge, reaching both horizontally through society and vertically from human propositional knowledge to "storage" in artefacts, will be translated into an economic picture.

## **4. Knowledge as the capacity to act**

### **4.1 Karl-Erik Sveiby**

Sveiby is credited for being the first KM scholar to explicitly define knowledge as the "capacity to act". In his doctoral thesis (1994) Sveiby develops a knowledge-based theory of the firm. The thesis consists of a case study of a publishing company. Based on primarily the work of Polanyi and partially Wittgenstein, and drawing also on KE Weick's sensemaking theory he develops his integrated knowledge theory. In later publications he incorporates Nonaka, Von Krogh and particularly Maturana and Varela.

Sveiby's focus is not knowledge per se, but organisation theory and strategy. It is, therefore, remarkable that he does not opt for a "quick fix" – most certainly not for the "fairytale" (Capuro in Zins 2007) of the DIKW - knowledge conception.

Sveiby does not contribute to the debate around the KE. Nevertheless, this definition of knowledge will prove to be highly useful if extended into the economic realm. He describes his view as a dynamic conception of knowledge and formulates it as follows: The emphasis of the definition is on the action element: "A capacity-to-act can only be shown in action. Each individual has to re-create his or her own capacity-to-act and reality through experience... Knowledge is dynamic, personal and distinctly different from data (discrete, unstructured symbols) and information (a medium for explicit communication). Since the dynamic properties of knowledge are most important for managers, the notion of individual competence can be used as a fair synonym to a capacity-to-act." (Sveiby 1994)

#### **4.2 Nico Stehr**

Nico Stehr is a sociologist-economist focussing primarily on the knowledge society. In the course of his prolific writings he has refined the definition of knowledge as capacity to act.

Stehr takes his cue from the well-known statement by Francis Bacon that 'scientia potest est'. It is this 'potentia' that is expressed in the word 'capacity'.

Stehr has in mind a dynamic ability. Whether the ability results in real action, is a different matter. It is not to be understood as a mechanical 'driving force'. Before a capacity for action becomes a real driver, a fusion with a variety of contextual factors must occur. But to shape the action decisively some or other pre-existing capacity for action must be present.

Defining knowledge as the capacity to act, does not mean that all knowledge is the same. In the actual event of action a wide spectrum of capacities may be observed. Particularly evident will be symbolic action, energy, language, and that set of competencies that are the catalysts that make knowledge act in reality.

Thus is Stehr's own words: "the sociological definition of knowledge as a capacity for action has the benefit of viewing knowledge as a phenomenon that is embedded in social relations, as an agency-related matter and not as a static phenomenon with context-free or context-freeing attributes such as truthfulness, empirical conformity, or objectivity" (2016). "Knowledge structures reality. Knowledge is a model for reality. Knowledge is future sensitive. The added value of knowledge, therefore, should be seen as a capacity to illuminate and potentially to transform reality. It is in this sense that knowledge is facilitative, and possibly transformative in getting things done"(2016). In fact knowledge is becoming.

Following the popular understanding of the slogan that knowledge is power, it is seductive to think that power is knowledge. However, Stehr rejects this notion. Knowledge as capacity to act is not a mechanical recipe for social or physical engineering.

In the typology that follows, the dynamic conception of knowledge is applied to economic theorising, rather than to societal analysis (as Stehr does).



## 5. Toward a dynamic notion of knowledge (economy)

The most instructive aspect of Mokyr's analysis is his picture of knowledge as a *systemic dynamic* which permeates all of society as a continuous vertical and horizontal interaction. Seen in this light, any attempt to atomise knowledge is a serious reduction of knowledge. But this is exactly what happens when knowledge is presented as a sum of information, or of data or as the sum of memorised facts and data in human minds and libraries.

The formulation of 'knowledge as capacity to act' is the best, and shortest formulaic statement to describe such a dynamic view of knowledge. It expresses both the invisible dynamic (capacity to...) and the observable outcome (action). It must be noted that this is a *categorical* (i.e not empirical) statement. Hence, it should not be read as if there is only one capacity. In actual reality there are a multitude of capacities, and the actions following the exercise of each will result in correspondingly differentiated outcomes. How actual capacities come into being, and how an actor can be deemed "capacitated" is a question that cannot be pursued here further. That would take us into the realm of learning theory. Here it will suffice to repeat that knowledge (categorially) is the capacity to act.

A systemically dynamic understanding means that we live *in* knowledge, in the sense that we share in and respond to the multitude of real capacities and their actions that surround us at any given moment. They are temporal manifestations of specific inherent dynamics. But the manifestations are not unrelated. They are signifiers of a network of ongoing interrelations.

Reverting back from observable incidences of action it is of course, possible and necessary, to theorise about the driving dynamics behind specific actions. With Mokyr, we may call this propositional knowledge which can be codified. But it must be underlined that such codifications are records of actions and records of theories with respect to the capacities underlying them. Codified records are, therefore, only symbolic knowledge. It needs human interpretation and inventiveness to turn it into action. It is a capacity to be exploited, but is not capacity to act in itself.

The enactment of propositional knowledge is far less visible than the codification thereof. We can only approach it via inferences derived from the observable outcomes. Without this insight it is impossible to grasp the full extent of the KE. It requires a mental shift from associating knowledge with codified presentations to associating it with a dynamic.

It is virtually self-evident that that societal process which we indicate by the term 'economy' is highly dynamic and adaptive. (If nowhere else, then at least in the 'market' such dynamism is evident). If we are going to describe the contemporary economy as a KE, the notion of knowledge as intrinsically a dynamic and adaptive capacity is a virtually self-evident entry point.

### 5.1 Key principles of a dynamic conception

Using a definition of knowledge as the capacity to act in a typology of the KE, leads to the following principles:

- a) The assumption that knowledge is restricted to human beings does not hold. It cannot be argued that the bio-physical domain is a static object and only acts on human demand
- b) Virtually all of the generally accepted tenets of science consists of discoveries of capacities to act that are *intrinsic* to the bio-physical domains. These capacities may be derived from genetic codes or from physical continuities which we sometimes call the 'laws' of nature. None of these capacities were invented by human beings. In fact humans share in, and are subject to such bio-physical capacities
- c) If science is a way of deeper intellectual discovery and insight into the bio-physical realms, industrialisation is a uniquely human enterprise through which the inventiveness that seems to be a uniquely human capacity to act, is given almost free reign in the wake of the scientific discoveries
- d) The industrial world and society is, therefore, the outcome of the *fusion* of human capacities to act with the capacities to act intrinsic to the bio-physical realms
- e) In this way a historically unique dispensation has emerged and grown over the past two centuries, transforming in the process both the bio-physical and the human world. The uniqueness of the industrial world is that
  - i. never before has there been a *fusion* of human and bio-physical capacities to act
  - ii. as a consequence of which both the human and the bio-physical capacities have lost their independence
  - iii. there is nothing automatic about the process. For that reason it puts a premium on managing the fusion. This premium is inherently a knowledge premium.

What, then, is the primary capacity (to act) of the industrial economic mode (and society)? The very fact of the *fusion* of human and bio-physical capacities has created a capacity which is new in history.

After 250 years the visible outcome of the fusion is not only clear, but it has constituted a socio-physical reality which in itself has become a driver and a monument to the capacity to fuse. This has led to a *division of knowledge* (not of labour as Smith argued) which was totally unthinkable in previous generations. Whereas the human partner increasingly finds itself being reduced to propositional knowledge and its managerial applications, the real action takes place in the realm of machines and technical systems. This is not just a matter of application of human knowledge by "artificial slaves". It is more. The mechanical and digitised world is operational because they *embed* in themselves both human and bio-physical capacities to act.

*The fusion of human and bio-physical knowledge happens in the world of automated artefacts, not in the human mind. For that reason the knowledge in an automated artefact is different from the knowledge in the human mind.*

The fusion of knowledges began with the first waves of industrialisation, but the primitive nature of industry then handed the overall dominance to the human partner. Now, however, the presence and scope of a fused reality is such that humans have to distinguish themselves

from that reality. The presence of embedded knowledge is too strong to continue to see it as simply extended embodied (i.e. human) knowledge.

If embedded knowledge differs from human knowledge in substance, there is a second difference. Embedded knowledge acts because it is empowered by non-human (but bio-physical) energy. This point is very important for any economic theory that one may want to develop on the basis of this typology. Ever since the earliest days of economic theorising it has been a *sine qua non* that the energy input into an economy is sourced from human beings – even in an economy that succeeds in building labour saving artefacts. This assumption held even as the majority of 'labour' shifted to bureaucratic employment during the second wave of industrialism. Perhaps the big shock that follows the hyped up realisation of the "4<sup>th</sup> industrial revolution" is the recognition that the assumption of human energy as the primary force of economic production does not hold any more – but, in fact, it was always a misnomer.

The implication for economic theory is dramatic. The more so because traditional economics (and politics) has tied the distribution of economic benefits also to (assumed) human labour input. In effect, this principle is leading to the economic disenfranchisement of the majority of the world's population, as the ownership of the knowledge economy increasingly narrows down to those people whose propositional and inventive capacities correspond with the increasing complexity of embedded knowledge. And as embedded knowledge grows, there is decreasing need and scope for labour.

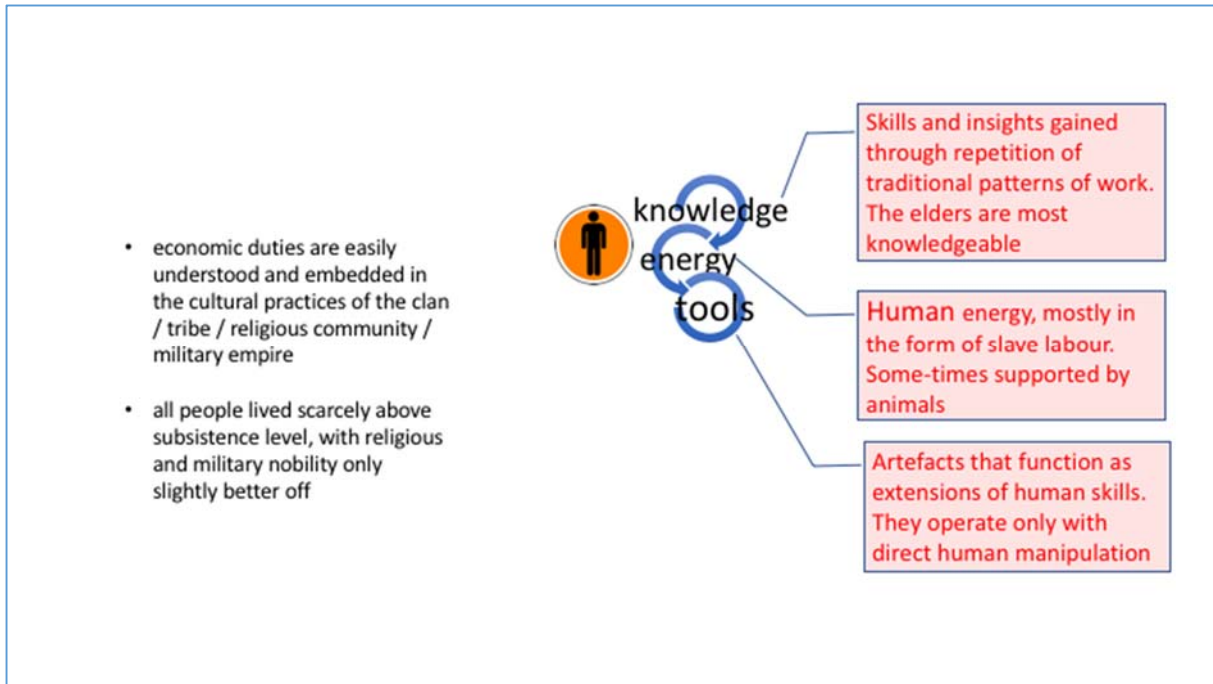
## **5.2 Graphic typological presentation**

In the following graphics the typology of the KE are set out. It shows how the industrial mode of production initiated a growing distribution of knowledge over an expanding system.

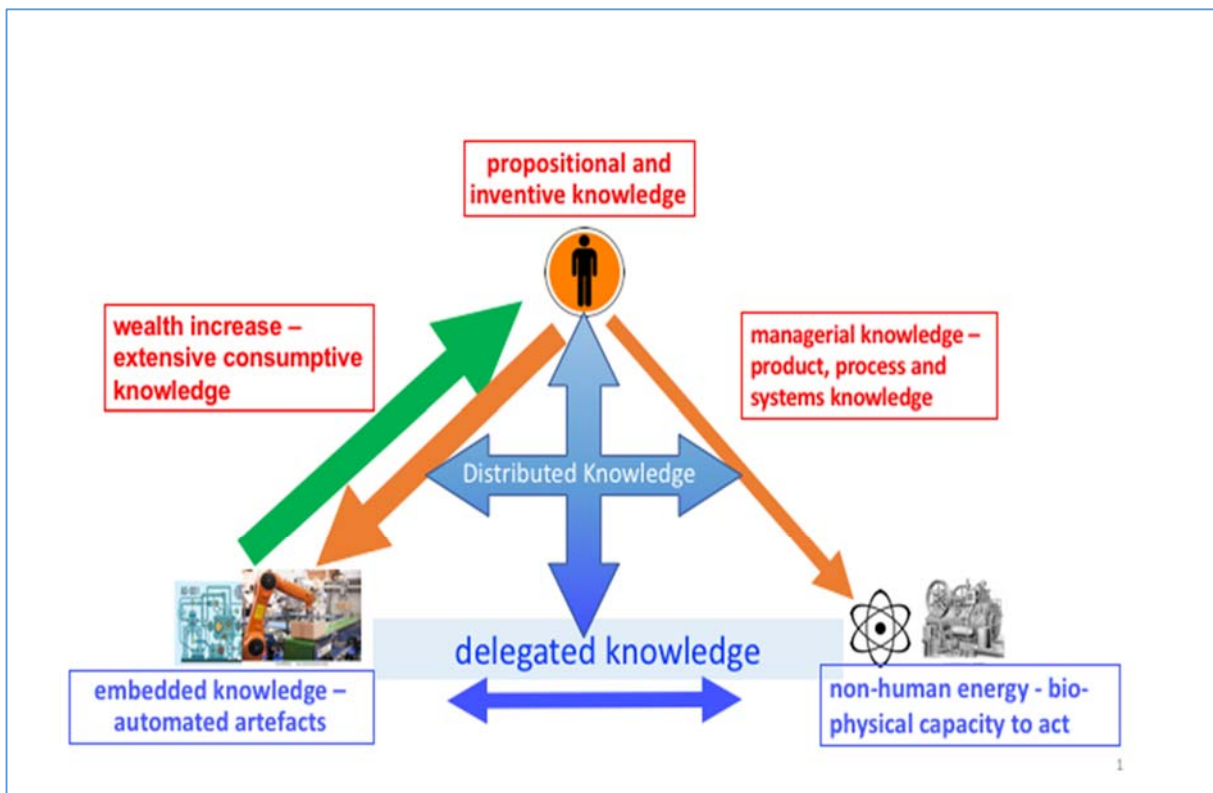
In Figure 1 a template of all economies is given in as much as they always involve an interaction between knowledge, energy and tools. Figure 1, simultaneously demonstrates the situation in any pre-industrial society.

Figure 2 depicts the changes in the relationship between the 3 foundational factors after the emergence industrialisation. Red inscriptions indicate those dimensions over which humans held full majority control, and blue where embedded knowledge had reached maturity. Figure 2 shows the growing distributed nature of knowledge in an industrial economy.

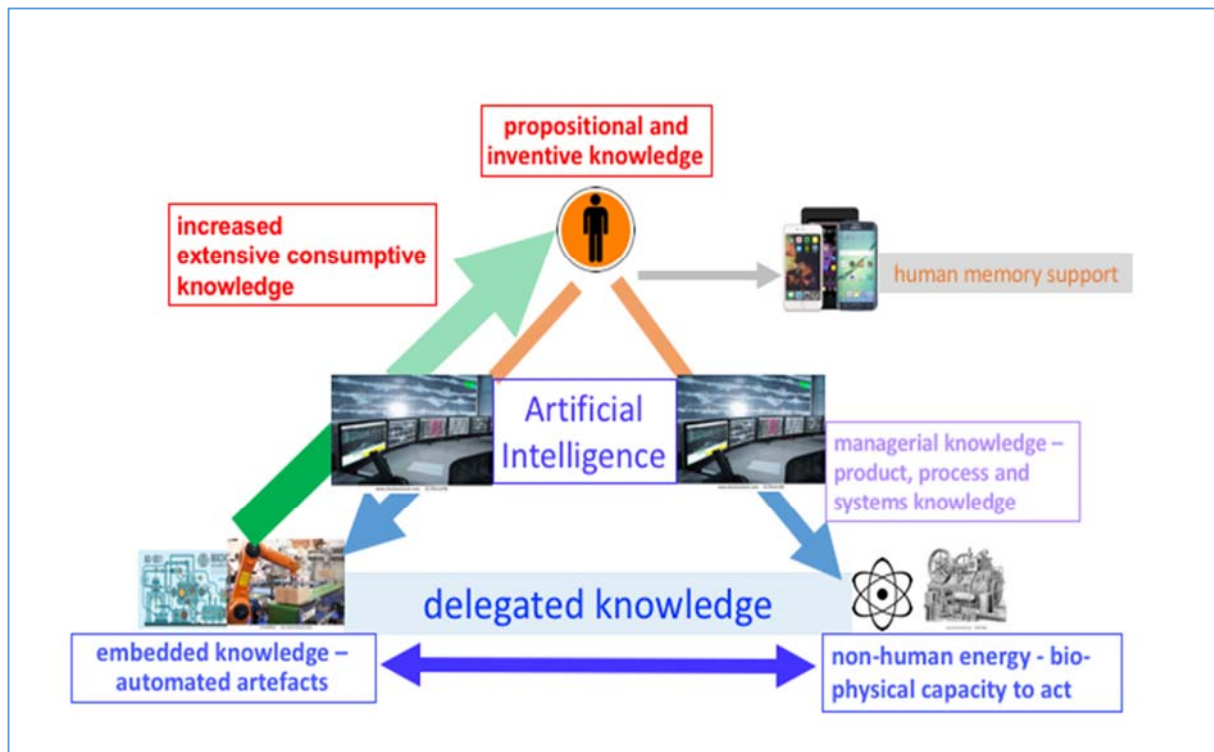
Figure 3 depicts the same after the absorption of computation into the system. Due to computation being the first automated artefact to accept delegation of human brain functions (as opposed to all other automata to which labour functions are delegated), a large part of human managerial functions are now transferred to the embedded realm. Direct human involvement further decreases (and becomes the domain of a small number of "experts").



**Figure 1** – Prerequisites for production in all economies (here shown for pre-industrial economies)



**Figure 2** The distribution of the capacity to act in industrial production



**Figure 3** – The shrinking human participation in knowledge in the 4<sup>th</sup> industrial era

## 6. Conclusion

Despite the large volume of research and reflection there is not yet a systematically coherent description of the KE. This paper argues that such a description is possible on the basis of a conception of knowledge as the capacity to act. It shows how the industrial economy is inherently a process of distributing the capacity to act across subjective and objective dimensions of society and economy. On this basis a typology of the KE may be constructed which offers explanatory possibilities that are otherwise ignored.

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# Using Enterprise Architecture Management Methods and Technologies for Knowledge Structuring in Strategic Management

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**Abstract:** Today, in the era of digital economy and the need for constant digital business transformation, the relevance of Enterprise Architecture (EA) tools and methods to strategic management tasks increases. According to the latest research, strategic decision-makers face a significant number of problems, which potentially can be successfully resolved with the help of EA. This paper is a review of potential application of EA methods and technologies to support strategic management process. The main research method for this paper is an exploratory literature review focused on the evolution, classification and functionality of EA methods with subsequent analysis of relevant problems from the field of strategic management. This result is an intermediate point for the further research which may add considerable value to both researchers and practitioners.

**Keywords:** knowledge structuring, strategic management, enterprise architecture management, conceptual modelling

## 1 Introduction

Developments in the field of information science are used successfully in many fields of management such as financial, operations or supply chain management, but in the field of strategic management IT-based methods and technologies are used not so widely.

In the era of the knowledge economy, the volumes of information that need to be processed in order to make the most accurate strategic decisions have significantly increased. In addition, the problem of making a strategic decision is complicated by the high degree of uncertainty in changes in the external environment, the increasing variation of the ways for doing business, and the accelerated pace of scientific and technological progress. All these means a difficult task for the modern strategic management: for keeping an organisation competitive, it is necessary to fit the strategy quickly and flexibly.

This problem could be resolved by increasing the degree of involvement of information technologies in the strategic decision-making process. This research considers the potential application of such IT-based discipline as Enterprise Architecture (EA) to facilitate strategic management.

In the course of this research, the main challenges of strategizing process that can be facilitated with the help of EA will be described. Next, a brief overview of the main concepts and points from the field of EA will be given, and the term of modeling as a way of studying systems will be defined. The last part describes how exactly Enterprise Architecture can facilitate a strategic management process.

## **2 Strategic management**

### **2.1 Strategic management process**

One of the first researchers in the field of management, who gave one of the first definitions of the term strategy, is Alfred Chandler. In his book *Strategy and Structure* (Chandler 1962) he defines strategy as "the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals". In this interpretation, the term strategy is based on the presumption of a formal, systematic planning process.

Later the concept of strategic planning was subject to criticism (Mintzberg 1994). Subsequently, several areas of management science were developed, some of which focus less on strategic planning and more on strategy content, such as competition, competencies and resources (Porter 1985). Other areas pay special attention to the process a strategy formation, and focus on concepts such as "organizational learning" and "strategic thought" (Huff 2002; Reger and Huff 1993).

There is also a well-established opinion that the process of strategic management can be divided into four main steps (Thompson and Strickland 2003): strategic analysis, strategic choice, strategy implementation and strategy evaluation.

In the 1990s, the opinion was rooted that the true definition of the strategy could vary greatly depending on the context. The development of this idea is a framework called "strategy palette" (Reeves et al. 2015), according to which it is possible to identify five approaches to the formation of the strategy depending on the context and environment: classical, adaptive, renewal, visionary and shaping. According to this classification, it can be assumed that different types of strategic analysis tools should be used for a different type of strategy. Partially this hypothesis can be confirmed by the materials of Gartner (McGregor 2016), which distinguish five possible roles of EA in the process of strategy formation depending on the context and the external environment (see below).

### **2.2 Challenges of strategic management**

Strategic planning process is one of the most difficult issue which managers face today. It can be an overwhelming challenge – at the same time to take into account the development of new technologies and social trends, and the behavior of competitors, customers and regulatory authorities, changes in the legal, environmental and financial base. The problem is compounded by the limited time, market uncertainty, the constant changes and internal tensions (Kudryavtsev et al. 2016). According to (Eppler and Platts 2009), it is possible to

identify three types of challenges relevant to the strategic management, which can be facilitated by EA: cognitive, social and emotional.

*Cognitive.* Firstly, strategic analysis creates a massive amount of information that is difficult to absorb and analyze by any individual manager or group. Managers confront with information overload. Secondly, strategizing requires the comparison of multiple strategic options based on various parameters without taking mental shortcuts and relying only on select criteria, but this comparison can be biased. Thirdly, the development of strategic options often requires novel perspectives and divergent thinking, but stakeholders often can be stuck in old view points. Finally, paralysis by analysis, i.e. omission of strategic information due to the large flow of information relating to daily operations.

*Social.* Firstly, diverging views or assumptions between team members. Strategy development and formulation requires collective sense making processes and input from various team members. Secondly, incomplete communication of basic assumptions, which need to be elicited and aligned. Managers need to assure that their reasoning is properly understood by employees. Finally, coordination difficulties. Strategizing requires coordination both in communications and actions. This is especially true for globally dispersed teams.

*Emotional.* Firstly, lacking identification with strategy, i.e. all involved managers should be able to identify with the strategy process and result and feel involved. Secondly, creating identification with (abstract) strategy, i.e. employees should perceive the strategy as something worthwhile pursuing, something that aspires and motivates them. Finally, the strategy needs to be communicated to employees convincingly.

Simon with colleagues (2014) also highlighted challenges and concerns in strategic management and emphasized the calling from corporate strategic management for a greater cross-fertilization of the field with other disciplines (Furrer et al. 2008). Specifically, systems thinking, which can be considered a basic principle of EA, is recognized as a promising means to facilitate the examination of the cause-and-effect-relationships between different strategic measures (Wang and College 2006). Such activity as modeling decomposition is also related to EA and it can be used for a procedure for evaluating different strategies against a set of objectives using decomposition to a level where relatively easy judgments can be made (Goodwin and Wright 2001). Strategy implementation (including ongoing execution) in particular suffers from difficulties in achieving success in practice (Cater and Pucko 2010) and there is a gap strategy and everyday practice or strategy execution (Knoppen and Saenz 2014). Moreover, among the most critical obstacles to successful strategy implementation recently identified are weaknesses in communicating strategy to lower organizational levels; again, this is an interesting finding given that one of the main functions associated with EA is to communicate organizational objectives.

### **3 Enterprise Architecture**

#### **3.1 Description and structure**

Enterprise Architecture (EA) is an emerging cross-disciplinary field concerned with the design, management and transformation of a modern enterprise as complex system (business and IT) to ensure values of the key stakeholders (Op't Land et al. 2009; Lankhorst 2009; Buckl et al. 2011). EA is based on enterprise modeling and implies documentation of enterprise strategies, business capabilities, business processes, organizational structures, and information technologies, and especially their interaction and dependencies. From representation perspective EA models include catalogs, matrices and diagrams (TOGAF 2011). Originally, EA was developed as a tool for information systems management. During the previous decades the concept has evolved more towards an instrument for business IT alignment (Simon et al. 2014). EA has included business goals, value chain, business capabilities etc. as elements since it was first introduced by Zachman (Zachman 1987) in the late 1980s. Now EA is more and more attached to enterprise transformation (Labusch and Winter 2013) and strategic management (Aldea et al. 2016; Simon et al. 2014).

The phrase "Enterprise Architecture" means a discipline, as well as some object of management, which provides a common picture in business and an agreement of parts into a whole. According to ISO 15704 the enterprise architecture should include the roles of people, the description of processes (functions and behavior), and the representation of all supporting technologies during the entire enterprise lifecycle. The EA model is used to design the future status of the company, to analyze the current status, as well as for the presentation of alternative development scenarios. An engineering approach underlying of the EA has a great value in its integrating role, as well as such inherited traits as a system approach, modeling, re-use of knowledge, solving practical problems on the basis of scientific knowledge. Some practitioners (Khudobin 2014) extends EA structure and includes the following elements: motivation architecture, transformation architecture, market architecture, financial architecture, operational architecture, and infrastructure architecture.

#### **3.2 Enterprise Architecture Management tools**

For modeling, analysis and design of enterprise architecture, there are special tools which called enterprise architecture management tools (Enterprise Architecture Management tools, EAM-tools). These tools are described in detail in the following publications (Matthes et al. 2008; Short and Wilson 2011; Bittler 2012).

This class of software integrates the developments in the field of Computer-Aided Design (CAD). In the 80s years of XX century, the idea of CAD-systems have led to the emergence of tools to support information systems design (Computer-Aided Software / System Engineering, CASE). CASE-tools can be considered as the parent of EAM-tools, which determined their basic functionality. Subsequently, the idea of CAD-systems have led to the emergence of tools for design and reengineering of business processes (Business Process Re-engineering, BPR-funds) (Bradley et al. 1995; Spurr et al. 1994), for design of structure and functions of enterprises (Orgware) (Grigoriev 2001), and then for design of strategy (Strategy design tools)

(Osterwalder and Pigneur 2013). All these categories of software are integrating into EAM-tools at the same time expanding the coverage area of the latter.

- EAM-tools provide the following opportunities:
- Description of the main components of the enterprise (processes, structures, goals, information, etc.) in a single model and their interrelations. The ability to work with a single database (repository) and store information about an enterprise "in one place";
- Visible and convenient representation of the knowledge of the company to different stakeholders (management, employees, analysts, IT specialists, partners, controlling and certifying bodies) by automatically generating reports from a single model in text, tabular or graphical form;
- Analysis of models (quantitative and qualitative, static and dynamic);
- Maintain a unified system of terms, concepts and their relationships, which improves the effectiveness of intra-company communications.

In accordance with the analytical overview of Gartner (McGregor 2016), the leaders in the category of management tools of the EA are MEGA, ARIS (Software AG), Enterprise Studio (BiZZdesign).

For management tasks, tools that make it possible to work effectively (simulate, analyze and design) with business architecture (component of EA) are especially relevant. To do this, it is possible to use universal graphics editors, for example, Microsoft Visio or Smart Draw. And at a certain level, they are quite enough. However, as the scale and complexity of tasks grow, the need for specialized tools begins to arise.

#### **4 Potential for using Enterprise Architecture to support strategic management**

One of the motives or drivers for applying EA is the need for constant changes in the continuous transformation of business. In this context, in business and scientific literature, the relationship of EA with the organization's strategy and with the result of strategic activity - the transformation of business - is increasingly being considered. It should be assumed that this is the "highest role" of the architectural approach, which has been going from computer architecture to a comprehensive view of managing the development of organizations over the past 50 years.

In this sense, it becomes increasingly urgent to discuss not so much the current architecture and search for optimization opportunities, as much as the target (to be) architecture that needs to be implemented. The gaps between the target and present states and turn into the development projects of the organization.

The architecture of a particular enterprise as a whole is the embodiment of its business capabilities and answers the question: how they are implemented. The target architecture is the embodiment of the strategy and vision of the organization that corresponds to the strategic notions of the future on different horizons, and the process of designing the future architecture is part of strategic planning.

Since the EA is responsible for integration, its application involves, among other things, the task of achieving synergies from the assets and business competencies of the organization. Providing integrity and consistency (coherence) at various levels of EA is able to create a competitive advantage through coordination and ensuring the coherent operation of the elements.

#### **4.1 What can Enterprise Architecture offer for strategic management?**

Enterprise Architecture is based on different types of modeling, on which the practice of EA is built. In the field of EA management and business engineering a lot of expertise in modeling has been accumulated. This expertise is based on such disciplines as conceptual modeling, "design science research", design theory, requirement engineering. The ability to make different types of "schemas" (diagram, table etc) for different stakeholders allows the formation of "added value" for strategic and tactical decisions. Modern research extends the possibilities of EA modeling methodologies in the part related to strategic management: concepts from strategic management appear in EA modeling languages ("Abilities", "Resources", "Factors of influence") (Aldea et al. 2015; Iacob et al. 2014); methods and tools of strategic management are formalized (Bock et al. 2016); the modeling methods become available not only to narrow specialists (Sandkuhl et al. 2016); the ways of presenting information about the enterprise structure are optimized (Kudryavtsev et al. 2016).

The Enterprise Architecture is based on engineering basis and it allows to solve the most important task for strategic management - the generation of alternatives. An architectural thinking facilitates the solution of this problem as it is the main element of the design approach in strategic management (Winter 2014; Winter 2016). Architectural thinking is a lightweight (e. g., less formalized), utility-centred approach, that is aimed at supporting non-architects and people outside the IT function to understand, analyze, plan, transform and communicate fundamental structures and design/evolution principles of what they perceive as their work system, i.e. to adopt holistic, long-term considerations in their daily decisions.

In (Osterwalder and Pigneur 2013) instrumental support is seen as an independent direction, rapidly developing in recent years. Traditional EA modeling tools have ceased to be highly specialized and are developing as support tools for managers (Sandkuhl et al. 2016). Forrester analysts point to the formation of a new software market for strategic planning, and the tools of enterprise architecture management are part of this market (Barnett and Visitacion 2015). Examples include tools to support the development and analysis of business models, which have already become a popular product on the market (for example, strategyzer.com) and are the subject of research (Fritscher 2014). In (Kudryavtsev et al. 2016) the possibility of integrating different ways of presenting information for strategic management tasks in EA modeling tools is demonstrated, as well as the potential of application of ontologies as a mechanism for integrating information and transformation between information / knowledge formats (from table to graphics, from graphics to tables, etc.).

In addition, certain methods and techniques that are mature in the EA can enhance the processes of strategic management - for example, working with stakeholders and with

resources oriented towards them (information representation) (TOGAF 2011) or capability-based planning (TOGAF 2011; Aldea et al. 2016).

#### **4.2 For what tasks of strategic management EA can be used?**

In practice, EA has very different coverage and scope of activity in different organizations. It is possible to distinguish two different variants of involving EA in the tasks of development management: 1. EA interacts with the strategy, but does not "cover" the objects and information needs of strategic management; 2. Strategic management is built on an architectural approach.

In the first case, the EA provides information about the current state of the organization for strategizing and takes the results of strategizing to build the appropriate architecture. The architecture, in this case, according to the Open Group standard (TOGAF) (TOGAF 2011), can solve three tasks (three options for involving the EA in solving strategic management tasks): 1) Identification of the need and potential for changes (when there is a driver for changes, but no target state is defined); 2) Identification of necessary changes (when the target state is defined in the strategy language, but the design of the target architecture is required); 3) Implementation of the necessary changes (EA performs audit and supervision of the changes being carried out for their conformity with architectural plans).

In the second case, the EA practice includes working with the objects of strategic planning and development management. For example, (Simon et al. 2014) proposed a business architecture framework that includes the necessary elements of strategic management, as well as detailed scenarios for the use of EA at all stages of the strategic management process: strategy formulation, strategy implementation, strategy monitoring. For example, in "Strategic Analysis" scenario, EA can be used to analyze the company's internal environment (except for "soft" aspects: culture, values, etc.), and within the "Strategy Review" scenario, EA will allow to see how the strategy is embodied in the operational model ("strategy traceability").

#### **4.3 Variations of the EA role depending on the type of business strategy of the company**

The role of EA in general and in strategic management in particular depends on the type of business and the company's strategy. Analysts of Gartner proposed to consider 5 types of strategy and 5 corresponding roles of EA (Blosch and Burton 2016; Smirnov 2017). Each of the types of strategy corresponds to a certain external environment and has its own characteristics, including critical factors of business success. These features generate unique requirements for EA (see Table 1).

Typically, companies combine the presented types of strategies. Traditional architectural approaches were invented for strategies of the first type. They are not completely applicable because number of situations in which they can bring organizations an essential value, is becoming less and less.

**Table 1:** The relationship between the type of business strategy and the role of EA

Strategy type	Grow	Experiment	Orchestrate	Adapt	Reinvent
Environment	Stable and predictable	Unpredictable	N/A	Changing quickly	N/A
Features of strategy	Structured analysis; Implementing competitive advantage	Search and creation of innovations	Integration into and influence the ecosystem	Flexibility, developed dynamic capabilities	Existing products, services and processes no longer work; Need a transformation
Factors of success	Size, differentiation or capabilities	Experimentation	Orchestration and collaboration	Ability to adapt quickly	N/A
EA role	Analyst	Innovator	Connector	Conductor	Tactician
Main focus of EA	Detailed analysis, planning and monitoring of changes	Search for ideas for innovation, support for innovation processes	External focusing, establishing connections, integrating	Identification of areas for change, support for changes	Development and evaluation of change options, transition planning

Source: McGregor 2016

For example, the relationship with management and development of IT can be considered. EA is important in order to take full advantage of emerging technological opportunities, because it allows to connect business strategy and IT strategy, assess the value of technological innovations for a particular organization, understand the areas that are priority for innovation, and vice versa, where it is required to apply standard solutions. This relationship is most evident in the scenario of the use of EA "Aligning business and IT" (Henderson and Venkatraman 1993) and is considered in detail in many works (Pereira and Sousa 2005; Bradley et al. 2011). EA allows to identify key areas (in terms of functional areas, capabilities or groups of business processes) that require IT support, identify the most significant data, form an IT strategy or an IT implementation plan based on the company's strategy. The specification of business needs and IT opportunities is due to the availability of information about the business architecture and IT architecture.

In addition, the EA creates a different perspective for considering various management disciplines - not through functional areas, but through EA objects in their interrelationships: goals, indicators, business processes, organizational structure, information, information systems, etc.

## 5 Conclusion

Enterprise Architecture over the past 30 years has overcome the way from solving technological problems to complex support of the development of organizations. Possessing a set of properties inherited from system engineering and the ability to represent various objects of control with the help of knowledge engineering and ontological engineering, the EA has acquired an important integrating role. It is the ability to integrate (areas of activity,



disciplines) and the representation of the organization as a whole that turns EA into a link for other disciplines and allows us to talk about the architectural approach to management. A well-built EA allows an organization to be more receptive to changes at the strategic level. Mature practice of EA management allows to switch to the warning control of changes through designing and "programming changes", which is especially important in the logic of shifting the center of added value towards design and projecting in many areas. A major role in EA is assigned to knowledge management in the field of management and organizational design in order to reuse best practices both external and internal the organization itself. To do this, the EA uses such concepts as reference models, architectural templates, building blocks, etc.

Further research involves the analysis of existing methods and techniques of decision-making and problem solving, both domain-specific, from the field of strategic management, and universal, based on such disciplines as knowledge management, decision theory, systems approach and systems analysis, with following their formalization and integration on the basis of EA methods to overcome existing limitations. In addition, it is possible to carry out an empirical study to investigate the problems and tasks in the field of strategic management, in practice solved with the help of EA, as well as assessing the effectiveness of using EA.

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## The relevance of learning and growth in organizations that adopt and do not adopt the BSC-characterization of the cultural profile

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**Abstract:** Organizational culture plays a key role, as it characterizes the way organizations behave, decide and guide its own success. Nowadays, due to highly competitive environments, performance is considered a leading concept in management. In the same line, learning and growth are also important in order to fulfill the requirements related to the defined performance. Regarding the global competition that organizations increasingly face, there are a number of strategic measurement tools that support managers in their decisions.

In this sense, the Balanced Scorecard (BSC) with its four perspectives, goes beyond the traditional management indicators as it monitors performance, promotes strategic alignment and foster organizational communication. Put it another way, BSC is considered one of the most relevant strategic management tools to improve organizational performance. Despite the recognized relevance of this research area, this link of organizational culture with the BSC's Learning and Growth perspective is yet unexplored.

This study examines first the differences of organizational culture within organizations with and without BSC. Second, the study addresses particular focus to the learning and growth perspective in organizations with and without BSC. Results indicate that organizations with BSC are more receptive to Learning and Growth. A possible explanation for these results may be associated to the multinational level of the sampled organizations, which leverage Learning and Growth in higher proportions.

**Keywords:** Balanced Scorecard, Organizational Culture, Performance, Learning and Growth

### 1 Introduction

Organizations are under increasing pressure due to globalization trends which consequently lead to deep organizational changes. In this line, and to face global challenges, several studies have been recovering the notion of organizational culture (DiMaggio, 1997; Zago, 2000; Cameron and Quinn, 2005). This study follows this trend, particularly the ability to adapt management strategies to external pressures due to rapid environmental changes (Smircich, 1983). Several authors contend that the organizational culture has an important impact on performance, yet there is a need to apply to several management tools to monitor performance (Pinho, Rodrigues, and Dibb, 2013) . Woodley (2006) confirms that culture is an

important component for the *BSC* interpretation. This author goes further by saying that “to increase effectiveness of the *BSC*, one of the issues that need to be given careful consideration is culture” (Woodley, 2006 p. 10-43).

The literature considers the *BSC* as it facilitates the aggregation of a number of financial and nonfinancial indicators, which are useful to align the different organizational perspectives (Kaplan and Norton, 2001; Kaplan and Norton, 1993, 1996; Mooraj, Oyon, and Hostettler, 1999; Wong-On-Wing, Guo, Li, and Yang, 2007). However, although several organizations have successfully implemented the *BSC*, there are others that have failed its implementation (Ittner and Larcker, 1998; Ittner, Larcker, and Randall, 2003; Speckbacher, Bischof, and Pfeiffer, 2003). Deem et al. (2010) acknowledged that there is a positive relation between the effective implementation of *BSC* and organizational culture. Some authors consider that one way to overcome this failure lies in learning, which has a substantial contribution in the implementation of *BSC* (Speckbacher, Bischof, and Pfeiffer, 2003; Cabrita, Machado, and Grilo, 2010).

Thus, this research focuses primarily on learning and growth. It aims to fill an existent gap in the literature as to our best knowledge there is no interconnection of cultural typologies between learning and growth. Also, there have not been any studies regarding the influence that the *BSC* may have on integrated performance. Thus, the questions that guide this study are:

*To what extent do the different organizational culture types, namely the clan, adhocracy, hierarchy, and market proposed by Cameron and Quinn (1999) differ in organizations that have BSC implemented from those that do not?*

To what extent is the importance, in organizations with *BSC* from non-*BSC* organizations, assigned to critical factors related to a learning and growth perspective.

Due to the complexity of this investigation, pilot interviews were performed to validate this research. Following this validation, a quantitative study was conducted, similar to most studies in this domain. The data collection was carried out through questionnaires applied to the 250 most exporting organizations in Portugal, with a response rate of 43%.

## **2 Organizational Culture**

Organizational culture has reached high interest in early 80s, especially in the area of organizational behavior, which stimulated the interest of several researchers (Hofstede, 1980; Tichy, 1982; Jones, 1983; O’Reilly, Chatman and Caldwell, 1991). In the early 90s, organizational culture defined its position mainly in the social sciences area, mainly through Sociology (Hatch, 1993) and Anthropology (Robbins, 1983). Pettigrew (1979) is recognized as the first author to apply the term "organizational culture". As he notes, “culture is the system of such publicly and collectively accepted meanings operating for a given group at a given time” (Pettigrew 1979: 574).

## 2.1. Organizational Culture Definition

There is no precise definition of the concept of organizational culture, although numerous researchers and managers have underlined its importance. In summary, there are some definitions that need to be emphasized

**Table 1:** Organizational Culture Definition

Organizational Culture Definition	Author
Organizational culture consists in a collective thinking that distinguishes members of different groups.	Hofstede (1980)
Organizational culture is known as the "normative glue" that interconnects a given organization.	Tichy (1982)
It may be a cognitive map that sets standards and mechanisms that have to be understood and followed by organizational members.	Jones (1983)
Organizational culture is like a cluster of shared systems that give meaning to organizational events.	Shrivastava (1985)
The standard of values and beliefs that allow you to understand how the organization manages your business.	Rohit, Frederick, and Webster (1989)
Organizational culture is, like a fan, composed of organizational characteristics.	Hofstede (1991)
Culture characterizes the way a group understands itself and solves their problems.	Trompenaars (1996)
Culture enters everyday life through the interaction of environmental cues and mental structures.	DiMaggio (1997)
Organizational culture is how members of an organization act.	Zago (2000)
Organizational culture defines the key values, assumptions, and interpretations of an organization.	Cameron and Quinn (2005)
"It is the core of what the company is really like, how it operates, what it focuses on, and how it treats customers, employees, and shareholders."	Gallagher <i>et al.</i> , (2008:25)
Culture reflects the way tasks are performed and goals are set	Heizmann and Lavarda (2011)

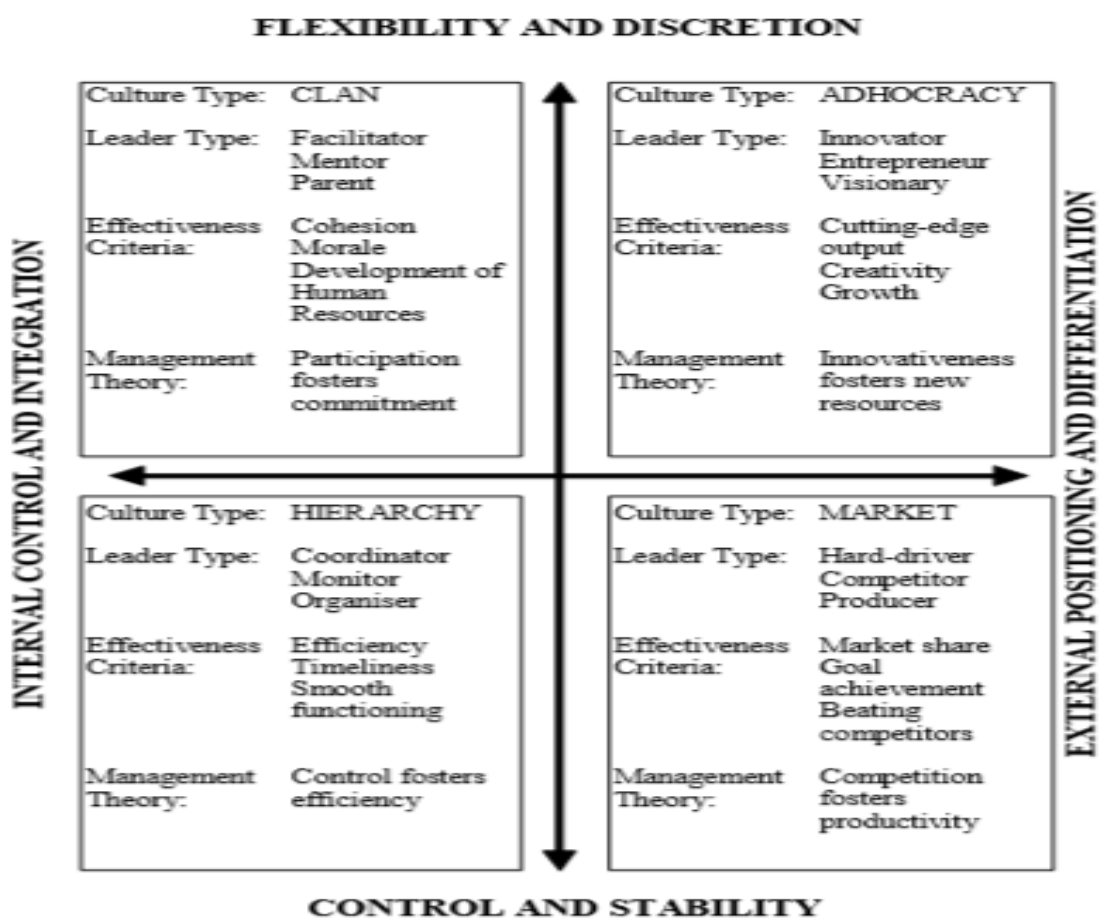
## 2.2. Competing Values Framework

Cultural interpretation depends on the context of the underlying archetypes, so the way culture is experienced and transferred can be characterized based on the dimensions of Jung (1923), namely Feeling, Thinking, Intuition and Sensing. Building on these dimensions, Quinn and Rohrbaugh (1981, 1983) developed studies in which researchers and theorists were asked to rate the similarity or dissimilarity between pairs of efficacy criteria that had already been addressed in the literature. Quinn and Rohrbaugh (1983) and Quinn (1988) analyzed the data through multidimensional scales, which allowed to define four types of cultures in this matrix, namely: Human Relations, Internal Process, Open System and Rational Objectives. The relative

placement of these four cultural typologies demonstrates the relationship that they maintain with each other. Each culture has opposite characteristics to the diagonal culture.

### 2.3 Organizational Culture - Typology

Quinn and Rohrbaugh (1983) continued with the definition of cultural clusters, which was later developed in 1999 by Cameron and Quinn. A cultural matrix is build on the basis of: 1) an internal focus, namely integration and differentiation, and 2) an external focus, namely flexibility and change versus stability. The development of the work of Cameron and Quinn (1999), resulted in a matrix of the cultural typology, composed by four quadrants, namely: Hierarchy, Market, Clan and Adhocracy.



**Figure 1:** Organizational Culture Assessment Instrument- OCAI  
 Source: adapted from Cameron and Quinn (1999)

#### Hierarchy – Culture type:

Bureaucracy and internal processes characterize the hierarchy typology. According to Quinn et al. (1996), the denomination of this typology shows its emphasis in bureaucracy based on Max Weber's theory and Henri Fayol's contributions.

It focuses on a clear organizational structure, made up of standardized norms and procedures, sustained on strict controls and clear responsibilities.

**Market – Culture type:**

In the market perspective, there are clear influences of Taylors' viewpoint, with recognized highlight at the beginning of the 20th century (Quinn, Faerman, Thompson, and McGrath, 1996). The key element of this perspective is productivity, since transactions are based on market mechanisms. In this context, efficiency, productivity and profit depend on a clear definition of organizational objectives.

**Clan – Culture type:**

The clan culture type emerged after the II World War, with focus on cohesion, commitment and moral values. Following this path, a direct relationship with cohesion, participation and teamwork is evident (Quinn et al., 1996).

Organizations characterized by Clan typology, consider that the main focus is sharing their values and goals on cohesion and participation. Also, teamwork, such as the involvement of employees and the commitment of top management to employees is valued.

Consequently, the core of this typology is characterized by group work, motivation and employee participation. In this sense, they usually identify common values and objectives and work in a collaborative and inter-auxiliary environment on which they value and promote employees' development.

**Adhocracy – Culture type:**

Regarding the adhocracy culture type, it converged to the clan's perspective at the final of the twentieth century. This culture type is based on a very competitive and turbulent environment in which organizational efficiency depends on the ability to adapt to the external environment (Quinn et al., 1996).

Organizations characterized by this culture type have the main objective of developing new products, promoting entrepreneurship, innovation, and creativity. It is known that adaptive capacity and innovation lead to new resources and profit (Cameron and Quinn, 1999).

**3 Balanced Scorecard – a strategic tool**

The *BSC* is considered a performance measurement tool that balances strategic objectives with financial and non-financial indicators, which leads to the organization's internal and external perspectives. By monitoring the indicators, managers can assess progress and determine the need to acquire or relocate tangible and intangible assets for the economic progress of the organization. The recognition of *BSC* goes beyond a performance tool, since it assumes decisive functions in strategic management (Louro, 2009). The *BSC* as a management tool enables the integration of mission, goals and strategies, according to the company's norms, achieving strategic alignment (Davis, 2011).



### 3.1 BSC Definition

Having in mind the complexity of functions, referred in the literature that can be achieved through the use of *BSC*, we attempted, in brief, to clarify the definition of *BSC*. Relying on the contribution of several authors:

**Table 2:** Balanced Scorecard Definition

Balanced Scorecard Definition	Author
<i>BSC</i> is one of the most appropriate strategic performance measurement tools.	Kaplan and Norton (1992)
<i>BSC</i> communicates targets and strategic ways to understand and reach the objectives.	Kaplan and Norton (1996, 1992)
<i>BSC</i> orientates strategic decisions, because it links the objectives to the organizational strategy.	Lipe and Salterio (2000)
<i>BSC</i> is an integrated system to measure performance.	Kerssens-van Drongelen, Nixon and Pearson (2000)
<i>BSC</i> is considered as the best approach to assist organizations in measuring and achieving performance.	Neufeld, Semeoni and Taylor (2001)
<i>BSC</i> is a corporate tool with a focus on development, communication, target setting and feedback.	Anthony and Govindarajan (2003)
<i>BSC</i> is a very relevant management tool to achieve the company's objectives.	Wegmann (2008)
<i>BSC</i> can be viewed as a vehicle within organizations improving its development.	Atkinson (2006)
<i>BSC</i> is one of the tools that provides focused and useful information to managers.	Hu, Leopold-Wildburger and Strohhecker (2017))

Having in mind the definitions above, it is well known that the *BSC* is not only a performance management tool but also a strategic tool that enables performance monitoring. It also can be used to align the organizational strategy at various levels. Additionally, it is a corporate communication tool, which helps to communicate the current performance of the organization, as well as the goals that the organization aspires to achieve, as well the strategic changes. Throughout the implementation of the *BSC* tools, communication should be disseminated in an integrated way to various organizational players.

### 3.2. Performance Measurement with emphasis on the four *BSC*'s perspectives

*BSC* is considered a valuable guide for managers that adopt this methodology. Their focus can shift to what is really important and not to an exhaustive analysis of the extensive information available (Mooraj *et al.*, 1999). The focus should be more comprehensive to allow performance evaluation in some areas that, when put together can be influential and guide the organization (Kaplan and Norton, 1992). By having the utmost respect for these four

perspectives, organizations can achieve an integrated focus, coupled with organizational vision and strategy (Chavan, 2009). Initially, the tool was designed as a multidimensional performance instrument, expanded in 1996 through the linkage of the four dimensions (Kaplan and Norton, 1996).

### **Financial Perspective**

It is based on financial measures such as income and productivity. Performance is itself directly dependent on the cycle: growth, sustainability and return (Kaplan and Norton, 1996). The increase in market share or productivity is related to the development of the strategic objectives and the financial situation of the organization (García-Valderrama, Mulero-Mendigorry and Revuelta-Bordoy, 2008). The financial perspective reflects the financial sustainability of the organization, knowing that the primary objective of the organizations is achieving the financial solvency, since this is the base for security and furthermore for organizational expansion (Kaplan and Norton, 1996).

### **Customer's Perspective**

It is related to market segmentation, since the indicators in this perspective aim to measure the creation of value for the client. This perspective seeks to ascertain the degree of satisfaction of the customer, thereby, it plans to gauge the fulfillment of the delivery deadline, the quality level of the products (goods or services) marketed, as well as the customers' satisfaction against the agreed price. The creation of value will generate confidence in the shareholders so that they continue to invest, to generate better financial returns (García-Valderrama *et al.*, 2008). This perspective consists of a sequential analysis to verify if the path to follow is the defined one (Kaplan and Norton, 1996).

### **Internal Perspective**

It highlights the importance to identify and analyze the critical processes related to productivity and efficiency, within the short and long-term period (Kaplan and Norton, 1996). The definition of the strategy according to the internal perspective represents one of the most important actions regarding the development of the tool in research and development areas. It is recognized, that the value proposed to the client shows measures of customer satisfaction, retention data and market share (García-Valderrama *et al.*, 2008).

### **Learning and Growth Perspective**

It characterizes the measurement of learning and growth of employees, which will consequently promote organizational growth. Growth forecasting, research and development of new products as well as human resource development are integrated into this perspective (Kaplan and Norton, 1996). This perspective aims to identify the objectives and indicators that support and allow the evolution of skills, for the development of the organization. This perspective is considered as the lever for the others, since it fosters the results of the first three mentioned perspectives. However, for achieving this perspective it is crucial to invest in the present in order to ensure that the infrastructures, skills and resources can be able to respond to the demands of fast changing markets. To that end, employee training, information systems as well as motivation, are critical (Kaplan and Norton, 1996). By applying

the strategy linked to learning and growth, organizational success in strategic execution is based on the organization's ability to learn, adapt and grow. This measurement also corresponds to the resources that the organization allocates to research and development, and mainly to human resources (García-Valderrama *et al.*, 2008).

### **3.3. The adoption of the BSC**

The literature confirms the adoption of the BSC in 40% of Fortune 500 organizations (Williams, 2001). Similarly in German-speaking areas, particularly in Germany, Austria and Switzerland, the adoption rate is around 25% (Speckbacher, Bischof and Pfeiffer, 2003). The research conducted by Quesado and Rodrigues (2009) about the knowledge level that the Portuguese companies have about BSC, which is based on a survey of 250 firms corresponding to the largest companies in Portugal, should also be underlined. This study shows that nearly half of the organizations stated that they knew about the BSC management tool and almost 20% had already implemented it.

## **4 The performance relevance to organizations**

An adequate, positive, organizational performance is the primary ambition of managers having in mind that solvency and sustainability are present before hand.

However, as already mentioned, performance measurement is complex, especially for organizations that are exposed to fast demanding (Hubbard, 2009). Consequently, a fast and dynamic organizational adaptation is key to the creation of organizational values. Thus, all management information systems should act as an internal communication medium to allow shared information within organizations and to standard procedures and practices in the internal management of organizations (Gomes and Romão, 2013).

Through performance management tools, the objectives are monitored to achieve a value proposition that is expected by the shareholders. Defining implementation processes, help plan and contract (Atkinson, Waterhouse, and Wells, 1997). According to Reilly and Reilly (2000) managers need to ensure that the organization reaches a certain result that fulfils the shareholders expectations.

In general, these management tools will guide managers in their strategic decisions related to innovation, investment and business operations (Chenhall, 2005; Ittner, Larcker, and Randall, 2003). In order to achieve the objectives set out, managers have a capable tool, based on the construction of relevant and systematic information, supported by logic and that follows the trends evidenced by indicators.

Currently, competitive advantage is leading to changes in the organizational paradigm, thereby managers are permanently trying to maintain, or even increase their competitive advantages. With the exponential growth of organizational turbulence, managers are increasingly required to monitor organizational performance in a very detailed manner, focusing their attention on the sources of competitive advantage, notably in resources and

skills (Grant, 1996). There is a learning process that will continue to take place in Organizations, and there should be, three essential characteristics of learning to this organizations:

1. A Learning process;
2. An orientation process to learn;
3. Guiding factors of the organization.

Kottler and Heskett (1992) report that corporate culture relates to organizational performance and is, therefore, one of the most important factors related to organizational success.

## 5 Methodology

The epistemological position that guides this research resides in a positivist paradigm and, as a result, is essentially quantitative relying on a survey in which the most dominant organizational culture among the most exporting organizations in Portugal is assessed. We have also analyzed the relevance that organizations attach to the perspective of learning and growth of the *BSC*. The items on the questionnaire and the multi-item scales were developed based on the literature. Organizational culture-related items were adopted by Quinn (1988) based on Cameron (1985). In turn, the *BSC* dimensions are measured based on the Kaplan and Norton indicators are based on the critical factors of Jordan, Carvalho das Neves and Azevedo Rodrigues (2015) With the objective of answering the defined research questions, we decided to investigate the following hypotheses:

**Hyp 1:** The importance of the critical factors, related to the financial perspective, differ in organizations that have the *BSC* implemented from those who have not.

**Hyp 2:** The importance of the critical factors, related to the customer perspective, differ in organizations that have the *BSC* implemented from those who have not.

**Hyp 3:** The importance of the critical factors, related to the internal perspective, differ in organizations that have the *BSC* implemented from those who have not.

**Hyp 4:** The importance of the critical factors, related to the learning and growth perspective, differ in organizations that have the *BSC* implemented from those who have not.

**Hyp 5:** The organizational type differs in organizations that have the *BSC* implemented from those who have not.

**Hyp 6:** The leader type differs in organizations that have the *BSC* implemented from those who have not.

**Hyp 7:** The cohesion (organizational glue) factors differ in organizations that have the *BSC* implemented from those who have not.

**Hyp 8:** The organizational critical factors differ in organizations that have the *BSC* implemented from those who have not.

## 5.2. Procedures of data collection

In order to validate the questionnaire, pilot interviews were conducted with three multinational organizations and a Technological Research Center. The suggestions of the senior managers have been analyzed and incorporated in the questionnaire. Accordingly, the questionnaire was sent by e-mail on December 17th, 2016, to a population of the 250 most exporting organizations in Portugal. Several telephone calls were made late December and early January, followed by repeated requests by e-mail, to reinforce the importance of participation and to increase the response rate. After concluding the data collection, a sample of 107 questionnaires were obtained, which corresponds to a response rate of 42.8%.

It is also important to notice that the greater number of organizations with *BSC* belong to multinational groups and of these a large majority comes from the automobile industry.

## 6 Data analysis

Before proceeding the data analysis, there is a need to prepare all data. This involved a number of steps, namely: verifying if the questionnaires were filled correctly, treatment of unsatisfactory answers, coding, and transcription of the questionnaire, validation of the data and insertion of the data into a database. In this sense, in order to analyze the questionnaires received, the answers were inserted and analyzed through SPSS software. As our objective aims to measure the extent to which the different perspectives of organizational culture differ in the organizations that have, or not, implemented the *BSC*, it was decided that the most appropriate statistical test to validate our hypotheses is the independence t-test. This t-test will be applied to independent samples (once verified the necessary conditions for application of the test). Subsequently, we can achieve a better and detailed analysis of the significance of some dissimilarities between the two groups.

After collecting information, the answers have been coded and converted from a 100 points scale to a Likert Scale of 7 points. Table 3 shows that organizations with *BSC* do not provide the same importance to Learning and Growth when compared to organizations without *BSC*. In this way, it is possible to confirm the Hypothesis 4, that there is a difference of mean between the two types of organizations.

In order to identify the most notorious cultural typologies among different firms, data was aggregated in order to determine the maximum value of each cultural typology.

**Table 3: BSC's Perspectives**

<i>BSC_n_BSC</i>		Mean	Standard Deviation	Mean difference	T test	Hypothesis Confirmation
PerA_Financial Factors	without <i>BSC</i>	2,95	0,958	0,069	0,718	H1: Not supported
	with <i>BSC</i>	2,88	0,956			
PerB_Customer's Fctors	without <i>BSC</i>	2,94	0,84	0,294	0,059	H2: Not supported
	with <i>BSC</i>	2,64	0,656			
PerC_Internal Factors	without <i>BSC</i>	1,87	0,566	0.013	0,91	H3: Not supported
	with <i>BSC</i>	1,85	0,573			
PerD_Learning and Growth Factors	without <i>BSC</i>	1,58	0,53	-0,321	0,006*	H4: Supported
	with <i>BSC</i>	1,9	0,617			
100 points scale, converted in a Seven-point Likert scale – 1-14 = Likert Scale 1    15-28= Likert Scale 2;    29-42 = Likert Scale 3 43-56= Likert Scale 4    57-70= Likert Scale 5    71-84= Likert Scale 6 85-98= Likert Scale 7    99 – referring to lines without responses						
* p<0,05						

**Table 4: Dominant Culture Typology**

Areas	<i>BSC_non BSC</i>	Culture item with highest score	Culture Profile	Culture Profile	Hypothesis Confirmation
Organisational Type	without <i>BSC</i>	Identification. with organization	2,93	Clan	H5: Not Supported
	with <i>BSC</i>	Identification with organization	3,08	Clan	
Leader Type	without <i>BSC</i>	Leader-entrepreneur	3,51	Adhocracy	H6: Supported
	with <i>BSC</i>	Leader – coordinator	3	Hierarchy	
Organizational Cohesion	without <i>BSC</i>	Union - loyalty	2,83	Clan	H7: Not Supported
	with <i>BSC</i>	Union - loyalty	2,68	Clan	
Organizational Critical Factors	without <i>BSC</i>	Results are the most important	2,74	Market	H8: Not Supported
	with <i>BSC</i>	Results are the most important	2,56	Market	
100 points scale, converted in a Seven-point Likert scale – 1-14 = Likert Scale 1    15-28= Likert Scale 2;    29-42 = Likert Scale 3 43-56= Likert Scale 4    57-70= Likert Scale 5    71-84= Likert Scale 6 85-98= Likert Scale 7    99 – referring to lines without responses					
* p<0,05					

As Table 4 indicates, four areas of organizational culture were identified, namely: 1.1. Type of Organization, 1.2. Leadership, 1.3. Organization cohesion, 1.4. Organizational Critical Factors (Important factors). Each group had four items allocated that aim to measure the most relevant characteristic of each group, through the maximum score attributed "culture item with a higher score".

There are some differences between the organizations that adopt *BSC* and those that do not adopt, particularly with regard to leadership type. Results indicate that organizations without *BSC* are more characterized by the adhocracy typology while organizations with *BSC* are more identified with the hierarchical typology. This difference allows confirming Hypothesis 6 that supports different cultural typologies in the leadership role.

However, in the other areas, namely in the organization type, both groups are identified with their organization. With regard to organizational cohesion both groups consider loyalty an important factor. Also, with regard to the critical factors, the ones which both groups of organizations consider the most important are the results. So that we may conclude that these cultural types do not vary significantly between organizations without *BSC* and with *BSC*, except those related to the characterization of the leader.

## **7 Discussion and conclusions**

As mentioned, Williams (2001) states that on average 40% of Fortune 500 organizations have the *BSC* implemented, a finding also obtained by Speckbacher, Bischof and Pfeiffer (2003) who concluded the implementation rate of *BSC* in 25% in German-speaking countries. Similarly, Quesado and Rodrigues (2009) found that 20% of the 250 largest companies in Portugal had already implemented the *BSC*.

On one hand, the research developed to the 250 most exporting organizations of Portugal, demonstrate an implementation rate of 43% which shows a significant adoption of this tool and an adoption growth in comparison to previous studies.

Regarding the importance of the perspective of learning and growth, it is pointed out that even today this point of view is less valued among the four perspectives of *BSC* (Campbell, Datar, Kulp, and Narayanan, 2015). However, organizations with *BSC* are the ones that value the most this perspective.

We may conclude that the *BSC* is a strategic tool that has been increasing its adoption in Portugal and is recognized by the organizations that have not yet implemented it as a tool capable of improving performance while allowing a strategic focus.

Regarding the link of organizational culture to the role of learning and growth, which in the past was of very limited relevance Woodley (2006) it relevant to emphasize that this link continues to be of low relevance for the sampled organizations. Although results indicate that it has major relevance to organizations with *BSC*. In this sense, it is known that learning has a strong contribution to the implementation of *BSC* (Cabrita et al., 2010; Speckbacher et al., 2003). Even though organizations give less importance to the perspective of learning and

growth, they classified the Clan typology (which values the integration and transmission of knowledge) with the maximum score in two of the four groups of the organizational culture.

On the other hand, regarding the issue of what is important to the organization, both types of organizations have answered that the results are the most important.

Therefore, there is a need to encourage organizations to pay more attention to learning and growth while maintaining focus on results. In this sense, organizations that want an integrated vision and that consider the *BSC* an ally, should focus on learning, since this is one of the leading causes of implementation failure and, in general, continues to be underestimated (Cabrita *et al.*, 2010).

## 8 Future Research Avenues

In terms of future research, in our view it is relevant to analyze the effect of implementation of *BSC* on cultural organizational types before and after the implementation of this strategic tool. This topic would be better understood in a longitudinal analysis instead of a cross-sectional analysis due to its dynamic nature. Another line of research would be to include organizations coming from different sectors, namely public and private sectors. The topic of learning and growth also requires a deep analysis. Moreover, for further investigations, it might be relevant to identify the reasons why organizations without *BSC*, spend less attention on Learning and Growth. In addition, a deeper knowledge about the distinct leader characterization in organizations with and without *BSC* may be helpful for organizations that intend to implement the *BSC*.

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## **Beliefs, Behaviours, and Outcomes: an Application to Knowledge Sharing in Healthcare Services**

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**Abstract:** Healthcare is a knowledge-intensive activity entailing that knowledge management, particularly sharing and conversion, is critical to decision making throughout the diagnostic-therapeutic cycle and ultimately to management as well as to health outcomes. This paper seeks to contribute to the understanding of how knowledge sharing behaviours in healthcare services depend from attitudes and impact on perceived organizational performance. After analysis from a survey of 298 healthcare employees from North Portugal, results confirm an overall positive relationship between beliefs, behaviours, and performance. Additionally, it is suggested that a strong belief in the organizational benefits of knowledge sharing is more important to the frequency of sharing and to the perception of organizational performance than the belief in personal benefits from sharing is. Finally, results point out the importance of the relatively less frequent exchanges of explicit knowledge to improve healthcare outcomes.

**Keywords:** Knowledge sharing; Healthcare management; Healthcare performance; Tacit knowledge; Explicit knowledge

### **1 Introduction**

Knowledge sharing is critical to effective healthcare outcomes, implying a great amount of communication between practitioners and between them and patients, and demanding the most qualified employees to constantly internalize and externalize knowledge (Karamitri et al. 2017), i.e. to generate and disseminate knowledge by continuously transforming recorded information into practical solutions and day-to-day accumulated experience and expertise into sharable documents. Healthcare is thus a knowledge-intensive activity and the availability and transformation of relevant knowledge is central to decision making throughout the diagnostic-therapeutic cycle and ultimately to service effectiveness, reflected in care quality and patient safety (Abidi 2008).

This paper aims to contribute to the understanding of knowledge sharing (KS) behaviours in healthcare services, namely by determine how different behaviours: (i) depend from attitudes towards the sharing; (ii) affect the (perceived) organizational performance. These are the two research questions from which the article will be developed below. The relationship between attitudes, KS behaviours, and organizational performance has been the subject of a number of previous studies. The potential contribution of this paper is to more analytically explore the relationships between the three levels of variables (beliefs, behaviours, and outcomes) considering: (i) two different belief referents (employee vs. organization); (ii) two directions of sharing (collecting vs. donating); (iii) two types of knowledge (tacit vs. explicit).

The next section briefly reviews the relevant literature on attitudes, behaviours, and outcomes related to KS. After that, we expose the methods and materials involved in the empirical assessment of the research questions. Then we present and briefly discuss the results. Finally we elaborate the conclusion and some implications.

## **2 Literature review and hypotheses**

There is a consensual idea in the management literature that all organizations should promote KS, particularly within the organization and between it and relevant stakeholders, so it is no surprise to find a vast literature about the factors which enable, promote or foster KS practices. For example, Liu et al. (2011) classify those factors as: individual, such as motivation and attitudes towards several facets of the job; interpersonal, including relational and exchange behaviours or attitudes regarding the others, particularly trust; organizational, like reward systems and management support.

### **2.2 From beliefs to behaviours**

Focusing on the individual-level factors, motivation and attitudes are indeed the most studied variables, although not always clearly defined in the KS context. According to Swift et al. (2010), the way employees feel motivated to KS by anticipating the outcomes (rewards or punishments) of KS behaviours depends on more general traits, namely goal-orientation. The authors propose that employees value the outcomes differently depending on their need to prove or hide their performance to or from relevant others and on the strength of their need to improve competencies. The outcomes we are referring to may be conceptualized as instrumental attitudes towards the act and are generally named the benefits and costs of individual KS behaviours (Swift et al. 2010), i.e. the favourable or unfavourable beliefs regarding KS.

Lin (2007) explicitly combines motivation with attitude theories by positing that an overall attitude towards KS depends on motivational factors, namely extrinsic goal-oriented to get organizational or relational benefits, and intrinsic self-rewarding by the pleasure of sharing. Theories implying attitude-behaviour relationships, such as the theory of planned behaviour, predict that the more benefits employees perceive as a result of KS, for themselves or for others, more likely they are to engage in KS (Witherspoon et al. 2013). So the development of the first hypothesis is straightforward:

H<sub>1</sub>: Perceived benefits from KS positively affect the frequency of KS behaviours.

After elaborating a thorough literature review of several facets of KS, Jacobs and Roodt (2007) suggested that nurses' motivation to KS could be linked not only to anticipated personal outcomes (be them intrinsic or extrinsic), but also to perceived benefits of KS to the organization. Alas, it is unclear from their paper how these different motivational and attitudinal factors may relate to KS behaviours or intentions. So, beyond the confirmatory analysis made explicit in H<sub>1</sub>, there is room for an exploratory analysis of the relationship between the two levels of beliefs (personal vs. organizational) and different types of KS behaviours.

KS implies a provider-recipient relationship, involving different kinds of actions, i.e. the acquisition (collecting) and the provision (donating) of knowledge (Lee and Choi 2003). On the other hand, the literature usually refers to two types of knowledge transferred between partners by different means and processes (e.g. Nonaka and Takeuchi 1995): explicit, codified and dependant on a system of transmission; tacit, embedded in social relations and transferred primarily through direct contact and observation of behaviour.

Most studies on the motives, attitudes, and more general enablers of KS focus on the donation of tacit knowledge, as the rationale for that research may have been to find triggers to motivate employees to share their own intellectual capital in the benefit of colleagues and ultimately of the organization. Much less attention has been given to attitudes towards knowledge collecting and towards explicit sharing. de Vries et al. (2006) related KS attitudes with behaviours of collecting and donating tacit knowledge. Their attitude instrument has a motivational basis and is bi-dimensional: eagerness to share is based on an internal drive to communicate and measured by ego-centred items; willingness to share is focussed on the group's interest and measured by items concerned with the group, its common interest, commitment, or reciprocity. So, the first dimension consists of personal benefits, mainly intrinsic, but also considering social rewards from the expertise recognition, whereas the latter consists of group or organizational benefits. The authors found that both dimensions contribute to collect as well as to donate tacit knowledge.

## **2.2 From behaviours to performance**

The way from KS behaviours to organizational performance may be found in numerous applications and based in diverse theories. Nonaka and Takeuchi (1995) accentuate the importance of knowledge conversion processes, i.e. the ways tacit developed knowledge is codified and becomes explicit (externalization) and explicit knowledge is adapted and spread by interaction (socialization). Conversions turn organizations more innovative and competitive and ultimately lead to increased performance. Healthcare services are settings where these conversions are critical, as there is a constant need to access newly generated explicit knowledge, to adapt it to the specific situation of each patient, and also to accumulate intellectual capital based in the service experience (Karamitri et al. 2017). KS is also critical because professionals in a healthcare service have different backgrounds, perspectives, and observations (Kim et al. 2012), so the service's outcomes are much dependant on the effective KS among these individuals. We then derive the second hypothesis:

H<sub>2</sub>: The frequency of KS behaviours positively affects the (perceived) organizational performance.

Focussing at the organizational variables, as predicted by Nonaka and Takeuchi (1995), the positive effects of KS behaviours on the (perceived) organizational performance seems to be

mediated by innovative behaviours (Marques et al. 2016; Wang and Wang 2012). At the individual level, theories such as the social exchange theory and its extension affective theory of social exchange may be adequate to model intra and inter-organizations knowledge exchange (Liu et al. 2011). According to these theories, the increased frequency of KS behaviours brings forth a set of positive cognitive and affective reactions which finally positively impact not only in individual performance (Quigley et al. 2007) but also in the (perceived) organizational performance, through the mediation of job related outcomes, such as satisfaction and commitment (Leal et al. 2016).

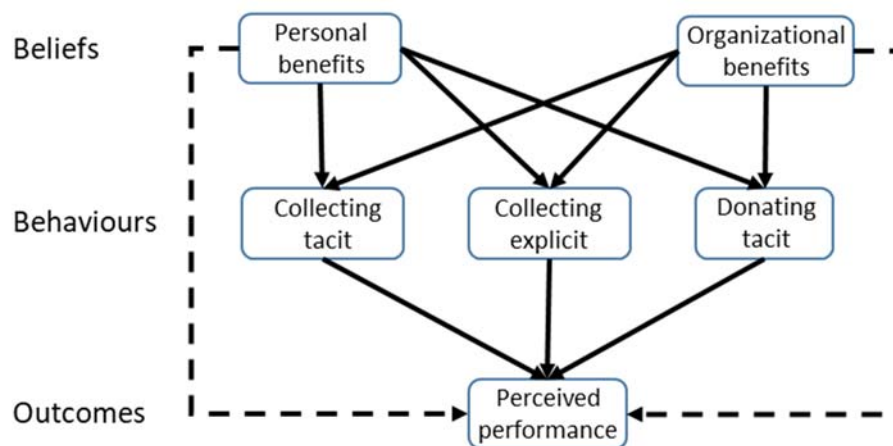
The variety of mediators and moderators which may be involved in the relationship between KS behaviours and organizational performance make it difficult to hypothesise detailed paths from each type of behaviour and (perceived) performance. For instance, Wang and Wang (2012) found that explicit KS has much stronger effects on perceived firm's innovativeness, thus indirectly impacting on perceived organizational performance. However, tacit KS strongly impacts non-financial performance (i.e. management effectiveness and marketing responsiveness) beyond the mediation of innovation. So, to summarize, we propose a model that globally predicts two positive relationships between beliefs → behaviours → performance, but leave room to exploratory analyses of particular relationships between each level of beliefs (personal or organizational), each type of knowledge (tacit or explicit), each direction of exchange (donating or collecting) and performance.

### **3 Methodology**

Both the confirmatory and the exploratory analyses will be done in the same path model with latent variables (Figure 1), where the beliefs are the exogenous variables; behaviours the mediators; and performance the dependent variable. In order to assess this mediation model, paths are hypothesised between all variables but the ones belonging to the same group (exogenous or mediators). The relationships between beliefs and performance (dashed lines in Figure 1) are supposed to be completely mediated by behaviours. However, they have to be formalised in the model in order to verify if there is no significant direct effect remaining beyond the mediation (Shrout and Bolger 2002). The model is estimated by maximum likelihood structural equations with bootstrapping with the software AMOS 23, the same used to assess the validity and reliability of the measurement instrument after confirmatory factor analysis, in accordance with the procedures suggested by MacKenzie et al. (2011) and by Fornell and Larcker (1981).

The instrument is based in the literature with minor adaptations. All items (listed in Table 1) are measured in five-point labelled scales. Items of beliefs are taken from Jacobs and Roodt (2007), although we deleted one item from personal benefits and added another one to the organizational benefits, in order to have an even number of items in the two dimensions. They are measured in an intensity scale, from Very small (1) to Very large (5). Items of behaviours were picked from the literature and classified in the four combinations of type of knowledge (tacit vs. explicit) and direction of exchange (collecting vs. donating), being measured in a frequency scale, from Hardly ever (1) to Very often (5). In the pilot study it was realized that it was difficult to apply relevant items of explicit donation, so this category was not used in the study. Finally the perceived performance is measured by three items from the scale published by Yang and Lin (2009). As may be seen in Table 1, these items resemble the measurement of the so called operational performance in Wang and Wang (2012), as we are

more concerned with the impact of KS on quality of care that on financial outcomes. Items are measured in a dis/agreement scale from Totally disagree (1) to Totally agree (5).



**Figure 1:** Research model

The questionnaire was applied to a sample of 300 employees in a variety of healthcare services in North Portugal during the fourth quarter of 2016. After checking for completeness of responses, 298 valid questionnaires were inputted into the data file for subsequent analysis. Besides the 17 items listed in Table 1, employees were asked about demographics and some job related variables discarded in this study.

#### 4 Results and discussion

Healthcare employees exhibit a neutral attitude towards their own benefits from KS and a mildly positive attitude regarding its benefits to the organization, as may be seen from the mean scores in Table 1. Keeping with personal benefits, intrinsic rewards are notably more important than extrinsic, formalised rewards. Concerning KS behaviours, as expected, collecting explicit knowledge is slightly less common than engaging in informal sharing.

Table 1 also presents the information necessary to assess measurements' reliability and convergent validity. It is noteworthy that all items have square loadings above 0.5, i.e. measurement error below 50%. Under this circumstance, the common criterion for convergent validity, an average variance extracted above 0.5, is necessarily met for all latent variables. The large loadings also permit reliable latent measures, as the composite reliability coefficient exceeds 0.7 for all variables, including the behaviours, each measured by only two items.

Having established the measurement validity and reliability, we report the goodness of fit statistics before advancing to the structural analysis. The  $\chi^2$  is 240 with 104 d.f., yielding a ratio of 2.305 per d.f. and a comparative fit index of 0.95. The RMSEA is 0.066,  $p=0.008$ , with a 90% confidence interval between 0.55 and 0.77. The examination of modification indices shows that no significant regression was left from the model and that the  $\chi^2$  value results from the omission of correlated errors, namely between some items of personal and organizational benefits.



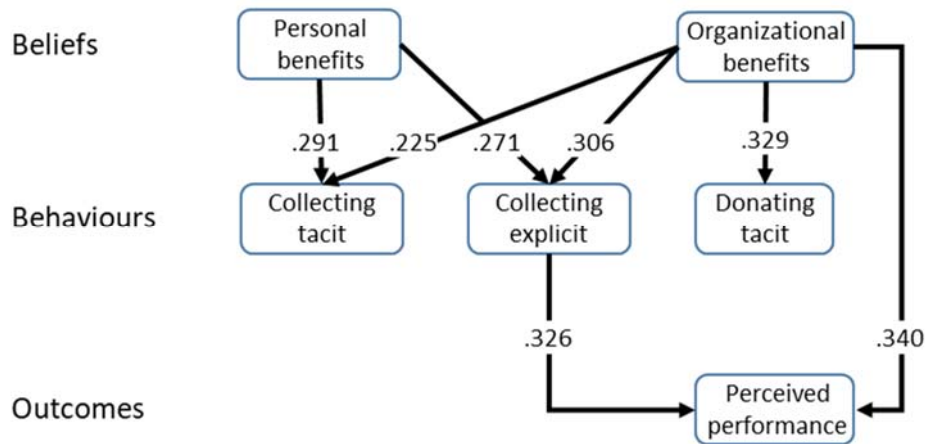
**Table 1:** Measurement model

Variable/Item	Mean scores (1 to 5)	Std. Dev.	Loading	p (Reliability)	Variance extracted
<b>Personal benefits</b>	<b>2.99</b>			<b>0.849</b>	<b>0.584</b>
Reward	2.50	1.19	0.741	0.001	0.549
Acknowledgement	3.11	0.98	0.744	0.001	0.554
Self-esteem	3.43	0.95	0.730	0.001	0.533
Promotion	2.92	1.13	0.838	0.002	0.702
<b>Organizational benefits</b>	<b>3.36</b>			<b>0.878</b>	<b>0.644</b>
Goal achievement	3.55	0.88	0.745	0.001	0.555
Success	3.47	0.95	0.834	0.002	0.696
Competitiveness	3.07	1.08	0.791	0.001	0.626
Innovativeness	3.35	1.00	0.837	0.002	0.701
<b>Donating tacit</b>	<b>3.69</b>			<b>0.817</b>	<b>0.680</b>
Asked for advice	3.53	0.96	0.713	0.002	0.508
Shares informally	3.84	0.93	0.769	0.001	0.591
<b>Collecting tacit</b>	<b>3.64</b>			<b>0.802</b>	<b>0.694</b>
Gets advice	3.46	0.96	0.919	0.001	0.845
Learns from others	3.82	0.94	0.709	0.001	0.503
<b>Collecting explicit</b>	<b>3.06</b>			<b>0.709</b>	<b>0.663</b>
Gets docs to task	3.04	1.12	0.875	0.001	0.766
Gets informative docs	3.08	1.22	0.786	0.002	0.618
<b>Performance</b>	<b>3.56</b>			<b>0.830</b>	<b>0.621</b>
Staff stability	3.47	1.20	0.806	0.001	0.650
Satisfied patients	3.78	1.01	0.714	0.001	0.510
Effective management	3.44	1.10	0.838	0.001	0.702

Our model hypothesises that the strength of the beliefs about the benefits of KS increases the frequency of KS behaviours, which, in turn, positively influence the perceived organizational performance. In order to assess this mediation model, all paths linking beliefs to behaviours, behaviours to performance, and beliefs to performance were estimated by maximum likelihood SEM, resorting to the bootstrap procedure. The significant direct effects are shown in Figure 2. Regarding the confirmatory analysis, we may say that  $H_1$  is supported, given that organizational beliefs positively affect the three behaviours and personal beliefs positively affect two of them. As to  $H_2$  the support is limited, because only one of the behaviours affects perceived performance. On their turn, the main results of the exploratory analysis may be exposed as follows:

Firstly, personal and organizational beliefs unequally determine KS frequency. Beliefs about personal benefits positively influence collecting behaviours, while beliefs about the benefits to the organization influence both collecting and donating. Secondly, the access to explicit knowledge is the only KS behaviour significantly impacting the perceived organizational performance. Tacit sharing appears to have no influence on the perception of organizational

performance. Last but not the least, collecting explicit knowledge fully mediates the effect of beliefs about personal benefits over the perceived performance, but fails to do the same regarding the organizational beliefs. That is, beliefs about organizational benefits positively influence the perception of healthcare performance beyond the hypothesised behaviours' mediation.



**Figure 2:** Standardised path coefficients

The exposed results from this exploratory analysis raise some hypotheses and questions that may be further explored in following research. Regarding the relationship between beliefs and behaviours, we now hypothesise that the perception of personal benefits is a basic dimension that is only involved in collecting behaviours, i.e. if workers only perceive personal benefits from sharing, they will not feel motivated to donate knowledge. It is the perception of organizational benefits from KS that triggers the donation behaviour. If we attempt to frame this proposition in the social exchange theory, we would say that donating majorly results from the perception of KS as a productive form of exchange, i.e. from employees believing that by sharing knowledge they contribute to a common good (Serenko and Bontis 2016). The importance of these beliefs is further increased by noticing that they have a direct impact on the perceived organizational performance. Given that explicit exchange is the only behaviour affecting perceived performance, it remains to future studies to verify if the direct effect from beliefs about organizational benefits could be mediated by explicit donating.

As to the impact of KS behaviours on the (perceived) organizational performance, we realize that it is completely independent from exchange of tacit knowledge. This result is in line with previous studies that established and found that this kind of exchange is pervasive in most organizations and it is the explicit KS that may differentiate innovative, competitive, and successful firms and institutions (Marques et al. 2016; Nonaka and Takeuchi 1995; Scully et al. 2013), although the optimal strategy seems to be a synergistic combination of both types (Choi et al. 2008).

## Conclusion

This paper sought to contribute to the understanding of specific KS behaviours in healthcare services, particularly how they depend from attitudes and how they impact on perceived organizational performance. An overall positive relationship between beliefs, behaviours, and performance was confirmed, but there is a need to further elaborate on the specific roles of

different types of beliefs and behaviours. From the stated frequency of behaviours, it may be seen that healthcare professionals, at least in Portugal, do exchange knowledge informally more often than they do collect codified knowledge. One ought to get a good impression from these results if considering that literature on KS in healthcare usually stresses the need to increase tacit sharing in order to improve the quality of care (Herbig et al. 2001; Karamitri et al. 2017; Wyatt 2001). However, the exploratory results from this study do indeed suggest that tacit knowledge sharing doesn't have any additional effect on the perceived organizational performance. We suggest complementary interpretations to the understanding of these results.

We found evidence to support the idea that less frequent KS behaviours do more significantly positively impact on the healthcare outcomes, namely the perceived performance. So it is suggested that teams, services, and organizations where the access to explicit knowledge is more frequent are in fact more successful. A possible explanation is that explicit knowledge is fundamental to innovativeness and that innovative attitudes and behaviours lead to superior performance. This effect has been previously found in studies dealing with public and health services (Scully et al. 2013). Another explanation is that, since most employees are involved in tacit KS, the ones more frequently involved in explicit KS do benefit from positive individual outcomes, such as commitment and satisfaction, which, in turn, positively affect the perceived organizational performance. This kind of effect has been previously found in Portuguese healthcare employees (Leal et al. 2016).

Future research may assess these explanations estimating the effects of a set of possible mediators between behaviours and performance. The donation of explicit knowledge was not considered in the types of behaviours measured in this research, because the researchers anticipated that few employees could be involved in that behaviour. Its inclusion in future designs would allow to more precisely compare the effects of tacit and explicit KS and would additionally provide a means to test if the direct effect of beliefs about organizational benefits over perceived performance holds.

Concerning the relationship between beliefs and behaviours, the finding that only beliefs about the impact of KS in the organization do influence the frequency of donating behaviours may be accommodated in the framework of social exchange theory. Being confident that sharing information with other employees has positive consequences to the organization is a condition for the productive mode of exchange, motivating donors to share without being worried about reciprocity. Again, future research ought to verify if this effect is still valid with respect to explicit donation and not only to tacit. Serenko and Bontis (2016) found that productive exchange elicits more favourable attitudes towards KS than any other kind of exchange. Having these authors considered an overall measure of attitude, researchers interested in deepening the understanding of the relationships between KS attitudes and behaviours may extend their model, differentiating between personal and organizational benefits, as we did in the present research. A more comprehensive picture could be composed by including negative beliefs (i.e. costs in addition to the benefits) and affective expectations (in addition to the cognitive beliefs).

The implications for healthcare management are twofold: first we ought to agree with Serenko and Bontis (2016) on the importance of management practices and organizational culture that foster the productive mode of exchange, i.e. a strong belief in the organizational benefits of KS that motivates donation without concerns for reciprocity or negotiation; second

it is advisable to increase explicit sharing, which may imply a more developed learning culture, but also investment in systems to facilitate this desideratum. The output of this research strongly suggests that these two recommendations would definitely contribute to the effectiveness and the quality of these healthcare services.

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## Management of internal communication as a strategic tool for employee satisfaction

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**Abstract:** Communication is of strategic importance in the management of organisations. The existence of a truly effective internal communication is considered indispensable in order to optimize the functioning of organisations, since effectively communicating and understanding the mechanisms of worker's collaboration process becomes central and can lead an organisation to success or to failure. When we talk about organisations, we see communication as a determinant of success, because organisations are made up of people who need a good level of communication to live together, and share the rules and goals. However it is noticeable that in most organisations there is dysfunction in internal communication because the complexity of organisational structures means that the information has to go a long way to the final receiver, often leading to the distortion of the original information. In order for internal communication to function as a true management tool, it must have the involvement and participation of all levels of the organisation. The sharing of information must be timely and credible, it must use different means according to its objectives and public, and it must circulate in a fluid way.

**Keywords:** internal communication, organisations, management, workers' motivation, strategy

### 1 Introduction

Communication is a *sine qua non* condition of organisational life, that is, an organisation is a communicational network. If communication fails, the organisational structure will also fail (Rego 2007). In this sense, internal communication is an essential condition for the proper functioning of organisations and a competitive differential in an increasingly competitive market. Organisations that have good internal communication systems are able to achieve better strategic planning conditions, where information flows more quickly and easily. Thus, the objective of our investigation is to analyse the importance of the internal communication in the organisations and its influence to the satisfaction of the employees.

This exploratory study, carried out through the application of questionnaires applied to workers of small and medium-sized companies, seeks to reflect on the importance of internal communication in their day-to-day organisation. It seeks to understand to what extent effective, clear, consistent, continuous and frequent internal communication may or may not influence organisational success and employee's satisfaction. The results were significant

regarding the recognition by workers of the importance of internal communication for the good functioning of the organisational structure and for their motivation and job satisfaction.

## **2 Communication in organisations**

Communication is one of the basic conditions for human survival. Since the dawn of mankind and its main objective is to promote social interaction. In this way, the communication allows man to conduct the exchange of information, knowledge, concerns, experiences, ideas, opinions and a whole other set of characteristics that are part of human life. In this sense, communication is also an essential element for organisational functioning (Caetano and Rasquilha 2007). Once the entire society is organized on the basis of the communication, the institutions (public and/or private) also need communication to get organized, both internally and externally. In fact, the communication represents the circulatory system of organisational life (Cunha et al. 2007), it is like the oxygen of the organisation, to the extent that it cannot play effectively its tasks without its contribution. In the opinion of Bilhim (2008), the organisational communication has taken on a new statute against the backdrop of globalisation, being that it is inevitable to talk in organisations, without mentioning the role of communication.

For Robbins (2005) communication has four basic functions within an organisation:

- (1) Control shall mean the communication acts to control the behaviour of people in the most diverse ways, determines who communicates in the first place or event information;
- (2) Motivation: communication facilitates the motivation, in that it clarifies the employees about what must be done, evaluates the quality of your performance and guides on what to do to improve;
- (3) Emotional expression: it is through communication that employees express their feelings of satisfaction or frustration;
- (4) Information: communication facilitates decision-making, since it gives the person or group the information they need.

Nevertheless, none of these four functions should be seen as more important than the other. In fact, all the interaction that occurs within an organisation exercises one or more of these four functions (Robbins 2005).

Consequently, the communication is a strategic activity in companies and encompasses all areas related to the audiences and the image. Indeed, the concept of communication is closely linked to the competitiveness of the company, to its market performance and respect for its stakeholders. Thus, although academically we can split the business communication in internal and external communication, its goals are global (Beirão et al. 2008). In this way, to Beirão et al. (2008), internal communication is one that develops within companies and aims to gain or consolidate a climate of reactivity among all individuals who work; the external communication is one that develops out of the company, to the public (customers, suppliers, competitors, communities, employers' associations, trade unions, Media, State and Government). Consequently, proper management of business communication is fundamental, as agent of pro-activeness and dynamism, wether from inside the company, at the level of the internal public, wether at the external audience. The communication must be

seen as an investment for the company, looking through it to have an image of credibility and strength.

Indeed, organisational communication is thus the set of models or instruments of action that the company uses to communicate and to be heard, internally or externally, and, therefore, the communication must be used strategically in business management (1995). In this context, the communication can be seen as a strategic tool for the exercise of leadership and, consequently, for the management of the business, where increasingly are necessary for understanding, active participation and the involvement of business leaders.

In this sense, internal communication presents a tool of utmost importance to the development of the employees and the organisation. According to Carvalho (2012), an internal communication management based on disclosure of the mission, culture and organisation projects, respecting individual differences and maximizing existing communication relations, organisational communication grants a strategic role to manage, coordinate, support and control.

### **3 Internal communication as a strategic tool of management**

Internal communication focuses on the human asset of the organisation, that is, in the company's internal public, the organisational members. In the centre of internal communication are the people as a system of interactions, which serve as a reference for its behaviour. Based on this perspective, internal communication plays a strategic role, not only to attract, but also to develop the organisational culture based on human resources management, while builder of relations (Taveira 2011). Therefore, internal communication is not an invention in management, but a basic need (Carvalho 2012).

Obviously the internal communication is influenced by the hierarchical structure of the company, at your formal and informal relations circuit (Beirão et al. 2008). So, communication in organisations has two fundamental aspects, one relating to the sense that there is this same communication and another related to the contents of the messages. Thus, in cases of internal communication, the communication flows in two directions: up (the bottom of the hierarchy to the top of the hierarchy) and down (from the top of the hierarchy to the base). However, according to Beirão et al. (2008), the upward flow is lower than the downward one and blocks more easily. This happens because collaborators avoid revealing to hierarchy unfavorable information, avoid showing dissatisfaction, complaining or putting forth problems in fear of suffering future reprisals. Therefore, the upward communication turns out to be only the positive opinion of the collaborators, generating distortion in communication processes (Beirão et al. 2008). That is why it is important to create a climate of trust between organisational members (Cunha et al. 2007).

On the other hand, internal communication must be sustained not only in formal and official communication networks, but also in informal networks. Thus, the notification is based on communication protocols, which respects the organizational chart. The informal one involves a more casual style and uses a simple language that does not follow the established channels. Maltz and Kohli (1996) argue even though the process of spreading formal communication is verifiable and not spontaneous, while the informal communication arises spontaneously and is not verifiable. According to Torquato (2002), the balance between the formal and informal



networks is fundamental to the fluidity of the communicative process in organisations. Therefore, to ensure a healthy flow of information within the organization it is essential for communication to use formal and informal channels (Titoce 2012). Moorman (1995) defends that informal communication channels provide more options than the formal channels to disseminate information, especially when organisational members seek to solve problems or when dealing with most turbulent environments. So, instead of ignoring or even trying to control the informal networks, managers should seek to take advantage, seeking to influence them and make them a major asset in the organisation. Effectively, for Lai (2016), “recently, the importance of formal and informal communications has received significant attention from business managers”.

Internal communication should thus be able to: inform and integrate all employees; provide all the knowledge of the changes in the working environment; involve employees in the course of the business; and facilitate organisational communication- to be clear and objective which will help facilitating the interaction with all sectors to work in order to make possible the involvement of all employees with the objectives of the organisation (Ventura 2012). Therefore, internal communication acts as an anchor on cohesion and coordination of the work of the organisation. This form of interacting makes the basic steps taken by the leadership known to all members keeping them abreast of the situation. Through the internal communication interpersonal relationships are potentiated and permanent self-help spirit waves are promoted. Likewise, internal communication, when well planned and structured, based on a strong communication strategy, is essential for the morale and motivation of its employees (Carvalho 2012; Men 2014). In fact, internal communication should seek to increase the interest of the employees of the organisation and, at the same time, employees identify their own interests with those of the company (Beirão and al. 2008).

Consequently, the participation of all employees throughout the organisational process is an essential condition for the smooth running of the organisation. We therefore consider that if the organisation communicates well internally, it will have more possibility to increase its organisational efficiency (Hola and Pikhart 2014), which will help its success and committed employees to act as spokespersons of the informal organisation (Ventura 2012).

In our days, internal communication takes a strategic and decisive importance in business management. In fact, for Beirão et al. (2008), the existence of an effective internal communication is essential to optimise the functioning of any organisation. In fact, the basic mission of internal communication is to contribute to the development and maintenance of a positive organisational climate, conducive to the fulfilment of the strategic goals of the organisation and the continued growth of their activities and services (Torquato 2002).

Therefore, a good strategy of internal communication implies the proper management of communication processes associated with effective leadership, while indispensable contributions to the motivation of employees (Nunes 2011; Men 2014). The concern of organisations to involve more and more employees is a matter of survival. The organisation should therefore prevent dissatisfaction to generate motivation in its employees (Pereira 2006).

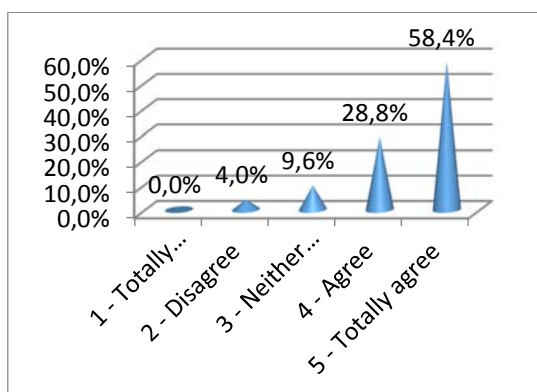
## 4 Methodology

Taking as a starting point the research question: “Do workers recognise the importance of internal communication and do they consider them a source of self-satisfaction and organisational success?”, the objectives of this research are: (1) to verify the importance of internal communication in organisational life; (2) to understand the importance of internal communication for the perception of the values and mission of the organisation; (3) to assess whether internal communication contributes to the satisfaction and motivation of workers; and (4) to evaluate the importance of internal communication for organisational success. Thus, this exploratory study, carried out through the application of questionnaires applied to workers of small and medium-sized companies, seeks to reflect on the importance of communication in their day-to-day organisation. It seeks to understand to what extent effective, clear, consistent, continuous and frequent internal communication may or may not influence organisational success and employee’s satisfaction.

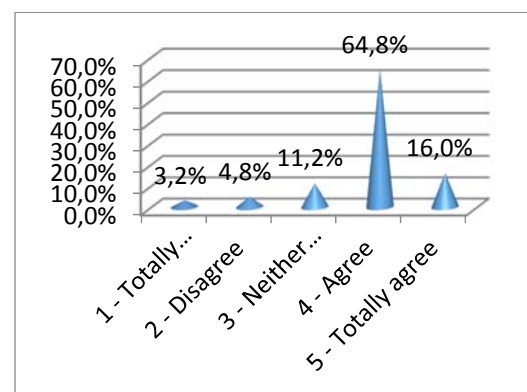
Although this is an exploratory study, this research seeks to underline the importance of internal communication as a variable to be taken into account for the satisfaction of the organisation's employees and, consequently, for the success and productivity of organisations. For this, a survey was carried out on 125 workers (65 men and 60 women) from small and medium-sized businesses in the north of Portugal. More than 90% of enquired have been working for more than 2 years on behalf of others. Regarding academic training, the vast majority of respondents have higher education, 72.8% of whom have a Bachelor’s Degree and 15.2% have a Master's Degree. Regarding the age, 60.8% of respondents are between 36 and 50 years old, 35.2% are between 18 and 35 years old, and only 4% are over 50 years old.

## 5 Analysis of results

The first aim of this exploratory study is to verify that employees recognise the importance of internal communication for the proper functioning of a company. According to the answers found in graphics 1 and 2, the vast majority of those enquired, more than 80% agree with the statement that internal communication is fundamental for the proper functioning of a company and even for its success.

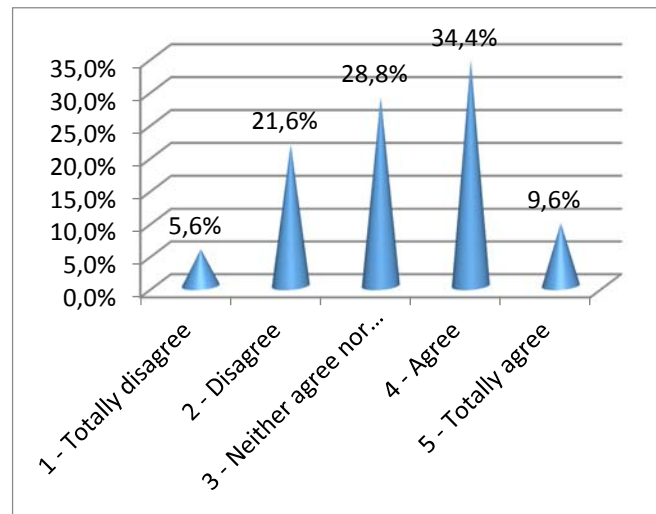


**Graphic 1:** Level of agreement between the enquired according to the affirmation that the internal communication is fundamental for a proper functioning of a company. (self-elaboration)



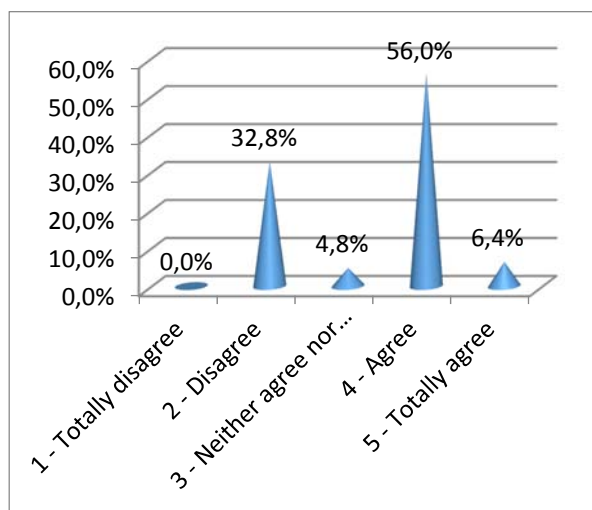
**Graphic 2:** Level of agreement between the enquired according to the affirmation that the internal communication between collaborators is indispensable for the success of the company. (self-elaboration)

However, when questioned on whether they receive the information needed for the achievement of the tasks, there is no total acquiescence. In fact, as the graphic 3 shows, respondents denounce lack of information for the achievement of their tasks.

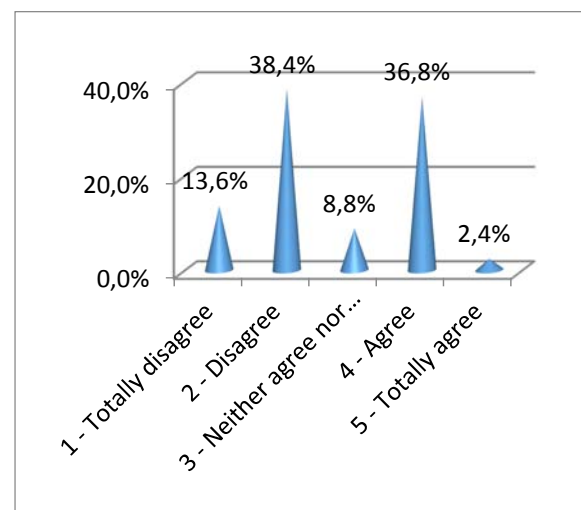


**Graphic 3:** Level of agreement between the enquired according to the affirmation that they receive the necessary information for the achievement of their tasks (self-elaboration).

Similarly, respondents also demonstrate some indecision of agreement regarding the provision of information on the situation of the company and of its objectives (see graphic 4), as well as on the situation of employees and their career progression (see Graphic 5). In fact, on this last topic, namely, on the situation of employees and career advancement, there is more disagreement on the part of the respondents regarding the provision of such information.

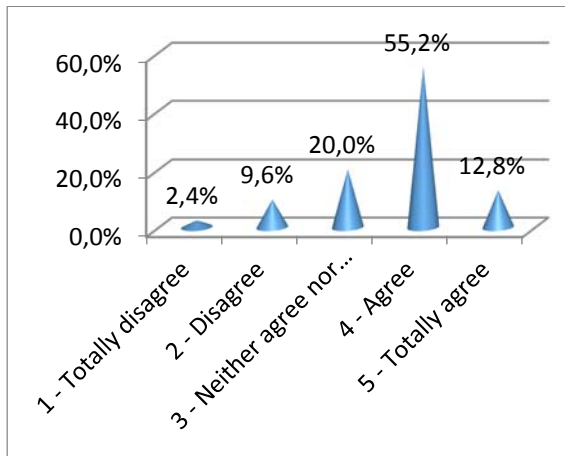


**Graphic 4:** Level of agreement between the enquired according to the affirmation that the business gives the necessary and sufficient information about the business' situation and its objectives. (self-elaboration)

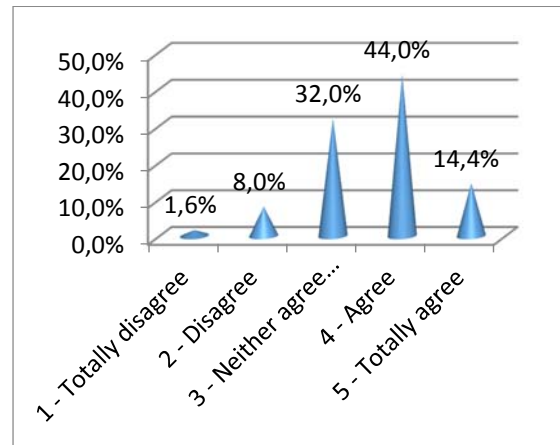


**Graphic 5:** Level of agreement between the enquired according to the affirmation that the company gives the necessary and sufficient information about the situation of its employees and their professional advancement. (self-elaboration)

On the other hand, with regard to what the employees communicate with hierarchical levels, the data reveal some communicational disorder. If, on the one hand, 68% of respondents claimed to have freedom to express their views and opinions to their superiors (see graphic 6), on the other hand, 58% of respondents assume to be afraid of reprisals if astounding reviews or negative reviews on the functioning of the organisation (see graphic 7).

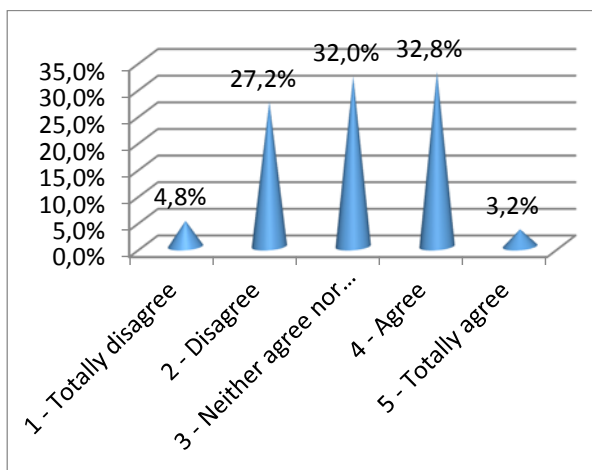


**Graphic 6:** Level of agreement between the enquired according to the affirmation that they are free to express their ideas and opinions to their superiors. (self-elaboration)

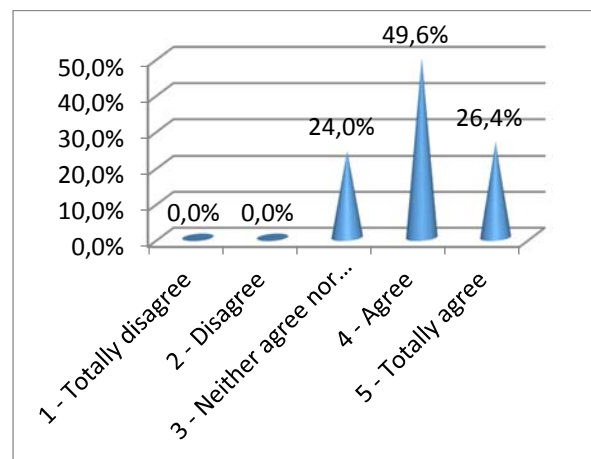


**Graphic 7:** Level of agreement of the enquired according to the affirmation that they do not do negative critics about the functioning of the company because they are afraid they will suffer reprisals. (self-elaboration)

With regard to the values, mission and vision of the company, the answers of respondents also show some dysfunction of internal communication at this level (see graphic 8). However, the vast majority (over 75%) claims to know and understand the mission, vision and values their company follows (see graphic 9).

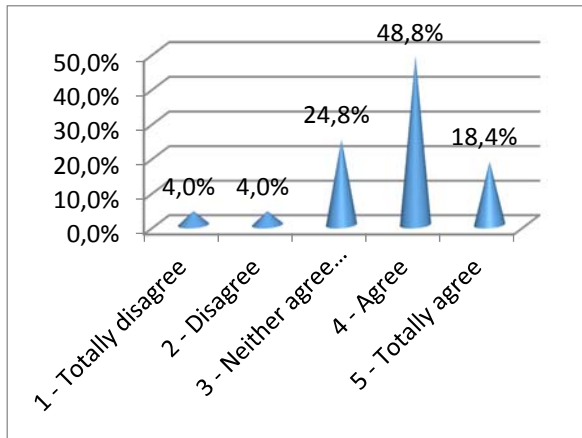


**Graphic 8:** Level of agreement of the enquired according to the affirmation that the company gives its collaborators the necessary and sufficient information about its mission, values and vision. (self-elaboration)

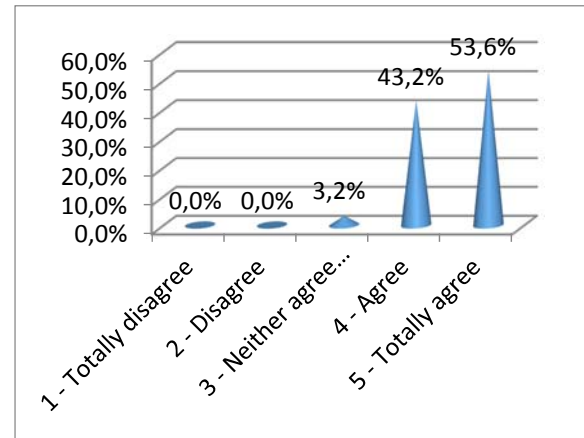


**Graphic 9:** Level of agreement between the enquired according to the affirmation that they know and understand the mission, the values and the vision that the company follows. (self-elaboration)

In this follow-up, most respondents feel committed to the mission of the company (see Graphic 10) and there is a strong agreement with the statement of sense of belonging and integration in the enterprise (see Graphic 11).

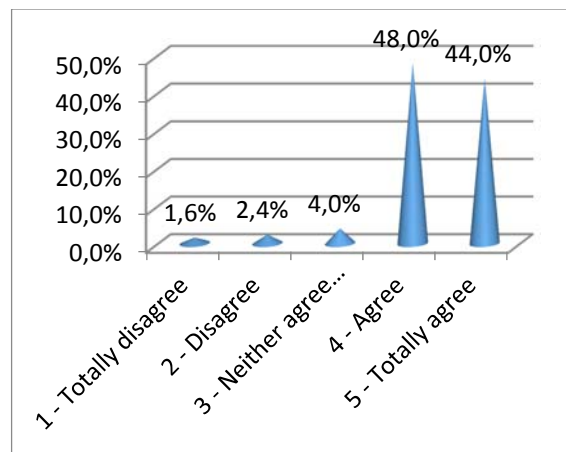


**Graphic 10:** Level of agreement between the enquired according to the affirmation that they feel committed with the company's mission. (self-elaboration)



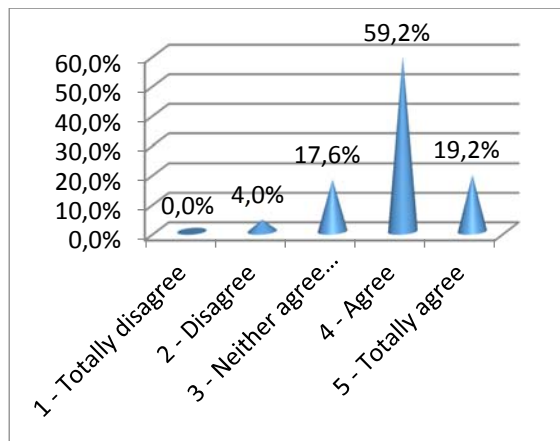
**Graphic 11:** Level of agreement between the enquired according to the affirmation that they feel they are part of the company they work for. (self-elaboration)

Therefore, the majority of respondents (more than 90%) also demonstrates a strong agreement with the idea that their work contributes to the achievement of the company's objectives (see Graphic 12).

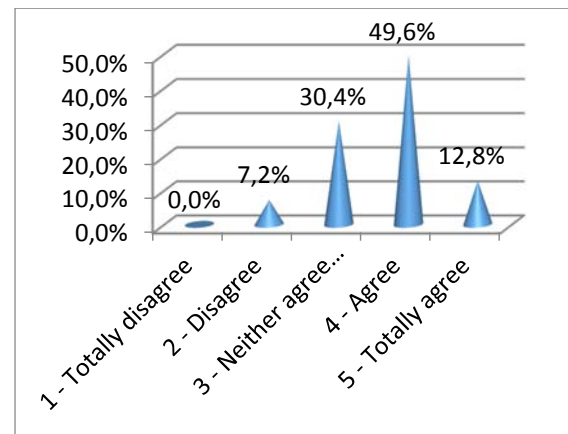


**Graphic 12:** Level of agreement between the enquired according to the affirmation that their work helps to contribute the company's objectives. (self-elaboration)

In this follow-up, regarding the motivation of the staff, the results showed that a well-functioning communication between the employees of a company makes the satisfaction and motivation at work (see Graphic 13). Consequently, the respondents also agree that when managers meet regularly with their employees, these feel more motivated (see Graphic 14). Therefore, according to our sample, a good internal communication is strictly linked to the satisfaction and motivation of workers.

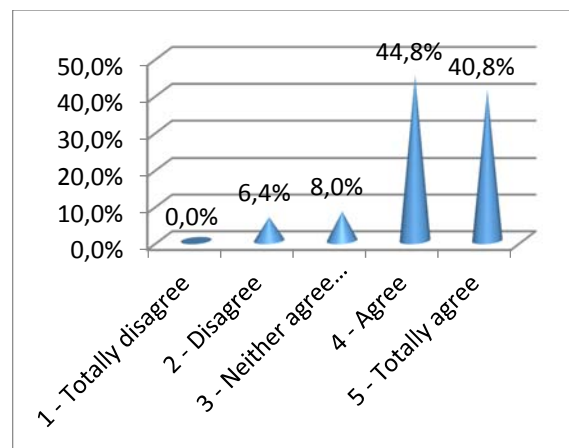


**Graphic 13:** Level of agreement between the enquired according to the affirmation that the good communicational functioning between collaborators conditions the satisfaction and the motivation at work. (self-elaboration)



**Graphic 14:** Level of agreement between the enquired according to the affirmation that when the managers/leaders meet regularly with their employees, the later feel more motivated. (self-elaboration)

Consequently, the answers of respondents are unanimous (over 85%) to agree with the statement that it is important that managers/leaders increasingly value communication with their employees (see Graphic 15).



**Graphic 15:** Level of agreement between the enquired according to the affirmation that it is important that the managers/leaders value more and more the communication with their employees. (self-elaboration)

## 6 Discussion of results and conclusions

According to the data obtained, we note that the enquired, while workers from small and medium-sized enterprises, they recognise the importance of internal communication for the proper functioning of an organisation, as well as for the satisfaction and motivation of workers. In fact, as several authors underline (Beirão et al. 2008; Cunha et al. 2007; Rego 2007), over 80% of respondents agree with the statement that internal communication is fundamental to the proper functioning of a company and even for its success.

However, such as underline Beirão et al. (2008) and Bilhim (2008), there still often exists internal communication dysfunction, because once the internal communication is influenced by the hierarchical structure of the company, not always the upper levels provide the necessary information and adequate to the expectations of workers, nor the workers express their ideas and opinions. In fact, the answers of respondents revealed a lack of information on the situation of the company and its goals, as well as on the situation of employees and their career advancement. On the other hand, 58% of the enquired assume to be afraid of reprisals if astounding reviews or negative reviews on the functioning of the organisation.

With regard to the role of internal communication in the transmission and perception of values and mission of the company (Carvalho 2012; Ventura 2012), the vast majority of respondents (more than 75%) claims to know and understand its mission, vision and values by which their company stands for. However, also in this aspect the findings denote some dysfunction of internal communication, due to the lack of information availability on the goals, values, vision and mission of the company.

With regard to the satisfaction and motivation of employees, various researchers have highlighted the role of internal communication as a potential tool of satisfaction of the employees (Carvalho 2012; Taveira 2011; Nunes 2011). The results obtained in this exploratory study are connected with the idea that good internal is strictly linked to the satisfaction and motivation of workers.

It is therefore important that managers/leaders increasingly appreciate the internal communication as a strategic and decisive tool in business management (Torquato 2002; Beirão et al. 2008; Cunha et al. 2007; Pereira 2006; Carvalho 2012). In fact, internal communication, in particular by providing information about the mission, the values, the objectives of the company, as well as about its situation and about the situation of its employees, contributes to the development and maintenance of a positive organisational climate, with employees even more motivated (Men 2014). On the other hand, leaders/managers should promote two-way communication, up and down, promoting greater involvement of employees in the management. If the organisation communicate well internally, it will have more possibility to increase its organisational efficiency and success.

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# Knowledge Management in Russian Companies: Overall Score

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**Abstract:** The main objective of this paper is to understand and describe how knowledge management practices are organized in Russian firms of different industries and the extent to which these practices have been adopted to support the business strategy. Based on hierarchical cluster analysis of 104 Russian companies, this study highlights the specific combinations of KM practices and accents made by Russian managers in this area.

**Keywords:** knowledge management, knowledge management cycle, Russian context, knowledge management practices, cluster analysis

## 1 Introduction

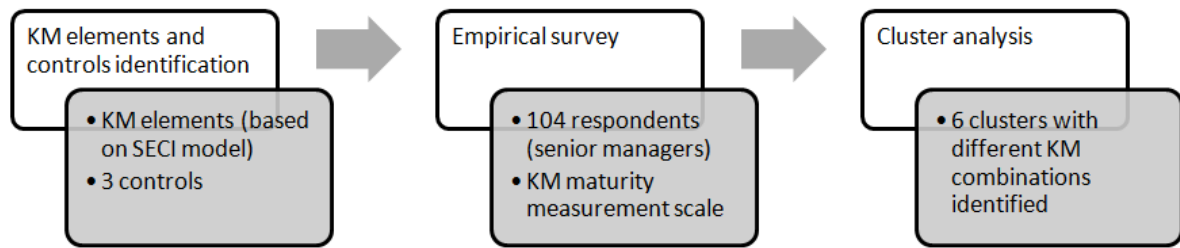
Evidence suggests that knowledge and effective knowledge management (KM) practices are among the most important factors for achieving sustainable competitive advantage. A primary concern of knowledge management is the process of capturing the value from the knowledge assets and intellectual capital of the organization. However, due to intangible nature of knowledge resources managers and academics struggle to evaluate and finally manage these resources of the company. There has been little quantitative analysis of adopted KM practices in Russian companies. This paper seeks to remedy these problems by analysing the patterns of KM practices in Russian companies.

## 2 Research design

This paper investigates the extent to which KM practices have been adopted by Russian firms to gain competitive advantage. Specifically, we address the following *research questions*:

1. Are firms using KM initiatives strategically to support the business strategy? If so, what are the major KM initiatives these companies adopt?
2. What may be the major problems and areas for improvement if KM practices are to play a more significant role in supporting the business strategy for firms to gain competitive advantage?

We aim to answer these research questions by studying the configurations of knowledge management assets for identified clusters of organizations. The research design is summarized on figure 1.



**Figure 1:** Research design

The KM practices are identified based on the adaptation of SECI model to the Russian settings. We conducted cluster analysis to identify similar groups of companies from the point of KM practices used. These practices are measured by three-point scale presenting the degree of active usage.

Because this study is of an exploratory nature, however, we feel that the number and spread of the cases we obtained are sufficient to provide information needed for this paper's discussion.

This research method bears the limitation of a convenient sample and therefore may lack generalizability.

### 3 Literature review

Numerous studies have attempted to address the importance of KM practices. The theoretical foundation of the paper is related to the classical work of Nonaka and Takeuchi (1995), Davenport (Davenport, Prusak, 1998), Senge (2006) and others.

We consider knowledge management as a system determined by organizational, human and technological components (see e.g.: (Milner, 2008). Organizational knowledge includes principles, skills, routines that provide business activities. The human component includes "social capital" of employees, an atmosphere of trust and cooperation that promotes knowledge exchange. The technological component that complements KM with IT tools is quite often the most obvious area of investment in KM (Andreeva et al., 2015). The paper dwells upon the KM cycle by Bukowitz and Williams (1999).

While conducting systemic literature review on KM empirical studies we came up to the conclusion that overall, there seems to be some evidence to indicate that ... authors often use original SECI model (Nonaka, Takeuchi, 1995) as a theoretical base. However, operationalization of the model varies depending on the the context and the goal of the research. Difference in the operationalization (e.g., number of questions) leads to the variety in analytical tools used by authors. Examples of articles implementing SECI model are provided in table 1.

Authors also link knowledge management and its core components (e.g., knowledge transfer, knowledge creation) with other theoretical concepts (e.g., absorptive capacity, productivity, informational flexibility) (López-Sáez, 2010).

**Table 1:** Analysis of papers (and corresponding questionnaires) using SECI model as conceptual base

Research article	Socialization (No. of questions)	Externalization (No. of questions)	Combination (No. of questions)	Internationalization (No. of questions)	Context	Methods & result
Ahmad et al., 2014	Communication, discussions within the group and teacher-pupil relationships (12)	Online access to learning materials, communication with instructors on the online platform (13)	Use of online survey for knowledge check, search of new relevant information (17)	Independent learning, engagement in discussions, critical thinking (11)	Problem based learning course (for software developers)	79 students, SEM+AMOS, positive influence of each SECI elements on the result is supported
Mehralian et al. 2014	Based on Nonaka and Takeuchi (1995), (2)	(2)	(2)	(2)	Pharmaceuticals (Iran)	460 respondents, SEM, LISREL 8.52. Supported model of influence KM on human IC component
López-Sáez, 2010	Communication channels and amount of communication with external agents – suppliers, clients, competitors (3)	Learning from external agents in the form of meetings, learning programs, reports (4)	IT support, use of information for internal purposes (3)	Study of practices and cognitive style of external agent (3)	Hi-tech organizations	52 respondents, linking knowledge transfer with absorptive capacity model
Ramírez et al. 2012	Understanding of other employees (4) based on Nonaka et al. (1994) and Lloria (2004)	Meetings, experience exchange, awareness of the overall situation in the firm (3)	IT system, best practices systems (4)	Employees` ideas collection and realization, learning from external organizations (4)	Spanish companies (with highest turnover)	LISREL 8.70. 4 knowledge creation modules positively influence (directly and indirectly) flexibility of information supply and productivity <sup>1</sup> (perceived, 5 items)
Riera, 2009	Communication with clients, colleagues (6) based on Nonaka et al. (1994).	Exchange of experience by various ways (6)	New ideas based on existing knowledge, plans (6)	Acquired knowledge implementation for work, knowledge exchange(6)	Cross-sectional sample of companies from the list “best IT management”	69 respondents. Authors propose new “Knowledge creating capability <sup>2</sup> ”, influencing productivity. For measuring SECI balance, the importance of modules is estimated.

<sup>1</sup> Flexibility of distribution of information is the ability to handle the flow of information in the manufacturing process

<sup>2</sup> Knowledge Creating Capabilities is a concept that emphasizes the importance of the balance level between the four modes of knowledge conversion

Research article	Socialization (No. of questions)	Externalization (No. of questions)	Combination (No. of questions)	Internationalization (No. of questions)	Context	Methods & result
Ramirez, 2013	(4) based on Nonaka et al. (1994).	(3) Similar to [4] in sample and theoretical model	(4)	(5)	Spanish manufacturing companies with reverse logistics.	SECI modules interrelationship, influence on reverse logistics productivity, flexibility of information supply and productivity. Model is supported.
Jeng, 2013	Based on Nonaka et al. (1994). Nonaka and Takeuchi [35], and Nonaka, Byosiere, and Konno	n/a			Manufacturing , textile companies	Influence of SECI on the success of ERP system introduction is supported as well as positive influence of KM infrastructure (org. Structure, culture, IT) on SECI modules.
Dyck et al, 2005	(2)	(1)	(2)	(1)	Malawi construction companies	9 questions about KM level, KM map (spider diagram). Survey is developed by the authors based on learning organization model, (Pisano, 1994; Wells, 1999) and TQM measurement framework
Becerra-Fernandes, 2001	Scales are developed based on existing organizational instruments (4)	(4)	(4)	(5)	NASA	Survey on NASA employees. Effects of working tasks characteristics: effectiveness of KM processes depends on context

#### 4 Results and discussion

Data for this study were collected using survey among Russian top-managers of large companies. Informants were asked six sets of questions. These included KM practices covering several areas:

1. KM infrastructure (including knowledge storing and physical design);
2. Employees responsible for KM;
3. Knowledge sharing;
4. Learning and KM;

5. Creating partnerships with external environments (alliances);
6. Organizational culture for KM.

The initial sample consisted of 104 Russian companies.

The methodology is based on applying cluster analysis. The cluster analysis methodology is necessary for constructing a classification. In other words, we have to divide the initial set of observable objects into classes. Cluster analysis assumes that information about characteristics or attributes of objects is available, and this information allows us to judge the similarity or difference of groups of objects, or their pairwise similarity or difference.

Classification of observations in the sample is the process of grouping the data of objects into a class in such a way that the objects in each class are similar to each other more than objects from other classes. In other words, cluster analysis (we use hierarchical cluster analysis) is a statistical procedure for arranging objects into relatively homogeneous groups or clusters based on a pairwise comparison of these objects according to previously defined criteria. In our case, six sets of questions on KM practices serve as these criteria.

Based on the cluster analysis of KM practices in 104 Russian companies we were able to get 6 different groups (clusters) of companies with measures of the maturity of KM system within these companies. Results of cluster analysis is presented in table 2.

It is apparent from this table that all groups of companies have very low indicators of KM system ranging from 11 to 25 points (out of 54 or 18 questions by 3 points each). But even within this low total score we are able to explore the combinations of practices used so as to show what do the real problems and biases Russian firms have.

The first group "Lagging behind" represents the majority of Russian companies (n=38) and scored very low on KM initiatives used (KM = 11 out of 54). What is interesting in this data is that this is the lowest result within the largest group with major emphasis on creating necessary KM infrastructure. Investing heavily in databases and ignoring other aspects of KM is by far the most widespread bias in KM initiatives implementation.

From this data, we can see that second cluster "Moderate-to-high Performers" resulted in the highest value score among other companies (KM = 25), although the score itself is just half of the maximum level of 54 points. The cluster has a substantial share of companies (n=29). These companies pay attention to all aspects of KM in some way, but overlook the "learning perspective", with no particular attention to benchmarking, learning by reflexion and implementing redundancy in job design.

The third cluster of companies "Moderate Performers" (n=19) is in the middle between the first and the second clusters with the score of 19 points. It is characterized by some developments in KM infrastructure, knowledge sharing, learning and alliances. However, these companies do not have job positions in charge of KM processes, and KM initiatives do not involve all employees. This is the typical situation when KM initiatives are launched by top-managers without support by middle-line managers and specialists.

The next three clusters are outliers from the point of their quantity. They are characterized by above average KM performance.

**Table 2:** Cluster analysis results

No	Cluster name and characteristics	N	%	Overall Score (out of 36)	KM Infrastructure	Employees involvement	Knowledge sharing	Learning	External partnerships	Organizational culture for KM
1	"Lagging behind companies"	38	38%	10,13	G	W	W	W	W	W
2	"Moderate-to-high Performers" - problems with learning	29	29%	25,00	VG	VG	VG	G	VG	VG
3	"Moderate Performers" - problems with KM positions and organizational culture	19	19%	18,79	G	W	G	G	Exc	C
4	Outlier "Moderate Performers" - strong infrastructure, knowledge sharing and learning. But problems with KM positions, partnerships and involvement. Top management involvement.	7	7%	20,57	Exc	W	Exc	Exc	W	C
5	Outlier "Moderate Performers" - strong employees involvement with no infrastructure, learning. Moderate knowledge sharing intensity.	5	5%	18,60	W	VG	C	W	C	C
6	Outlier "Moderate-to-High Performers" - strong KM positions, organizational culture and overall scores. But no adequate infrastructure.	1	1%	23,00	W	VG	C	C	C	VG

\* Range of KM practices:

Exc – Excellent    VG - Very Good    G – Good    W - Weak    C – Controversial

The fourth cluster "Moderate Performers" (n=7) has the moderate score of 21 points and is characterized by good developments in KM infrastructure, knowledge sharing and learning (learning organization creation). Main areas for improvement are related to positions responsible for KM, alliances and involving all employees in KM initiatives. The situation repeats the third cluster when top-management is actively involved in KM development overlooking the need to cover employees of all levels.

The fifth cluster "Moderate Performers" (n=5) with lower score (19 points) focuses on creating job positions in charge of KM processes but does not have well-developed infrastructure, learning orientation. The knowledge sharing system is developing to some extent. Organizational culture supports employees' initiatives but, again, does not involve all

employees in the process of KM. From this point of view this cluster is similar to the fourth one.

The sixth cluster "Moderate Performers" (n=1) with the second highest score of 23 has employees responsible for KM and relevant organizational culture. However, it lacks the appropriate infrastructure, the systems of knowledge sharing, alliances and learning have controversial results.

## 5 Conclusions

The major objective of this study was to investigate the patterns of adopted KM practices in Russian companies. Overall, these results indicate that all groups of companies have very low indicators of KM system. The paper demonstrates state of the art of KM practices implemented in Russian companies grouped in six clusters.

The leading group of clusters include: (1) "Moderate-to-high Performers" (face problems with learning and knowledge acquisition). Medium performance group involves (2) "Moderate Performers" (face problems with KM positions and organizational culture). The third group is "Lagging behind companies" cluster.

There are also three clusters of outliers:

1. Outlier "Moderate Performers" - strong infrastructure, knowledge sharing and learning. But problems with KM positions, partnerships and involvement. Top management involvement.
2. Outlier "Moderate Performers" – strong employee involvement with no infrastructure, learning. Moderate knowledge sharing intensity.
3. Outlier "Moderate-to-High Performers" - strong KM positions, organizational culture and overall scores. But no adequate infrastructure.

In summary, these results show that having low scores of KM development, Russian companies have specific patterns of KM practices usage. Taking in charge these patterns may allow managers to make better decisions. These patterns can also benefit the theory of KM from contextual perspective.

## 6 Practical implications

The findings of this research provide insights and a number of practical implications for KM professionals, KM practices, and organizations in the global context. The paper demonstrated state of the art of KM implementation in Russian companies, helping managers to identify bottlenecks and areas for further development. This information can be used to develop targeted interventions aimed at improving KM practices in Russian companies. The results of this study indicate that managers of Russian companies should pay closer attention creating positions responsible for KM in companies, stimulating learning organization and knowledge sharing and developing appropriate organizational culture. Besides, we try to suggest explanations for the identified problems and provides managerial recommendations related

to the development of KM strategies in Russian context. This research will serve as a base for future studies on KM patterns in Russian companies.

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## Facebook - the Business Model Rooted in the Social

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**Abstract:** Facebook emerged within a specific environment that redefined the way business was made. Having its roots in the digital, Facebook has managed to adopt traditional strategies for acquiring money but complementing them with unique attributes from the atmosphere that surround and gave birth to it. Defined both as a social networking site Facebook found a way in which the core valuable element from traditional media outlets, advertisement, is attracted not just by the number of certain viewers, but by the potential growth of the market rooted in the social nature of humans through valorizing the connections between individuals.

This paper analyzes how this social platform has evolved with sociality at its center not just to justify its philosophy but also to create an alternative way to gain market and produce earnings against monopolistic competitors such as Google. The case study is used to reflect on how sociality and other natural human conditions could be used as core element for new business models' development.

**Keywords:** Facebook, digital economy, sociality, network value, Facebook Ads

### 1 The digital shift

Due to the arrival of the Internet, the term 'digital economy' has emerged referring to the new market logic and the capital flow on it. This term implies a substitution of an old — or non-digital — economy that used to exist. Scott Lash and John Urry identified this shift and describe the formation of "economies of signs and space" (Lash and Urry, 1994) where, as Jonathan Joseph summarizes "they emphasize the importance of flows of capital, labour and commodities, but in particular, information and images" (Joseph, 2012). Focusing this shift toward information and images almost 25 years ago, in the early days of the Internet, it is clear that the role of information as driver of the economy has become more prominent, being the foundation of the practices in the digital economy. Furthermore, what is more important to notice is that information is the key element for communication, what represents now a core element for the digital economy.

Because of this shift, several institutions and their activities were modified in order to adapt to new trends and tools; one of the major industries affected was the media. As having its value as a gatekeeper for information, the openness allowed by the Internet broke traditional media's major value. However, while old models were destroyed, new types of media outlets emerged such as social networking sites (SNS), sometimes called social media platforms.

Amongst all these new media outlets that appeared with Internet's boom, Facebook has gradually become the major player when talking about sociality in the web. The numbers speak by themselves. By March 2017 the platform had 1.28 billion daily active users on average (Facebook, 2017[a]) becoming a key player in the social digital world.

While new media outlets, Facebook included, took elements from traditional business models such as the reliance on advertisement, they updated them by adding factors not considered before to add value to their sites. Being the Internet its natural environment, business models such as the one of Facebook have gone beyond the focus on individual consumers and money by itself to more complex features inherent to the digital world such as interactions, sharing and creating as sources of value. Bates have called this kind of economic thinking as social economics, which has a major focus on the value created by social goods as interactions, sharing and others, instead of just financial assets (Bates, 2008).

In this line of thinking, Facebook's business model particularly combines values of attention, popularity and connectivity to constitute its basis (van Dijck, 2012) and thus developed an effective strategy to compete within the advertisement model but with its focus on different selling assets, thus being able to gain terrain against dominant players such as Google. Applying strategies based on behavioral and what Bates calls social economics, Facebook has adapted its features to be able to become an extension of user's communication centered in human nature. By doing this it has found a way to capture users as potential consumers and thus sell their attention and connections to advertisers in a way that not even its main competitor, Google, can do by dominating the digital sphere.

This article will argue that Facebook has found a golden mine when talking about business potential because of its main focus on human sociality. The evolution of the platform and inclusion of communicative features reflect the intentions of Facebook to become a switcher (Castells, 2012) or central node in the Internet with everything related to social interactions, thus potentiating its brand value with an endless growth driven by users' connections. This is also an interesting study case for business to integrate social factors within its business philosophy in order to create sustainable business models that not just take advantage of consumer's need, but also potentiates their social needs to add value to their products or services.

## **2 The social key**

In order to understand how Facebook managed to develop a successful business model within a saturated environment as the Internet and even more, how it opened an opportunity to acquire a portion of the market against massive competitors such as Google, it is important to understand the basic concept that drives Facebook's philosophy: sociality.

"We are an intensely social species — it has been argued that our social nature defines what makes us human, what makes us conscious or what gave us our large brains" (Adolphs, 2003). What Ralph Adolphs illustrates in his statement is one of the natural qualities of human beings: their sociality. This claim has been proved from several areas such as cognitive science, anthropology, and biology, among others; even in the ancient Greece the famous quote by Aristotle in his Politics has become a popular expression: "man is by nature a social animal" (Aristotle, 1998). In this sense, it is undeniable that being human somehow equals to the need

of being with others, interact and be connected in order to find better ways to advance as evolution shows.

To be social means to be connected, to have shared values with others that allow us to coexist and build together. Sociality has not just been an inherent attribute of human nature, but also it has expanded with the creation of 'artificial tools' that enhance the ability to connect and thus expand sociality. Being able to communicate with others offered humans the opportunity to acquire scalable knowledge that made the evolution exponential instead of lineal. This is explained in Tim Urban's article where he introduces what he names as "Human Colossus":

"The better we could communicate on a mass scale, the more our species began to function like a single organism, with humanity's collective knowledge tower as its brain and each individual human brain like a nerve or a muscle fiber in its body. With the era of mass communication upon us, the collective human organism—the Human Colossus—rose into existence" (Urban, 2017).

The appearance of the Human Colossus represents the potential of sociality when well directed and furthermore how sociality is scalable and is constantly growing because of human's communicative processes. Sociality is a natural element for human beings, but it is a quality not yet fully exploited and studied, even less managed in a productive way to add economic value to it. Nevertheless, historically sociality — understand mainly as the creation of connections through communication — has driven change, allowing the creation of technology to produce value, being this Human Colossus' core motivation (Urban, 2017).

In this sense, connections through communication have been potentiated with the development of technologies as language, books, gossip, 'common myths', (Harari, 2014), radios, phones and more recently with the Internet. Every technology, with its own limitations, opened new possibilities to enact social relationships efficiently and create networks that will further raise sociality itself. Even though communicative technologies grow and refine every day, companies have not yet taken into account communications and the connections it creates as a valuable good where profit can be made if well directed. Main business models today think just of individuals and not of intra and interconnected groups, being the invisible connections the most valuable asset.

In this regard, ignoring sociality as a potential asset for value creation was a mistake for business in previous 'eras'; nonetheless when the Internet arrived and the digital era started to gain power this became a major failure as one of the core elements of this world is precisely the value of connections. Understanding this world permits business to identify key elements of it and adapt their business models in order to take part in the new economy system.

## **2.1 Digital equals social**

The Internet arrived with two main promises: connectivity and availability. The openness of the platform allowed everyone to have information at the moment and as much as they wanted. In the other hand, because of the technology improvements new ways of communication were presented, consequently everyone could be connected all the time with others. The formats changed (chat, forums, blogs, videos, email) but the essence remain:

communicate, share knowledge and generate connections one with another. It is in this way how sociality was particularly potentiated when digital platforms started to evolve.

If previously the main way to connect with others was through communication — oral or written — the Internet reinforced this efficiently reducing time and space during the process. Furthermore, it seems that a main focus when thinking on development of technology, sites, apps and any other creation within the digital, tends to lead to enhance communication. In this sense, by simplifying communication the Internet detonated the era of the multiple networks, where the value of the network depends on the quality and quantity of its members.

To understand how a network acquires and grows its value, three main laws have been created. Smith and Skelley note that “technology changes have been guided by a series of technology laws known as Sarnoff’s Law, Metcalfe’s Law, and Reed’s Law. These laws have changed the ways businesses and industries operate” (Smith and Skelley, 2006).

Summarizing in a superficial way these theories, network values knowledge has moved from a broadcast vision in which each member adds one asset to the network (Smith and Skelley, 2006); to a transactional perspective where the value of the network grows approximately the square of the number of users of the system (Metcalfe, 2013); and finally to a Group Forming Network vision that includes also the group-groups connections, thus connecting not just members but networks (Reed, 2001). This can be expressed mathematically as Figure 1 shows.

$1=1$	$1=N^2 - N$	$1=2^n - N - 1$
<b>Sarnoff</b>	<b>Metcalfe</b>	<b>Reed</b>

**Figure 1.** Main network laws

What is really important of these laws is the fact that connections by itself are recognized as having a value by their potential to make the network grow; in other words, the value of social networks are immense because of their scalability. Applying this to business, building a network with several actors or even more, building a network that simultaneously builds networks, represent a vast opportunity to create value and make of it profitable. The way each networks is monetized depends on the sector, in the case of media it is through advertisement.

## **2.2 The media: from users to connections**

It is important to notice at this point that Facebook is framed as a SNS, which mainly reproduces the functions of a media outlet. In this sense, in the digital era the final source of money for media stills the same that before, but the way to get them have fully changed. Google for instance uses its massive dominance on the Internet to deliver ads to anyone, aiming to send the right message to the right audience and according to Google (2017) “connect the right people, in the right moments, to make digital advertising work better”. Under this philosophy Google developed its advertisement strategy conformed mainly by Google AdWords, Google AdSense and DoubleClick that dominates the digital advertisement market. Rieder and Sire unveil the prominent role of this company and its huge power in all

the stages of the process, specifically in the advertisement industry where major online companies make revenue (Rieder and Sire, 2013).

At first, this might look as a dark panorama for other platforms that try to compete to get a share of the advertisers' market. However, Google's vision still think of users as isolated consumers that can be reach. Hence, it represents no significant change in the way of making business; technology and tools change, but not the basis. It is in fact in the basis of the system where Facebook found a way to sell something that not even Google could offer and furthermore that is the core element of the digital world: connections. As José van Dijck writes "in a world where social structure is everything, connections become the prime economic value" (van Dijck, 2012).

Mark Zuckerberg — Facebook's creator — realize of this niche not exploited by anyone as core of their business models, and looking at his platform he noticed he already had a product that could adapt to become the switcher (Castells, 2012) of the Internet regarding sociality, just as Google became regarding advertisement. In other words, Zuckerberg found a way to compete with Google but in a field unexplored by that company. In van Dijck's words of, "one thing Zuckerberg knows for sure is that conventional business models do not apply to his invention" (van Dijck, 2012).

Consequently, the platform started to move fully towards sociality, adapting all its aspects — algorithm, functions, interface, etcetera — to give their users more ways to connect with each other but also gaining data from this connections in order to be sold, adapting its privacy police too. By doing all this modifications Facebook assures to become the major and unique platform that essentially works on the social and sustains its profit on it too, creating a business model that applies to the platform's philosophy. The evolution of this SNS is driven by the mission portrayed in the newsroom as follows: "Facebook's mission is to give the people the power to share and make the world more open and connected" (Facebook, 2017[a]). Two main concepts build this statement: openness and connection, the same that are the basis for the Internet, thus trying to completely adapt to the world where it operates.

In this sense, Facebook attempts to create a network described by Reed as "the many-to-many—or group-forming—network, which allows network members to form and maintain communicating groups" (Reed, 2001), becoming a latent opportunity to raise and create value within the information in it to then be sold to advertisers not just as individuals but also as a potential economic value based on Reed's law. After building the massive network that Facebook is today, it found three main potential values in which relies to sustain its model: attention, popularity and connectivity (van Dijck, 2012).

### **2.3 From like, to share, to react**

The attention model is the more widespread way of making business online, it derives from traditional models having exposure from consumers to certain product or services as value. In the digital world it means that making users spend more time in your site, gives you more attention value. Five years ago according to Harris (2012) the average Facebook user spent more than eight hours a month on the social network; in 2017 it can be said this time has at least remained if not increased due to the inclusion of more tools that invites users to stay longer. Regarding attention, Facebook already has an important share of the market that is

result of implementations to connect with other sites, expanding its influence at almost zero cost. This is shown with the introduction of the term Social Graph in 2007 that evolved to the Open Graph.

When Zuckerberg introduced at his first F8 — annual event where Facebook’s innovations are presented — the concept of social graph, a major shift in Facebook happened. Explained in words of Matt Hicks, former Corporate Communications’ manager for Facebook, it is “the idea that if you mapped out all the connections between people and the things they care about, it would form a graph that connects everyone together” (Hicks, 2010). Even though this is by itself a major shift in the way we understand connections and sociality, a step beyond was done that day, 10 years ago now. Mark Zuckerberg recognizes not all digital interactions (connections) are happening in his site, however, smartly he presents a tool to allow other site to concentrate their information and interactions in Facebook: the Social Graph. Described as Facebook (2012) the social graph is “the digital mapping of people’s real-world social connections”. This concept is the key success of the platform, in words of Alex Fattal (2012) “the social graph is what binds online and offline worlds, which has been a Facebook hallmark [...] it is the data that Facebook collects about its users' relationships, converted to a visual format that balances the complexity of the relationships and the ability to graph it in a visually meaningful way (Fattal, 2012).

What Zuckerberg did with the release of the Social Graph was to redirect traffic from other sites to his platform and expand Facebook’s elements — particularly its like and share buttons — all over the web. This strategy applies Reed’s concept of network value by connecting one network (Facebook) to any other network by “offering devices that can potentially turn any website and any web user into a part of its platform” (Gerlitz, C. and Helmond, A., 2013). Some of these devices are plug-ins, APIs, logins, among others, expanding Facebook’s presence, network and value exponentially at zero cost. Just in two years, from 2008 to 2010, over two millions sites integrated with Facebook (Gelles, 2010).

This not just represents the platform’s influence over the web, but also a way to obtain tons of data not just through its own site — [www.facebook.com](http://www.facebook.com) — but through any other site that includes its features. In this sense, what Facebook did was to gain attention value using the connection value. By allowing other sites to connect with the platform, thus growing its network, Facebook managed to become the virtual identity of any user slowly being needed to be part of the network. That’s how the popularity value was added too, having the three core elements were its business model was just about to be build. As The Financial Times portrayed it in 2010 referring to the introduction of the Open Graph and the openness of Facebook to interact with other sites “Facebook is becoming the virtual driver’s license, house keys and passport for those travelling around the web” (Gelles, 2010). In this sense, becoming this virtual identity for everyone allowed Facebook to understand users’ full movements through the web, identifying what they like and want being able to implement those features in its own site.

That is how the evolution of Facebook started to enhance users’ communication. In 2008 you can log in to other sites or even create accounts using Facebook’s credentials; by 2009 social buttons appear in order to be implemented at any site and show engagement to contents; from 2011 to the date a major focus on the app Messenger started, adding and improving features such as emoticons, stickers, calls, location sharing and stories; particularly since 2015 new synergies arrived welcoming sharing of GIFs, Spotify, games, among others through app’s

extensions. All these improvements come from users’ reading through the years, looking how they connect, what they want and adding it in the most ‘human way’ possible in order to boost sociality not just by adding features but by concentrating synergies within the platform.

In this sense and following Gerlitz and Halmond’s line of thought, the evolution of Facebook trying to acquire economic value can be traced in a way where the social is its core. It has moved from the more traditional and original economy from early days of the internet known as the hit economy exemplified with the measurement of likes in 2009; to a more refined structure where the sharing and recommendations rule — hyperlink economy — to finally address a new kind of economy where universal connections and expressions rule: the Embed economy where a synergy between platforms arise, understanding that “the increasing presence of Facebook features on the web contributes to generating connections between websites beyond the traditional hyperlink (Gerlitz and Helmond, 2010). The economies’ evolution can be understand under the Table 1 model.

**Table 1.** Evolution of economies

Hit Economy	Hyperlink Economy	Embed Economy
The value metric is the number of hits, understand as visitors.	The value shifts from visits to references, represented by hyperlinks inserted in sites referencing others.	The value is acquired through possible ways to connect with others and thus further the network; in this sense understand as platform’s synergies.
Like	Share	Platform’s synergy

This way Facebook identified and in a sort of way helped to develop a new economy based on sociality, where not just a platform or site acquires its value from visits or references, but possibilities for users to interact embedding or connecting with other platforms to offer a better social experience to users and get data from the usage of all the features. By doing this, Facebook became the central node of sociality within the web, having both the major quantity of data regarding connections to be sold and the platform to make of this data a viral content to reach others and therefore get more economic benefits. The economic potential has to be understood from the notion that in the Internet the social “is of particular economic value, as user interactions are instantly transformed into comparable forms of data and presented to other users in a way that generates more traffic and engagement” (Gerlitz and Helmond).

In this sense Facebook already created a strong platform with enough attention, connection and popularity value, allowing the platform to create a model to sell advertisement not just individual users but the complete picture of users regarding affections, needs, preferences, emotions and so on, going beyond classical demographic information. Furthermore its platform represents a place where a product or service can reach tons of similar users without working for it, leaving this to the platform’s nature relying in sociality. As Tricia Hussung explains it “today’s Facebook algorithm determines which advertisements align with users’ interests based on their onsite activity, listed interests and interaction with other pages” (Hussung, 2016). This is how Facebook developed its Facebook Ads’ platform to finally make of all its social dominance a business model.

### 3. One place to monetize it all

Facebook Ads is the response from Facebook to Google's dominance on the advertisement chain all over the web through its products, partners and technologies. Specifically, AdWords, AdSense and DoubleClick work together and are needed to advertise in the Google Network conformed by Google Search and Google Display Networks, the latter alone including sites that reach over 90% of people on the Internet (AdWords, 2014) thus being apparently impossible not for advertisers and brands not to be part of the network. While others just accepted to join Google's technology, Facebook decided to make its own market. It has a solid structure that attracts the users and therefore the data; moreover its platform and connections represents by itself a huge advertisement chain, it was just needed to sell the product — data — in its own terms, giving the information a different usage.

While this platform has some common basis from traditional digital marketing as demographic filters and a CPC —Cost per Clic — or CPA —Cost per Acquisition — auctions, the differentiation started in 2008 with the creation of Business Pages, which represent in a way virtual identities for brands, becoming an user themselves. This is significant since changes an anonymous or cold interactions between companies and users, promoting instead a 'face to face' — virtually speaking — interaction. In 2011 a type of advertisement known as 'Sponsored stories' appeared, showing users when a friend interacted with a brand under the idea that this will potentially interest the user too. Even though the function was disabled in 2014 it represent a social way to get closer to consumers.

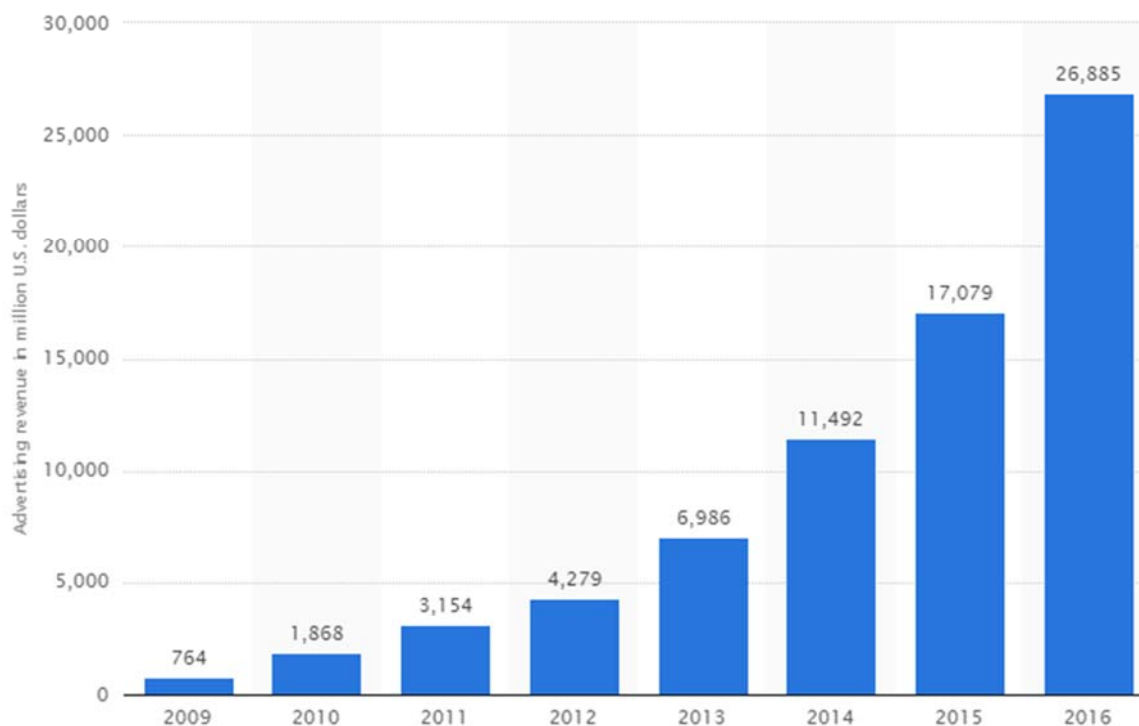
The inclusion of the Social Graph in 2012 represents a major distinction from technologies as the ones from Google. Adding this feature advertisers were able to track users' connections while they interact with pages, friends and contents. What the Social Graph signifies is a new way of understanding consumers as connected individuals, being able to reach not just one person but all his connections as potential new consumers. As Dinnen writes it "now, not only was Facebook seeing dollars in the eyes of all its users bur also in their actions and behaviors" (Dinnen, 2015). The introduction of the Social Graph and its application to the advertisement platform Facebook Ads is the first step from Facebook towards a new social advertisement.

Going beyond, in 2013 with the same philosophy of the sponsored stories but less invasive the platform introduced the 'lookalike' audiences "which let advertisers reach potential customers who share similar characteristics with their current ones" (Dinnen, 2015). Facebook is moving its strategy from users to groups or intra networks within its network, making profit from the data acquired not just from every user activity, but also from the space in-between these users and what this space means.

The impact of this new way of advertising is proved by the numbers. In 2016 Social Media Marketing Industry Report made by Michael A. Stelznar (2016) it was identified an "overwhelming majority [of marketers] use Facebook ads (87%), followed by Google ads (39%) and Twitter ads (18%)" (Stelznar, 2016). It displaced Google's dominance in the marketers' field not just because of the innovative way of thinking to reach consumers, but also because of the ease in the use of the platform. While Google relied in its dominance and reach, Facebook moved from that to focus the data in its site, organizing the data and connections in an attractive way to advertisers in order to be sold. This way Facebook takes advantage of its popularity and particularly of the data acquired through connections and interactions from its users to build the business model that in 2016 gave them 26,885 million dollars in revenues just trough advertisement, representing an increase of 57% compared to the previous year



(Facebook, 2017[b]) and an increase of 3,518.9% since the beginning of the advertisement in 2009 as Figure 2 shows.



**Figure 2:** Facebook Ads Revenues (Source: Statista)

#### 4. What Facebook's study case show

The revenues gained by Facebook in the last years are increasing and is not a surprise. As this article has tried to outline, the Social Networking Site was built under the premise of socialization and instead of following the rules of the digital market it created an own business model to exploit its major asset: connections. Step by step, Facebook found a way to become the switcher — using Castells' terms — of the social world in the digital, and thus to control the major quantity of data regarding this human distinctive. Using the data in a creative way that not just focus in the data alone but in the relationships between them, Mark Zuckerberg created a business model with huge potential and apparently inexhaustible.

Facebook became a place where is needed to be in order to be popular, but furthermore in order to be 'someone' in the digital era. In this sense, the platform made of itself a need and gain popularity value that at the same time attracts more and more users every day, which means more data and connections to be sold increasing its value. Consequently it is now the biggest network within the major network — the Internet — overcoming even its major competitor Google not by means of ownership but by means of reach through the users and thus potential data to be sold. Being the major site where everyone not just want but has to be, the attention value is there by default making of Facebook the golden mine for advertisers.

The combination of these three values — popularity, attention and connections — and the data acquired because of them organized in Facebook Ads' platform is what makes of

Facebook a successful business which core element is the sociality itself. In words of Cohen (2008) when this movement was just starting, “it is this [...] desire to share knowledge, communicate, and foster relationships that Facebook has tapped into and exploits”. If Facebook fails to continue being the core node of the sociality in the web, then its business model will fail. The success of the strategy is explained by human’s natural condition to be connected with others, creating one’s identity and preferences because of this connections. In this sense, Facebook in a way exploits its power to connect people not just to build a universal network as it claims with the philosophy on the site, but also to make profit by doing this.

Facebook’s study case open the doors to analyze to what extent is it possible to build new business models that rely in the sociality or other natural needs of human beings. Instead of thinking on models such as creating scarcity or needs, focusing on what is natural to a particular segment and adapting to it could be the solution. Particularly regarding sociality it has been done little to understand consumers as networked individuals that take part in several groups at a time and thus are the best way to reach others. Even though the word of mouth concept takes de idea, it focuses just in the individuals that interact but not in the interaction by itself and what it means. Business should look at this immaterial concepts that are loaded with potential values exploited yet just by few. It is in human nature where the next place to make business is.

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# Knowledge Management and Corporate Social Responsibility in Logistics Companies

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**Abstract:** The paper intends to elaborate the relationship between KM and CSR in general and with particular focus on the logistics business. Based upon a pairwise discussion of logistics, knowledge management and corporate social responsibility, it demonstrates the current and potential role of knowledge within CSR and identify fields of future research for strengthening the link between these two concepts.

**Keywords:** knowledge management, CSR, logistics, sustainability, reporting

## 1 Introduction

In recent years, Corporate Social Responsibility (CSR) and sustainability have been presented to companies and organizations as imperative goals. In fact, CSR was presented as a way of achieving sustainability. In early stages, the term sustainability referred to ecological aspects and green development only. This also strongly influenced the logistics sector as transportation is the linking element in each supply chain and impact on the ecology (typically presented as carbon foot print) is high. As a consequence "green logistics" appeared as a clearly expressed goal in how to run logistics and the so far 6 "R"s describing the logistics challenge (right goods, right quantity, right place, right time, right quality, right costs) got extended by a seventh one – right ecological impact.

Meanwhile sustainability also addresses economic and social aspects. In fact, sustainability is presented as an ideology, overlapping previously known ideas as growth, economic growth, economic development, human development or even sustained development as societal goals. In company management, this way of thinking is what CSR refers to: a system "whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (The European Commission 2001). In late 2011, the European Commission put forth a new definition of CSR as "the responsibility of enterprises for their impacts on society" (The European Commission 2011). That evolution happened while Knowledge Management (KM) was establishing itself as a major scientific field and area of practice. Both concepts of CSR and KM have in common a necessary change in company management paying more attention to so-called soft facts. This goes in line with severe hesitation concerning their possible contribution to company performance and success. On the other hand, it is common understanding that multiple knowledge leverage processes contribute to dynamic organizational sustainability.

However, the interrelationship between KM and CSR has not yet been fully studied (Perry 2015). This initiates research questions about the relationship between the two concepts: Which role does KM play within CSR? Does KM contribute to CSR or is it part of CSR? These questions form the basis of the paper aiming to investigate interdependencies and to provide a situation analysis of their implementation and impact in company management. For this, the logistics sector is used as example as evolution of logistics to some extent goes in line with the evolution of KM and CSR – as fields of knowledge and research, but also in terms of their implementation in practical settings, i.e. companies.

Against this background the paper discusses evolution of logistics in correlation with related and required knowledge on one hand and need for and implementation of knowledge management activities on the other (Section 2). After that, the impact of corporate social responsibility on logistics companies is explained (Section 3), before both concepts KM and CSR are put in relation (Section 4). These pairwise discussions of the concepts lead to conclusions on the role of knowledge and KM within CSR particularly related to logistics companies (Section 5).

## **2 Logistics and Knowledge Management**

Logistics is a particular activity of the economic life which is related to accommodating the goods and services to the meet the desires of demand. The European Logistics Association (ELA 2004) defines logistics as ‘the planning, execution and control of the movement and placement of people and/or goods and of the supporting activities within a system organized to achieve specific objectives’. The aim of any logistics activity consists in providing the right goods or services of the right quantity and quality at the right price and under the right ecological conditions to the right place (or person or organization) at the right time – these are the so-called six (or more) R’s of logistics. Logistics therefore constitutes a sector of economic life: companies related to the logistics sector are either logistics service providers of various kinds or, for example, big companies such as car manufacturers with a specific logistics department being responsible for matching operations within the company and between the company and its customers or suppliers.

In terms of research and business application logistics can be called a relatively young discipline. In the 1970s it evolved from a very functional understanding aiming to individually optimize separate functions of transportation, storage and transshipment within a company (Baumgarten 2008). Here, focus was put on materials handling operations only with no link to company core processes like procurement, production or sales. Required knowledge was directly and exclusively related to the particular function any activity was orientated at.

In the 1980s this focus changed towards the optimization of material flows; in this context logistics was understood as cross-divisional function enabling and supporting order processing. In addition to the availability and application of function-specific knowledge it needed to be interlinked, but knowledge coordination requirements were still very low or not seen as relevant at least.

In the 1990s logistics moved into the next stage of evolution. It became an integral and integrating function within companies creating process chains and between companies resulting in value-creating chains. In addition to material flows now also information flows

were subject to comprehensive optimization resulting in a new management discipline called supply chain management. Introducing the wider concept of supply chain management ‘involves a significant change from the traditional arm’s-length [...] relationships’ towards ‘co-operation and trust and the recognition that, properly managed, the “whole can be greater than the sum of its parts”’ (Christopher 2011). Although relevance of knowledge and especially the need for sharing it amongst partners in the supply chain grew, it was not until globalization required integration of value chains within global networks taking into consideration socio-economic factors when knowledge management became vital in the logistics business sector.

This current stage of evolution of logistics and supply chain management in the new millennium led to an increasing complexity of today's logistics processes and systems and the need for global networking to cope with the growing diversity of logistics problems. Because of this, and by commonly accepted theory, knowledge is becoming more and more a strategic resource in logistics. Consequently, knowledge management is expected to provide a tremendous contribution to the improvement of logistics planning and performance. To learn from previous experience, to know about valuable experts, their location and expertise for getting them involved in running projects or new tasks, to better understand pre-conditions, settings and decisions from the past and with relevance to today's activities, to easily identify and get access to the right knowledge exactly when it is needed – these are sources for increasing a person's, a team's or an organization's logistics competence and performance and to let them become more knowledgeable consumers, well acquainted supervisors or enthusiastic developers of logistics services, systems and processes (Tomé and Neumann 2014).

In terms of historical implementation of knowledge management three phases have been defined (Edwards 2010):

- *Phase 1* was based in technology, and happened in the 1990s when there was the naive idea that knowledge management problems could be solved by improved Taylorism with better machines, that would solve the knowledge riddle.
- *Phase 2* was based on people and happened in the first decade of this century, when knowledge management departments were created in companies and organizations and people were nominated to put forward the knowledge management function.
- *Phase 3* is based on processes and currently being developed after it became apparent that even with the best technology and the best people knowledge management continued to be a fundamental organizational problem.

This basic paradigm has been in great show regarding logistics. In fact during the 1990s logistics companies tried to improve their material base, using computers and other technical devices to improve the quantity and quality of their services and to remain competitive worldwide. In the beginning of the century, as the importance of knowledge grew to be more evident and knowledge management became a managerial buzzword in many companies and industrial sectors, like e.g. logistics, a big (technological) wave was indicated (obviously) without any particular benefit to (most of) the companies. This has been caused by the variety of theoretical concepts related to knowledge and its management without clear suggestions and guidelines on how to deal with it, implement it in a certain company setting, and link it to the company's day-by-day challenges. Furthermore, managing knowledge and benefiting from it was said to be a technological issue only or at least mainly. A large number of

knowledge management projects and initiatives were launched that focused on the introduction of certain information technology such as knowledge data bases, intranet, information storage and retrieval functionality etc. – and failed because of being too single-dimensional, forgetting about the people as key stakeholders and shareholders in any knowledge-creating and knowledge-dependent process, and also because of being too short-term focused with regard to measurable impacts and especially financial returns.

So, knowledge has been on the agenda since the mid 1990s, but still hasn't unfolded its full potential in the organizational practice. Even worse, it had lost a lot of its credibility also in the logistics practice because of the wrong focus. When the knowledge management promise was not fulfilled, and especially when the economic downturn of 2007-8 happened, logistics companies further slowed down their explicit investment and interest in knowledge management, even if implicit they continued to depend on knowledge management to ensure their success. Moreover those companies continued to suffer from the problem of how to manage better knowledge, addressing it exactly from the process point of view.

Nevertheless, several studies that have been run in order to investigate the current state-of-implementation of knowledge management in the logistics sector again and again showed a strong interest with logistics companies in using knowledge as a strategic resource (Baumgarten and Thoms 2002, Fraunhofer 2005, Wagner and Buko 2005, Reihlen and Ringberg 2006, Strubelt and Neumann 2006). Tomé and Neumann (2009) run an empirical impact study to understand the current state-of-implementation of knowledge management in logistics companies, and identify general and company-specific needs for KM activities. Summarizing the findings, the main conclusion was that knowledge management still seemed to be just of little importance in the logistics sector. These results and findings of the study are in clear contrast to theoretical expectations. Especially, the question of how to best make use of it still remains unanswered. The problem simply seems to be a lack of knowledge and understanding with the companies on how to implement knowledge management methods in a customized way. The way to overcome this problem is to provide companies with respective information seeing knowledge management as supporting service addressing a company's personnel, organisation and IT basis at the same time and eventually lend them a hand in managing their human resources, selecting technology or changing the organisation. In the end any knowledge management activity and investment into knowledge must aim to purposefully intervene in a company's logistics processes.

Subsequently, in the last years further important studies have been published. One question to be studied was the importance of knowledge management creation in reverse logistics (Ramirez and Garcia Morales 2011). Activities of reverse logistics require adequate knowledge management in all phases of return of the product that may help to approach the current goals of customer satisfaction and business benefit to the legislation for the environment. In this sense, it is fundamental for an organization to have the ability to generate new knowledge in order to reduce the high level of uncertainty of reverse logistics activities. Another question addressed the relation between knowledge management in logistics and the process of globalization (Fugate et al. 2012). Authors concluded that the link was strong and that it implied product differentiation in supply chain management. Durst and Evangelista (2016) used a multiple case study approach to explore knowledge management practices implemented by third-party logistics service providers (3PLs) operating in Italy and Sweden and the main barriers slowing down the adoption of such practices. Findings achieved indicate

that in spite of some adoption, 3PLs are not sufficiently realizing the full potential of KM and associated benefits.

So, to summarize the current relationship between logistics and KM, situation has not changed much for about 15 years. The importance of knowledge also for logistics companies is clear, the need for managing this knowledge as part of company management activities is expressed, but KM still seems to be rather a buzzword than a clue to more economic success. However, latest observations within logistics companies in Germany show some slight signals towards a change. This is eventually driven by understanding the stronger influence of so-called soft factors on company performance and the requirement for more responsible action in business and society.

### **3 Logistics and Corporate Social Responsibility**

Corporate Social Responsibility (CSR) is considered as the main contribution of corporations to sustainable development (Bansal 2005). The European Union is concerned with CSR as it can be a positive contribution to the overall strategic goal of becoming “the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion” (The European Commission 2001, p. 3). According to The European Commission (2001, p. 4) “corporate social responsibility is essentially a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment”. Hereby, it needs to be considered that CSR as a concept comprises both dimensions, the internal one and the external one. Within the company, socially responsible practices primarily involve employees and relate to issues such as investing in human capital, health and safety, and managing change, while environmentally responsible practices relate mainly to the management of natural resources used in the production. But, CSR extends beyond the doors of the company into the local community (e.g. Björklund and Gustafsson 2015) and involves a wide range of stakeholders in addition to employees and shareholders: business partners and suppliers, customers, public authorities and NGOs representing local communities, as well as the environment. In a world of multinational investment and global supply chains, CSR must also extend beyond the borders of Europe.

More precisely, CSR requires corporations to take into consideration fairness towards employees, clients and sub-contractor employees. Corporations are expected to protect natural resources and to demonstrate involvement and responsibility in sustainability, community, human rights, and environmental components which may be affected by the actions of the business. Beyond its immediate profit motivation, therefore, the corporation must commit itself to the well-being of society.

Answering the question for what CSR means to the logistics industry, first thoughts are typically related to the impact a business has on the environment in general and to the need for reducing a company’s carbon foot print more specifically. Consequently, all leading logistics service providers dealt with this issue since it has taken place in political and societal discussion. As an example, Figure 1 illustrates seven future trends in sustainable logistics as identified by Deutsche Post DHL (Ehrhart 2010). Even though this addresses a very important issue – climate change – it has to be clarified that CSR in the logistics business refers to much



more than greening logistics and the supply chain (Evangelista et al. 2010, Halldorsson et al. 2010).

### Seven Key Developments Will Shape a Sustainable Logistics Industry:

- |  |   |
|--|---|
| 1. <i>Logistics counts – it is not a commodity</i>   | 4. <i>Business models of logistics companies will change as sustainable innovations open up new opportunities</i> |
| 2. <i>Technological change will be achieved through a concerted drive from companies, governments and financial institutions</i>                 | 5. <i>CO<sub>2</sub> labeling will become standardized</i>  |
| 3. <i>Collaboration will increasingly be seen as an enabler to attain sustainability; even erstwhile competitors will cooperate more closely</i> | 6. <i>Carbon emissions will have a price tag</i>  |
|  | 7. <i>Carbon pricing will lead to more stringent regulatory measures</i>  |

Figure 1: CSR in logistics – the example of Deutsche Post DHL (Ehrhart 2010, p. 130)

Carter and Jennings (2000) first introduced a concept they called logistics social responsibility (LSR) meaning “the socially responsible management of the supply chain from a cross-functional perspective” (p. 16). For this, they proposed an integrative framework encompassing different areas of logistics management: purchasing management, transportation management, and warehouse management. It particularly aims at enabling an integrated view on a sustainable supply chain management instead of dealing with the different aspects in a stand-alone fashion. This general framework of LSR comprises a wide set of specific activities, including environment, ethics, diversity, working conditions and human rights, safety, and philanthropy and community involvement (Figure 2). Later, other authors provided further models classifying the variety of LSR practices in five categories or allocating them to five dimensions (León and Juan 2014).

All approaches support the integration of corporate social responsibility and sustainability principles in logistics. Sustainability is to be reached in a practical way balancing eco-efficiency, social productivity and social equity and also taking into consideration the need for a compromise among social and environmental aspects (León and Juan 2014). This triangle of usually competing goals in company management, i.e. being economically successful and at the same time protecting the environment and acting socially responsible, particularly challenges logistics companies and globally operating supply chains. Even though in many economies (especially in Europe) discussion on those issues is on the agenda and “green thinking” has become part of the society’s memory, external motivations such as government regulation and the pressure by customers are still the main reason for adopting sustainable practices. Nowadays, more and more companies report to the public on their efforts towards social responsibility – on a voluntary basis or as a requirement. Quite often these reports also fulfil marketing purposes convincing customers about fair trade, fair working conditions, reliability etc. In a more general approach, sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for

organizational performance towards the goal of sustainable development (Global Reporting Initiative 2011). As this might also contribute to building up the company’s knowledge base, a link between CSR or LSR and KM appears logical and is discussed in the following section.

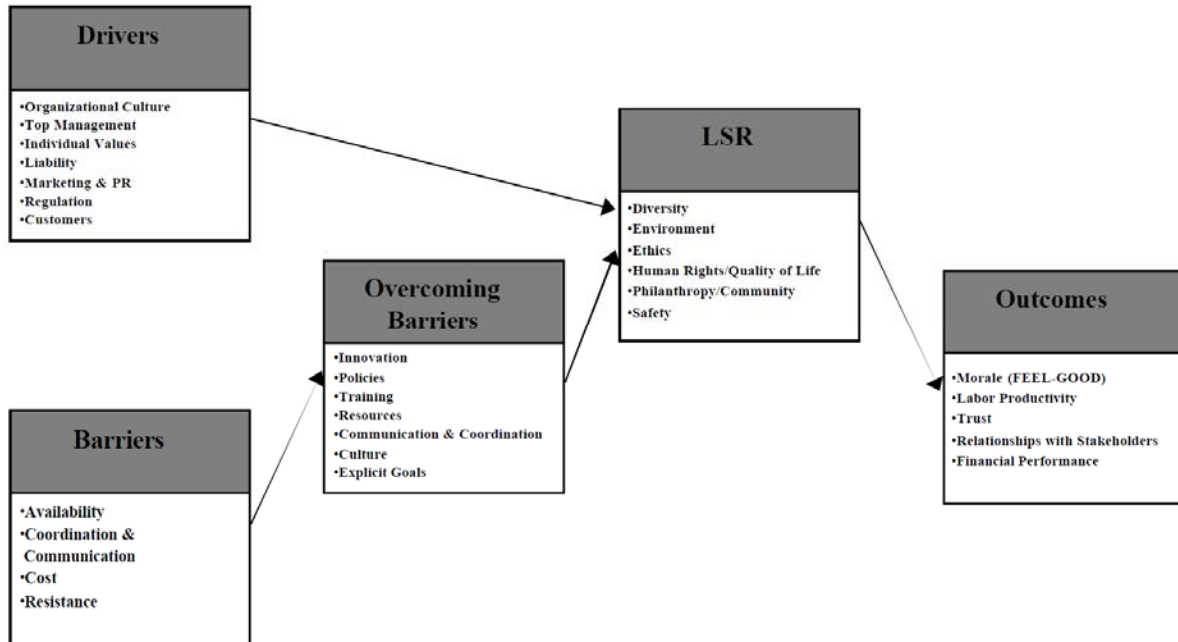


Figure 2: Framework of logistics social responsibility (Carter and Jennings 2000, p. 23)

#### 4 Knowledge Management and Corporate Social Responsibility

In order to support clear and open communication about sustainability the Global Reporting Initiative provides a trusted and credible framework for sustainability reporting that is improved continuously. It is intended to serve as a generally accepted framework for reporting on an organization’s economic, environmental, and social performance. For this it defines appropriate reporting categories and sustainability performance indicators (Global Reporting Initiative 2011) as illustrated in Figure 3:

- The *economic dimension* of sustainability concerns the organization’s impacts on the economic conditions of its stakeholders and on economic systems at local, national, and global levels. Sustainability performance parameters are related to economic performance, market presence, and indirect economic impacts.
- The *environmental dimension* of sustainability concerns an organization’s impacts on living and non-living natural systems, including ecosystems, land, air, and water. Environmental indicators cover performance related to materials, energy, water, biodiversity, emissions, effluents and waste, products and services, compliance, and transport.
- The *social dimension* of sustainability concerns the impacts an organization has on the social systems within which it operates. Social performance indicators identify key performance aspects surrounding labor practices, human rights, society, and product responsibility.

These Guidelines for Sustainability Reporting are of generic nature and can therefore be applied to almost any kind of organization and business sector. In order to support focused reporting on sector-specific topics, sector-specific supplements of the guidelines got released. The Logistics and Transportation Sector Supplement released in 2006 is intended to be relevant to service providers and freight forwarders within the sector. The scope of this supplement is focused on companies that are directly involved with the movement of goods using different modes of transportation (e.g. mail, parcels and packages, freight, chemicals, and bulk materials). It also addresses the distinctive reporting needs of logistics and transportation companies, such as fleet compositions, urban air pollution, congestion, noise/vibration, transportation infrastructure development and road safety, by providing additional sector indicators. ([www.globalreporting.org](http://www.globalreporting.org))

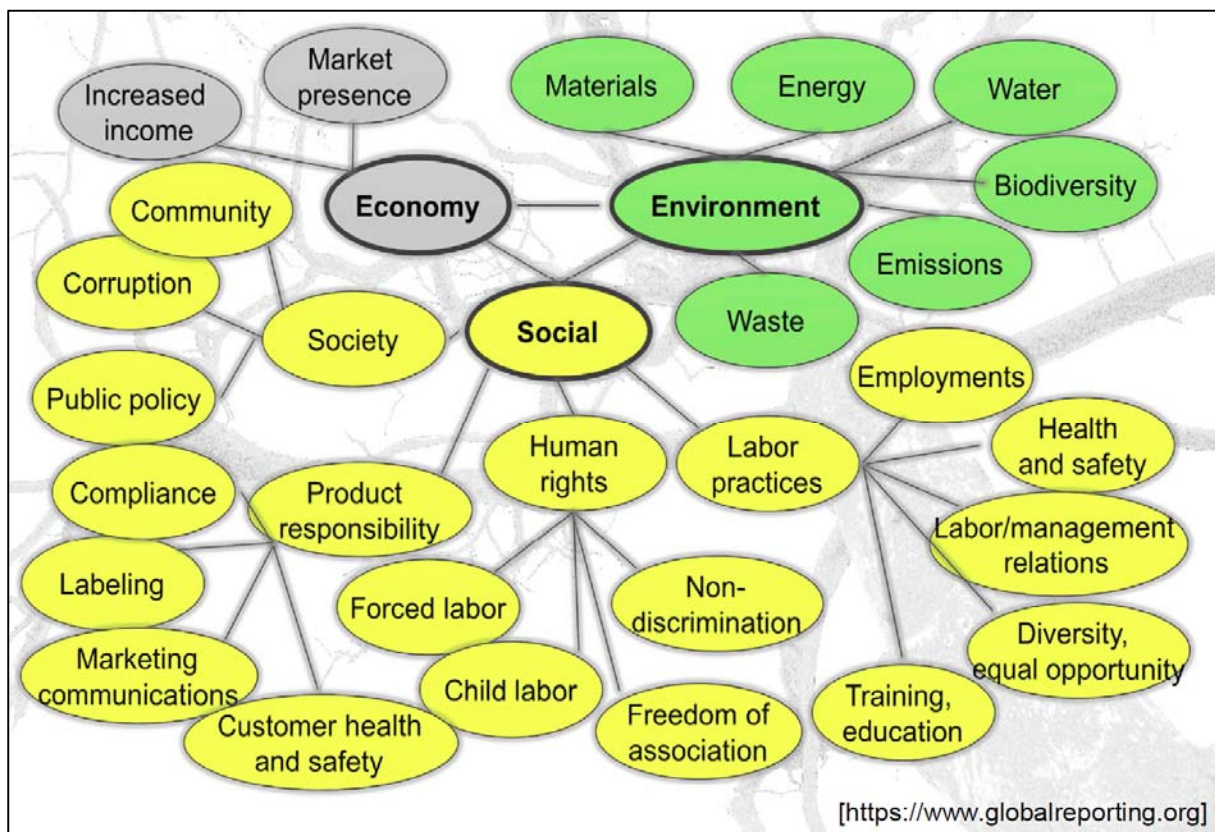


Figure 3: Aspects of reporting on CSR (Björklund 2014)

Paying a closer look on reporting categories as illustrated in Figure 3, the question for where to find knowledge on CSR and related processes pops up. There is no direct hint on knowledge, however to some extent aspects belonging to the social category of CSR indirectly address knowledge-related achievements at least. Procedures related to training and raising awareness in relation to the labor aspects include information on who participates in diversity, equal opportunities and gender sensitization training (e.g., highest governance bodies, senior management), and the topics addressed by training and any informal awareness raising. With this training and education is the aspect closest to knowledge and particularly knowledge development within the reporting guidelines. However, instead of indirectly addressing

knowledge as an aspect of CSR reporting only, it should be included directly in the reporting structure within the social category next to society, product responsibility, human rights, and labor practices.

To manage the knowledge developed, but also the CSR-related knowledge gained while managing a company, knowledge management processes are needed. Preuss and Cordoba-Pachon (2009) investigated how KM processes can foster progress towards CSR and identified KM areas of particular relevance for managing a company's social and environmental externalities. When designing and implementing a CSR strategy a range of explicit knowledge is needed, like e.g. the technical knowledge of CSR practitioners or CSR knowledge that resides in other departments, such as human resources, external affairs or supply chain management. When internal CSR knowledge is found to be insufficient, KM can aid identifying the gaps that are to be filled through external CSR experts. Interaction with outside stakeholders of the company promotes knowledge exchange for the benefit of both the company and its wider set of stakeholders. Furthermore, KM can lead a company to create structures of dialogue for enabling the exchange of ideas or joint solutions to problems by people working across areas as well as beyond the formal boundaries of the company. In terms of CSR this could concern the integration of stakeholder priorities into corporate strategy design and implementation. A key strategy in here is the identification, nurturing and fostering of communities of practice. They provide a shadow communication structure through which company aims and performance e.g. regarding CSR issues are subject to constant checking.

Since new knowledge is necessary for change to occur, a KM-based approach to CSR offers a valid perspective on how traditional ways of running a business are replaced by a more comprehensive consideration of the role of business in society. For example, Wernick (2003) defined environmental knowledge management (EKM) as a system that provides a platform to interconnect information, analysis and human resource to establish high industrial ecological standard in a business setting. However, a new issue emerges on how to combine both environmental management and knowledge management effectively and to apply it in actual situations (Huang and Shi 2009). Organizations apply the idea of EKM to monitor environmental impacts caused by its operations through the creation, accumulation, sharing, utilization and internatization of environmental knowledge which require the management of tacit and explicit knowledge (Huang and Shih 2009). EKM is a tool for the integration of environmental problems into an organization's routine operations with the aim to minimizing environmental impact and increasing corporate social responsibility initiatives towards the natural environment (Huan and Shih 2009).

## 5 Conclusions

The importance of logistics in the economy has grown, and so has done the importance of knowledge management. Studies on detailed aspects of the use of knowledge management in logistics have been increasingly, namely and mostly regarding roles/capabilities and trust, the two issues being intimately related due to the nature of the logistics business. Adopting CSR can benefit logistics companies by increasing their reputations, through better financial performance, the good will of regulators, and by retaining and attracting talent. An increasing number of companies report their CSR to authorities and to the public, above and beyond the financial reporting required by law. But the total number is still very low, and, as with KM, strategy implementations have been rather lack luster. (Perry 2015)

However, the current global public climate provides an excellent opportunity to use KM (the “how”) for implementing CSR (the “what”) and to leverage both strategies for the sake of good practices in company and supply chain management and for the benefit for society. CSR defines the norms (transparency, visibility, responsibility and accountability), which can be applied using KM tools in daily organizational life. KM tools can leverage implementation of CSR in various ways, since they share their main values and stress common objectives.

Concerning the relationship between KM and CSR in general and with regard to logistics companies in particular research is still on its way and several questions are still open:

- It is obvious that CSR-related knowledge is created and applied in the process of CSR development and implementation in a company or supply chain setting; the need for managing such knowledge is pretty clear. But in which way CSR-related knowledge is to be managed? Do the same challenges, methods, processes and tools apply as in managing any other kind of knowledge?
- Within CSR, knowledge is a strategic resource, too. Because of this, it needs to be included directly and visibly in the CSR reporting; it should be an aspect within the social report category. But which specific knowledge aspects are relevant in terms of CSR reporting?
- Reporting on CSR is mandatory in many cases, but companies also more and more report on their CSR activities on a voluntary basis to demonstrate their social responsibility. However, this CSR report forms another report to be prepared by the company in addition to the mandatory accounting report and the voluntary Intellectual Capital report. Here, the question is if all reports are really needed and if so, as separate ones. Or should reporting aspects be integrated into a single report?
- True sustainability (beyond „greening” the company or supply chain) cannot be achieved without knowledge management. If, this way, KM contributes to sustainability, will KM become sustainable itself, too?

Finally, change cannot be planned and imposed from above; rather it emerges in evolutionary ways. This has been illustrated by the evolution of logistics and supply chain management, but also by the stage of the development of knowledge management. In contrast to those two fields, corporate social responsibility is still in a growing and sharpening phase. A KM-based view on CSR might help in straightening this process and in explaining why some companies are making greater progress in terms of the corporate sustainability than others.

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## Knowledge Sharing and Healthcare: A Bibliometric Analysis

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**Abstract:** Taking into account the importance of Knowledge Management, both in academic terms and in the management practices, this work aims to explore and describe the scientific literature published in the ISI Web of Science. As specific objectives we present a) describe how this field of research is organized in terms of publications, authors and sources (journals); b) discuss how the literature referred to presents challenges (opportunities and difficulties) for the scholarship on the knowledge sharing within health organizations. A systematic approach was used, making use of a rigorous protocol and definition of steps to perform the research and analysis of the literature. The results show that this is still an incipient research topic due to the high polarization identified, either in terms of the number of publications by journals or authors. This paper identifies ways of research that can be explored in order to give greater consistency and to increase substantively the theoretical and empirical knowledge in this theme.

**Keywords:** Knowledge Sharing, Healthcare, Bibliometric Analysis

### 1. Introduction

According to Serenko, Bontis, Booker, Sadeddin, and Hardie, (2010), knowledge and information are currently the drivers of a company's life, having a greater relevance than physical assets such as the land, capital or even work (Bontis, Dragonetti, Jacobsen, & Roos, 1999; Leal, Marques, & Marques, 2016). The majority of knowledge sharing studies suggest that his application on organizations reproduces a positive impact on their performance (Brown & Duguid, 1991; Davenport & Prusak, 1998; Davenport, Jarvenpaa, & Beers, 1996; Drew, 1999; Farzin, Kahreh, Hesani, & Khalouei, 2014; Hooshyar, 2010; Lin, 2007; Mueller, 2012; Prieto & Revilla, 2004; Schwaer, Biemann, & Voelpel, 2012; Yang, 2010). Being the knowledge sharing seen as symbol of trust and unity inside the company (Yang, 2010).

Knowing that Rowe, De Savigny, Lanata, and Victora (2005) identified the existence of an inadequate performance problem in the healthcare organizations from the mid and low economic countries, seems to us that is relevant to bridge the gap between knowledge sharing, or more specifically, knowledge dissemination and the performance of these type of organizations.

In this sense, the realization of this study has as main goal to analyze the theme "knowledge sharing and healthcare" regarding the publications belonging to the *ISI Web of Knowledge* database in order to obtain a frame capable of identifying some fundamental aspects



concerning the characterization of the evolution of previously studies in this area with the purpose of identifying key factors or eventual gaps to investigate in further studies. For such reasons, we start from the following questions:

- When the first publication about knowledge sharing and healthcare appeared?
- Which are the authors with the most publications about knowledge sharing and healthcare?
- Which are the most cited articles about knowledge sharing and healthcare?
- Which countries publish more about these subjects?

In order to answer these questions, we have done a bibliometric analysis which, according with Dalpé (2002), could bring an enormous contribution to the present research in a given area of knowledge. Pritchard (1969) says that a bibliometric analysis is based in a quantitative analysis of the written communications. So, in this sense, this paper is based on a quantitative analysis of the number of articles, excluding other types of publications, regarding knowledge sharing and healthcare.

The bibliometric analysis could be done considering the number of citations, co-citations or a combination of both. In this article, and due to the reduced number of co-citations, we opted for a bibliometric analysis taking both into account.

Therefore, the article has the following structure: the first section presents a literature revision about the theme, emphasizing knowledge sharing and healthcare. The second one, explains the methodology used in the research, followed by the results and its discussion and the last shows the conclusions and limitations of this study, as well as further research suggestions.

## **2. Literature review**

### **2.1 Knowledge Sharing**

The knowledge as being recognized as an added value to the individual, being knowledge sharing seen as a symbol of trust and union amongst the organization (Yang, 2010).

Bartol and Srivastava, (2002) define knowledge sharing as an act of disseminate relevant information between workers in the entire organization. On the other hand, Šajeva (2014), expresses a more developed definition of this concept. According to him, knowledge sharing is defined by the broadcast, diffusion and interchanging of knowledge, expertise, abilities and valuable information from an individual to other members inside an organization. By Jang, Hong, Bock, and Kim, (2002), knowledge sharing has been considered the most meaningful part of knowledge management.

The intra-organizational knowledge sharing refers to the level of communication and knowledge sharing, experiences and ideas between workers and a certain organization (Yang, 2010). This is necessary in order to prevent the loss of information and the accumulation of knowledge within organization (Yang, 2010).

The knowledge sharing between individuals allows them to improve their skills and simultaneous spawn new knowledge (Sveiby, 2001). According to Yang (2010), knowledge sharing is an activity that raises the value of the organization's value chain. Being considered

by Dawson (2000), the final objective of knowledge sharing between employees is their transfer to the organizational assets and resources, which promotes the value creation of the organisation.

Thus, knowledge sharing can be formal or informal (Šajeva, 2014). It can be done in several different ways, such as: correspondence, written communications, face-to-face or through electronic knowledge systems. This can occur in different manners depending on the recipient, furthermore it can also occur between pairs, coworkers from the same or different unit teams inside the organization (Šajeva, 2014).

Sveiby and Simons, (2002) emphasize that knowledge sharing can be maximized when the employees have collaboration across three levels of the organizational hierarchy: immediate superiors, workgroups and the business unit. According to Šajeva (2014), knowledge sharing has a positive effect on the organizational success and competitiveness (Andreeva & Kianto, 2012; Peltokorpi, Nonaka, & Kodama, 2007; Shahzad, Bajwa, Siddiqi, Ahmid, & Raza Sultani, 2016).

However, we can infer, as mentioned by Yang (2010), that one of the main obstacles to knowledge management is the propensity of people to stock knowledge without sharing it.

## **2.2 Healthcare**

Science is constantly evolving and as such the health sector has followed this same evolution. Today the healthcare industry has evolved into a firm that is backed by sophisticated knowledge and various types of resources.

According to O'Leary, (1998), the knowledge management area in healthcare can be seen as the convergence of formal methodologies and techniques to facilitate the creation, identification, acquisition, development, preservation, dissemination and, consequently, their use for value creation.

Healthcare companies could be considered as rich in information, because they generate large amounts of data, such as medical reports, clinical trial data, hospital records, administrative reports, among others. However, the healthcare industry is considered to be in need in knowledge area because data processing rarely occurs in order to transform it into knowledge and, consequently, a decision support resource.

Nowadays with the technological evolution, several facilities have emerged regarding the raw empiric data migration, and its transformation into empirical knowledge about the healthcare organization.

The acquisition of more knowledge about their own organisation, could mean an improvement in operational conditions and their effectiveness, since it would make the stakeholders have a more accurate notion of the reality lived in healthcare organizations.

### 3. Metodology

This study has a quantitative nature, allowing the researcher to increase his/her expertise regarding a given circumstance or problematic, and thus being characterized as an exploratory-descriptive study (Abrams, 2009) based on bibliometric techniques.

**Table 1** – Research Settings

Key words	Period	Data base	Fields of research	Research areas	Document type
Topic: <i>knowledge sharing</i> AND Topic: <i>healthcare</i>	1900 to 2016	<i>Web of Science Core Colletion</i>	<i>Social Sciences; Arts and Humanities; Science; Social Science and Humanities.</i>	All available in the database except, <i>environmental sciences or engineering industrial or mathematics interdisciplinary applications or computer science software engineering or industrial relations labor or food science technology or engineering environmental or computer science cybernetics or automation control systems or engineering electrical electronic or law or d or computer science theory methods or engineering multidisciplinary or construction building technology or mathematical computational biology</i>	<i>Article</i>

The data used in this investigation was extracted in April 17 of 2016 from the *ISI Web of Science*. From table 1 it is possible to identify the steps followed to conduct the research. Regarding the temporal evolution, no filter was used, since one of the objectives of this investigation is to discover the beginning of the research in knowledge sharing in healthcare.

The data obtained was analyzed through VOSviewer version 1.5.7 in order to conceive and visualize bibliometric maps. This analysis aimed to map the most cited authors and the most used keywords. It was also possible through this analysis to perceive inherent clusters to the articles in the database.

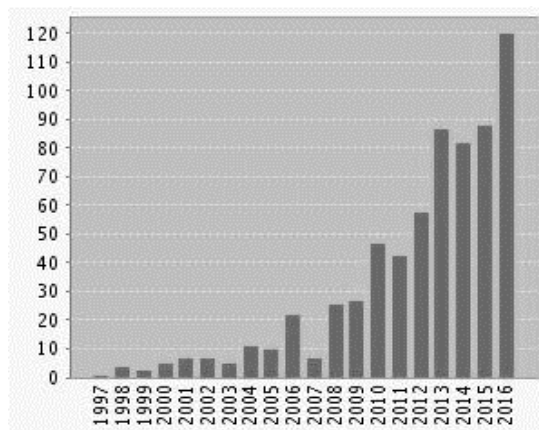
### 4. Results

In order to obtain the desired data, some filters were added to research. Initially, with the addition of the topics "knowledge sharing" and "healthcare", 1033 publications were obtained, which decreased by approximately 30,48% with the implementation of the "Article" document type filter. The result of 718 articles about this theme, was further reduced to 603 with the application of the remaining filters shown in table 1.

The application of knowledge sharing in healthcare is a recent development in research. This can be proved by this bibliometric analysis, since the first publication is dated from 1997, and in this period of time only 603 articles were published about this subject.

Regardless of the number of publications not having a constant evolution, we can verify in Figure 1 that, nevertheless, there has been an evolution in this subject over the years, having surfaced a more visible increase in the year 2010. It is also worth mentioning that there was a

decrease in the number of published articles in 2011 comparatively to the previous year, with a significant increase in 2013 and 2016 (the year with the highest number of publications).



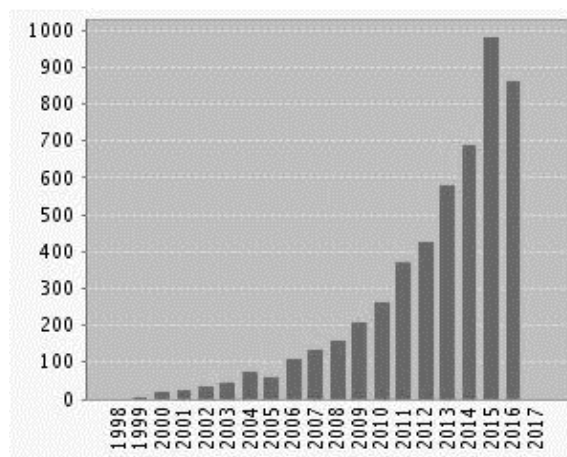
**Figure 1:** Number of articles published per year

Looking at Table 2, we can confirm that, as previously reported, there was an increase in the number of publications in 2016, and at the time of the research, there were 32 more published articles than in the previous year. That being said, the year in which there was a greater number of publications on knowledge sharing and healthcare, in this database, was 2016.

**Table 2:** List of the 10 years with the most publications (descending order)

Year	Nº of Articles	Percentage of number of publications (n=603)
2016	120	18.100 %
2015	88	13.273 %
2013	87	13.122 %
2014	82	12.368 %
2012	58	8.748 %
2010	47	7.089 %
2011	43	6.486 %
2009	27	4.072 %
2008	26	3.922 %
2006	22	3.318 %

Although the first article was published in 1997, the first citation was only made 2 years later (in 1999), as can be seen on Figure 2. Contrary to the number of publications by year, the number of citations had a more constant evolution, only decreasing in 2005 and (apparently) in 2016.



**Figure 2:** Number of citations per year

From 1999 to April 2016, 5088 citations from the 603 gathered articles have being made. Based on the number of citations, there was an average of 7,67 citations per article, thus obtaining an h-index of 32.

Through the bibliometric analysis of the published articles, we can confirm that there is a country that stands out in the number of publications regarding the knowledge sharing and healthcare theme: the United States of America. The USA published 32,579% of all articles having the largest number of publications, followed by England which published 18,552% of the articles.

In table 3, we can see the top 10 countries that have the most publications about this subject, being led by USA, as previously mentioned.

**Table 3:** List of the 10 countries with the most publications (descending order)

Countries	Publications	Percentage of number of publications (n=603)
USA	216	32.579 %
England	123	18.552 %
Canada	73	11.011 %
Australia	46	6.938 %
Switzerland	41	6.184 %
Netherlands	37	5.581 %
Italy	31	4.676 %
Germany	29	4.374 %
France	21	3.167 %
China	21	3.167 %

Despite the prominence of the USA, the predominance of European publications in relation with other continents is well known, which may be an indicator of the eventual academic concern regarding knowledge management issues in the health sector.

The table 4 lists the authors with more publications on knowledge sharing and healthcare. Thus, the author with more publications is Legar with 9 articles. It should be noted that this

author only has 1,513% of the published articles, which allows us to realize that, in regard to the number of publications, this is not a significant data, besides that, it also shows a huge dispersion considering this theme in the constructed data base.

**Table 4:** List of 10 authors with the most publications in descending order

Authors	Nº of publications	Percentage of number of publications (n=603)
Legar, F.	9	1.357 %
Montori, V. M.	7	1.056 %
Shah, N. D.	6	0.905 %
Gagnon, M. P.	4	0.603 %
Labrecque, M.	4	0.603 %
Leblanc, A.	4	0.603 %
Stacey, D.	4	0.603 %
Wright, A.	3	0.452 %
Yawn, B. P.	3	0.452 %
Zhou, L. H.	3	0.452 %

The table 5 shows the 10 most cited articles, being “*Promoting informed decisions about cancer screening in communities and healthcare systems*” the most cited with 181 citations, which represents 3,55% of the total number of citations. This result proves the previous thesis about the polarization of the number of studies on the theme.

**Table 5:** List of 10 most cited articles

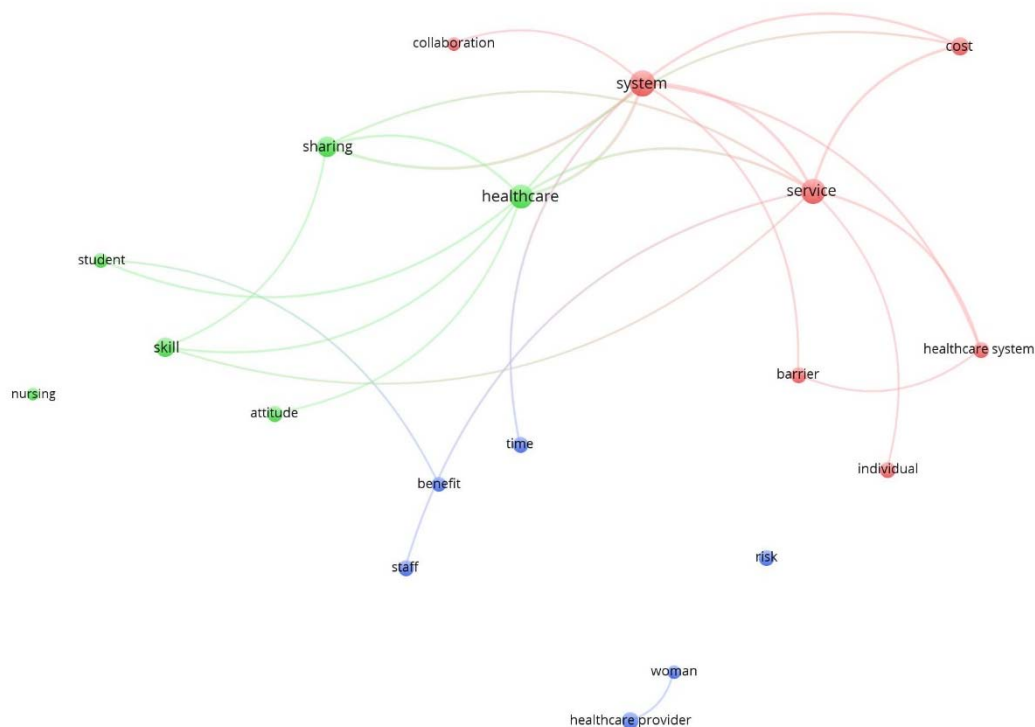
Article title	Nº of citations	Percentage of number of citations (n=5088)
Promoting informed decisions about cancer screening in communities and healthcare systems	181	3,557%
Sharing the true stories: improving communication between Aboriginal patients and healthcare workers	106	2,083%
Integrated Personal Health Records: Transformative Tools for Consumer-Centric Care	100	1,965%
Challenges in end-of-life care in the ICU: Statement of the 5th international consensus conference in critical care: Brussels, Belgium, April 2003: Executive summary	98	1,926%
Flexible guideline-based patient careflow systems	87	1,710%
Just-in-time delivery comes to knowledge management	84	1,651%
Leading organisational learning in healthcare	77	1,513%
The role of networks of practice, value sharing, and operational proximity in knowledge flows between professional groups	74	1,454%
Evaluating re-identification risks with respect to the HIPAA privacy rule	71	1,395%
Exploring patient involvement in healthcare decision making across different education and functional health literacy groups	181	3,557%

As far as journals with more publications are concerned, *Bmc health services research* has 21 published articles of 595, representing only 3,526%. Such fact reveals that the published articles on the subject are published in a wide range of journals, once again highlighting the proliferation of the studies. The set of tables 5 and 6 bring us yet another important conclusion: although the most cited articles are linked to the theme, the journals with the most publications belong to the Health field.

**Table 6:** List of the 10 journals with more articles published

Journals title	Nº of publications	Percentage of number of publications (n=603)
<b>Bmc health services research</b>	22	3.318 %
<b>Implementation science</b>	19	2.866 %
<b>Journal of advanced nursing</b>	15	2.262 %
<b>Journal of the American medical informatics association</b>	12	1.810 %
<b>International Journal of medical informatics</b>	11	1.659 %
<b>Journal of clinical nursing</b>	10	1.508 %
<b>Plos one</b>	10	1.508 %
<b>Social science medicine</b>	10	1.508 %
<b>Journal of biomedical informatics</b>	9	1.513 %
<b>Medical teacher</b>	8	1.345 %

Through the VOSviewer software, it was possible to identify the main keywords used by the authors and the relationships between them, as it can be seen in figure 3. As we can observe in figure 3, the most prevalent keywords are System, Healthcare and Service.



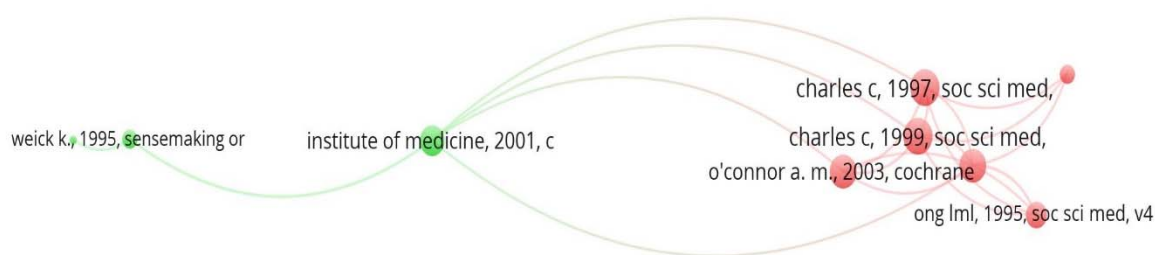
**Figure 3:** Most used keywords and their associations

Still on figure 3, it is visible the existence of 3 distinct clusters, being shown below, in the table7, the keyword distribution by cluster.

**Table 7:** Association between keywords, cluster and the number of their citations.

Keywords	Clusters	Citations
System	1	93
Service	1	87
Healthcare services	1	44
Cost	1	43
Barrier	1	42
Individual	1	32
Collaboration	1	27
healthcare	2	89
Sharing	2	65
Ability	2	43
Attitude	2	36
student	2	34
nursing	2	18
employees	3	43
Benefits	3	43
Risk	3	39
Physicians	3	37
Time	3	36
woman	3	35

The existence of clusters is also shown in the Figure 4, where we can find the most quoted authors in the articles that compose the research data base.



**Figure 4:** Authors most cited by the authors of the database

As we can see on table 8, despite the 3 distinct clusters from the keyword analysis, only the first 2 clusters exist when we analyze the most cited authors by the authors of the articles of the data base extracted through the previously described research.



**Table 8:** Association between the most cited authors, cluster and the number of their citations.

Co-citations	Cluster	Citations
Pope c, 2000, Brit med j, v320, p114, doi 10.1136/bmj.320.7227.114	1	4
Stevenson fa, 2000, Soc sci med, v50, p829, doi 10.1016/s0277-9536(99)00376-7	1	4
Charles c, 1997, Soc sci med, v44, p681, doi 10.1016/s0277-9536(96)00221-3	1	3
Charles c, 1999, Soc sci med, v49, p651, doi 10.1016/s0277-9536(99)00145-8	1	3
O'connor a. m., 2003, Cochrane db syst rev, v1, doi [10.1002/14651858.cd001431, doi 10.1002/14651858.cd001431]	1	3
Ong lml, 1995, Soc sci med, v40, p903, doi 10.1016/0277-9536(94)00155-m	1	3
Institute of medicine, 2001, Cross qual chasm new	2	4
Weick k., 1995, Sensemaking org	2	3
Wenger e., 1998, Communities practice	2	3

That being said, once again, is denoted the diminutive predominance of citations by a specific author or article.

## 5. Conclusions, limitations and suggestions for further research

The knowledge and information are currently the drivers of a company's life, having a greater relevance compared to land, capital or even labor (Bontis et al., 1999).

According to Yang (2010), in recent years, the knowledge management was considered a relevant strategy for companies to achieve competitive advantages. Being the knowledge a strategic resource essential to a company to maintain a sustainable competitive edge (Choi, Poon, & Davis, 2008).

As stated by Avgar, Givan and Liu (2011), health organizations face various kinds of clinical, economic and organizational pressures, a reality that is transversal to developed and developing countries.

According to Rowe, De Savigny, Lanata, and Victora (2005), there is an inadequate performance in health organizations in low and middle income countries. There are several keys that interfere in the performance of health professionals which give rise to difficulties in the achievement of their competences, such as: knowledge, skills, motivation and job satisfaction, remuneration, or experience (Rowe et al., 2005).

Human behavior is considered by Bollinger and Smith (2001) the key to the success or failure of knowledge management strategies, since it gives the high regards to the organizational culture, teamwork, the learning promotion and knowledge sharing. In that way, as Bontis et al. (1999) said, when a company has a good knowledge base, it means that in the next few years it can start to use this base to create even more knowledge, thereby increasing its competitive advantage over its competitors. Because, knowledge, as a resource, after being created is disseminated throughout the company, having a positive effect on the value of the firm and, consequently, increasing its capacity to answer to new and unusual situations (Choi et al., 2008).

Thus, this article aimed to analyze the scientific production regarding the knowledge sharing, specifically, in the healthcare sector, because, given the difficulties experienced in this sector, knowledge sharing would be an added value.

As we have been able to analyze throughout this study, the number of published articles on this topic is still small, being therefore an area of recent interest, since the first publication registered by this database occurred on 1997.

One of the most pertinent conclusions drawn from this research, is the polarization of the published studies, whether in publications by author or in number of journals. There was only a substantial difference in the number of publications by country: the USA stood out from the rest of the countries, having published approximately 34% of the total.

Another interesting result has to do with the areas of the journals with the most publications. The journals of the Health field were highlighted, and in the 10 most published journals, none of them are from the management field. This indicator may, on one hand, highlight a concern of health professionals with the management issues of their organizations and, on the other hand, point out a possible way for new research's focused on this sector, since knowledge management has been the target of numerous works (Leal, Meirinhos, & Marques, 2016).

This article was based on a bibliometric analysis and as such, has some limitations, being these the following ones: the data collection was conducted only considering the articles published in the *ISI Web of Knowledge* database and the research was limited to articles that were published between 1995 and 2016. Because of these limitations, other studies that might have been published in other databases or in non-indexed books and journals, were excluded at the outset.

In future developments, it would be interesting to move from a descriptive analysis to a more in-depth statistical analysis, in order to define patterns regarding the publications (e.g. by obtaining clusters). It would also be useful to undertake quantitative empirical studies that explore the relationship between knowledge sharing and other dimensions (e.g. performance) in health organizations.

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# Poster Session

Dora Naletina

## Competitiveness of Port of Rijeka

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**Abstract:** The Port of Rijeka is the most important port in the Republic of Croatia, and also the biggest port on the Adriatic Sea. It is a port of national interest opened to national and international public traffic. The significance of the port of Rijeka has been recognized by the European Union, which considers it as a crucial point in strategy of the further development of multimodal European network. Important characteristic of the Port of Rijeka is its closeness to the capitals of neighbour countries while most of them are from countries with large overseas goods exchange. Considering that Croatia became the European Union Member state in July 2013, to the port of Rijeka - the biggest Croatian port - same conditions have been provided as to its greatest competitors - the ports of Koper and Trieste. In order to establish wheather the Croatian membership in the European Union has had a positive effect on the competitiveness of the port of Rijeka, the safety indicators and the activity ratios for the period before and after the membership in the European Union, more precisely for the period from 2010 till 2016, will be analysed, based on the annual financial reports.

**Keywords:** Croatia, competitiveness, Pan-European corridors, Port of Rijeka, profitability

### 1. Introduction

The maritime port industry is mature, capital-intensive, and dominated by a small number of large, global actors, yet, at the same time, it is characterized by high levels of public sector involvement in the regulation of the coastal zone and the provision of public infrastructure (Hall & Jacobs, 2010: 1104).

In the last 10 to 15 years, the liner shipping and terminal operating markets have been characterized by massive consolidation both vertical and horizontal (Notteboom, Winkelmanns, 2001). Levinson (2016) remarks that over the past fifty years, the maritime transportation sector has been profoundly transformed through the processes of containerization and economic globalization. Likewise, moreover, due to expanded container shipping, maritime traffic is drawn to a small number of very large ports. The number of players in the deep-sea container transport market has decreased while the remaining companies have become larger through mergers and acquisitions and organic growth (Wiegmanns et al, 2008: 518). Many of Europe's largest container load centres are to be found in the Hamburg-Le Havre range (Wiegmanns et al, 2008: 520).

The business environment is becoming more and more complicated and its most characteristic features at the beginning of the new century can be described as changeability,

impossibility to anticipate and instability (Mezak et al, 2006: 14). Increased port traffic may also lead to diseconomies as local road and rail systems are heavily burdened. Environmental constraints and local opposition to port development are also of significance (Notteboom & Rodrigue, 2005: 300).

Considering that Croatia became the European Union Member state in July 2013, to the port of Rijeka - the biggest Croatian port - same conditions have been provided as to its greatest competitors - the ports of Koper and Trieste. In order to establish whether the Croatian membership in the European Union has had a positive effect on the competitiveness of the port of Rijeka, the safety indicators and the activity ratios for the period before and after the membership in the European Union, more precisely for the period from 2010 till 2016, will be analysed, based on the annual financial reports. The significance of the port of Rijeka has been recognized by the European Union, which considers it as a crucial point in strategy of the further development of multimodal European network.

## **2. Literature review**

Wiegman et al (2008: 517) have conducted research in aim to understand and analyse the decision-making process of deep-sea container carriers when selecting a container port and when selecting a container terminal in the port in which to invest or from where to buy handling capacity. Next to service and cost factors a carrier's port choice behaviour might also be affected by the fit of the port in the trade, the requirements imposed by the alliance structure they operate in, by shippers/customers location and relations, by the strategic considerations of shipping lines, and by the arrangements between the shipping line and incumbent terminal operators. As well, most respondents indicated that port choice is far more important than terminal selection. For the terminal selection problem, speed, handling costs, reliability and hinterland connections are important criteria when the capacity and availability of terminal handling capacity is sufficient (Wiegman et al, 2008: 532).

In 2005 Banomyong was investigating the impact of port and trade security initiatives on maritime supply management. He remarks that, as markets are becoming 'globalized', trading opportunities can be improved by implementing security initiative in global supply chains. As well, an efficient and secure maritime supply chain can help build and sustain the competitiveness of internationally traded products by reducing transit time, reducing transport costs, and increasing reliability and cargo security (Banomyong, 2005: 12).

Notteboom and Rodrigue (2005) have analysed port regionalization as a new phase of port development. They remarked that in this phase inland distribution becomes of foremost importance in port competition, favouring the emergence of transport corridors and logistics poles. The same authors concluded that the port itself is not the chief motivator for and instigator of regionalization. Regionalization results from logistics decisions and subsequent actions of shippers and third party logistics providers. With a more efficient access to the hinterland, mainly through modal shift, port competitiveness is thus increased. Finally, they remarked the valuable role of port authorities who can play an important role through an active engagement in the development of inland freight distribution, information systems and intermodality. Direct and indirect forms of networking with nodes and market players constitute probably the most important role for port authorities in the regionalization phase, as gaining competitive advantage will more and more become a matter of going beyond the

port boundaries both in terms of physical investments and managerial capabilities (Notteboom and Rodrigue, 2005: 311). These changes have been profoundly spatial, affecting the functional and strategic relationships between producers, consumers, and the numerous transportation intermediaries that connect them. It is clear that these changes have implicated ports in more spatially extensive yet increasingly integrated systems (Hall & Jacobs, 2010: 1104).

Twrdy and Batista (2014) have conducted research in aim to examine some characteristics of container throughput in northern Adriatic ports in the period from 1990 to 2013 and also to identify competitive dynamics among them. The total container traffic in the northern Adriatic ports has increased in recent years but still represents a negligible proportion in total throughput of the European ports (Twrdy & Batista, 2014: 370). As well, the same authors remark new trends in maritime transport which favour the use of bigger and bigger container ships and the ports in the North Adriatic will have to join forces to attract shipping lines to this part of the Mediterranean (Twrdy & Batista, 2014: 370).

The key role of an integrated logistics system is to assist in the production, consumption and distribution, or the 'supply chain', of goods and services. This means that goods must be produced and delivered to the market (or customer) in the right quantity, required quality and at a competitive price. Integrated and seamless logistics can play an important role in facilitating global supply-chain processes (Banomyong, 2005: 3). Inland distribution is becoming a very important dimension of the globalization/maritime transportation/freight distribution paradigm (Notteboom & Rodrigue, 2005: 297). Trade is not possible without transport; therefore support for integrated transport will facilitate national and international trade by ensuring an uninterrupted and smooth flow of cargo and giving better control over the supply chain (Banomyong, 2005: 3). Maritime supply chains are structured by an integration of maritime services and transshipment functions to maritime distribution functions at hub centres (Frankel, 1999).

### **2.1. Port and competitiveness – terminology**

Ports deliver value to shippers and to third party service providers; customer segmentation and targeting is at the basis of a clearly specified value proposition; and the port captures value for itself and for the chain in which it is embedded. It is a place that handles ships and cargo with operational efficiency (Robinson, 2002: 241-243). The seaports are absolutely vital for trade and business development as the most important international traffic corridors and commodity flows through them dictating global trend of economic development. The ports, as part of the national transportation system, do not belong to any particular branch of traffic but are rather collection points of goods transported by various traffic routes and means of transportation. The role of modern seaports is particularly important for the general economic prosperity of a certain region (Hlača et al, 2010: 380).

The port is a third party service provider, intervening in the supply chains of individual firms. Port is one element or a firm among a number of firms in the import and export supply chain between producer and consumer. Ports are elements embedded in value-driven chain systems, in value chain constellations; they deliver value to shippers and other third party service providers in the value-driven chain; they will segment their customers in terms of a value proposition; and, in so doing, will capture value for themselves and for the chain in which they are embedded (Robinson, 2010: 250-252).



As a complex transport and economic system a seaport is made of three basic and mutually connected and interactive segments (Hlača et al, 2010: 382):

- natural or built-up and protected sea basin (harbour) suitable for cargo handling and other port operations,
- port hinterland connections with its catchment area, and
- port maritime connections with overseas destinations.

It can be said that every port has two sides, the one facing the land and the other facing the sea. Consequently, hinterland and maritime foreland are equally important for the operation of seaports (Hlača et al, 2010: 382).

When choosing a port, the most important criteria from a carrier's perspective are: availability of hinterland connections; reasonable tariffs; and immediacy of consumers (large hinterland). One source of power that some dominant actors are able to exercise is the ability to choose between ports; when they can, they are able to extract value from place-bound actors, in particular, labour, terminal operators, port authorities and some shippers (Hall & Jacobs, 2010: 1107). When selecting a traffic route, i.e. an adequate transit port, the distance is not always critical, but the choice rather depends on logistic criteria of the given optimal conditions and the quality of port services (Vilke, 2006: 86).

Port authorities, railroad operators, road operators, stevedores, shipping lines, depot operations, customs agents and numerous other actors exist only on the basis of trade demand; if there is no demand there is no movement and no requirement for a third party service provider (Robinson, 2002: 246). The development of rail hubs and barge terminal networks in the hinterland aims at contributing to a modal shift from road transport to rail and barge, and as such enhances the regionalization phase in port and port system dynamics. Inland terminals might transfer a part of the collection and distribution function inland away from the ports, thus preventing a further overcrowding of limited seaport areas (Notteboom & Rodrigue, 2005: 302). A large number of inland ports have become broader logistics zones, as they not only have assumed a significant number of traditional port functions and services, but also have attracted many related logistical services (Notteboom & Rodrigue, 2005: 304).

The port itself is not the chief motivator for and instigator of regionalization. Regionalization results from logistics decisions and subsequent actions of shippers and third-party logistics providers. There are three major steps that can be identified in the port development process: setting, expansion and specialization. The three phases depict port development processes objectively, especially in large traditional ports. The model remains a valid explanation of port development. However, the model has some weaknesses in view of explaining contemporary port development (Notteboom & Rodrigue, 2005: 298-306).

Firms sustain competitive advantage not simply on the basis of operational effectiveness; but also on the basis of strategic positioning that involves the creation of a unique and valuable position involving a different set of activities (Robinson, 2010: 247). Understanding the competition is crucial for the efficiency of the strategy which, in order to be successful, must be focused on the competition weaknesses aiming at neutralizing its advantages (Mezak et al, 2006: 9). A company's competitiveness on the global market is limited by its ability to respond to immediate market changes and keep its position. The idea of competitive advantage begins with the creation and distribution of value. A company is considered competitive when its influence determines the economic changes in the market where it operates (Baublys et al,

2003). The ability to defend its competitive advantage position along with the ability to successfully respond to the competitors is of great importance (Piccoli, 2005).

The maritime port sector is such a sector, in the sense that most critical technologies - the container, the cellular vessel, the straddle carrier, and double-stack trains - are now widely dispersed and standardized. It is a sector where competitive advantage often rests upon scale economies, especially as regards container ships and terminals. However, it is also a sector in which competitive advantage rests upon coordinated action, both within existing supply chains and between competing supply chains that share the same port-hinterland spaces and infrastructure (Hall & Jacobs, 2010: 1113). The development of global supply chains increased the pressure on the maritime haul, on port operations and, last but not least, on inland freight distribution. Inland accessibility as such has become a cornerstone in port competitiveness (European Conference of Ministers of Transport, 2001).

Actors in the port context include (Hall & Jacobs, 2010: 1107):

1. Those who directly transport the goods (ocean carriers, terminal operators, surface transporters, and labour),
2. Those who arrange goods movements (freight forwarders, shipping agents, and logistics providers),
3. The owners of the goods (termed shippers), infrastructure providers, regulators, and local polities.

Many of these actors are private operators seeking to increase the amount of value created through port activity, and to increase their share of value added. One source of power that some dominant actors are able to exercise is the ability to choose between ports; when they can, they are able to extract value from place-bound actors, in particular, labour, terminal operators, port authorities, and some shippers (Hall and Jacobs, 2010: 1107).

The importance of collective infrastructure to port innovation is another reason why public sector actors (port authorities and regulators) have remained responsible for most ports around the world, despite much rhetoric about privatization (Brooks, 2004). Also, moreover, environmental innovation has recently emerged as one of the most important arenas for competition between ports, especially those in major metropolitan areas in democratic societies (Hall & Jacobs, 2010: 1108).

Larger ships and terminals require considerable attention to infrastructure-related collective action problems in the port hinterland, while the rise of global supply chains requires constant attention to upgrading. Port actors need mechanisms that ensure inclusive and timely infrastructure planning and delivery, mechanisms that ensure mitigation and compensation for local externalities, and mechanisms to enforce stable rule-systems that discourage opportunism (Hall & Jacobs, 2010: 1113). The strengths of the port, its minimized weaknesses respectively, should be made the basis of every successful strategy (Mezak et al, 2006: 13).

In the port context where the product is a transportation service, innovation includes new technologies and organizational processes for handling cargoes that are embedded in global value chains. The four forms of value chain upgrading are all applicable in the seaport context (Hall & Jacobs, 2010: 1107-1108):

1. Process upgrading refers to improved efficiency of processes internal to the firm as well as to external relationships within the chain.
2. Product upgrading refers to the introduction of new or improved products or services.

3. Functional upgrading refers to value adding by changing the mix of firm activity through out- or in-sourcing various functions.
4. Chain upgrading refers to the successful insertion of the firm into more valuable chains.

Port competition also implicates institutional and functional levels of management (Bichou & Gray, 2005). The competitive ability of a seaport depends not only on its geographical position but primarily on the cargo handling rate inside a port system, where the promptness and capacity of shipments are particularly important (Hlača et al, 2010: 379).

## **2.2. Northern Adriatic Ports: Koper, Rijeka and Trieste**

World trade has changed in the last decade such that container traffic flows are oriented towards more parts of the European continent. The European container port system is not a homogeneous set of ports; instead it consists of several big ports (e.g., Rotterdam, Hamburg, Algeciras...) and a large number of medium and small ports. Northern Adriatic ports are located in the northern part of the Adriatic Sea, which penetrates deep into the middle of the European continent, providing the cheapest maritime route from the Far East, via Suez, to Europe (Twrđy & Batista, 2014: 363-364). The primacy of the Northern European ports over the Mediterranean and Northern Adriatic ports is best evident in the fact that, in the year 2014, the total container traffic in the ports of Koper, Rijeka and Trieste (1.372.048 TEU) accounted for only 11.16% of the container traffic realised in the port of Rotterdam.

On one hand, the ports of Rijeka, Koper and Trieste compete with each other, each accentuating their advantages, benefits and abilities to attract as much freight as possible. On the other hand, they hold the position of common competition, acting as a joint port system in relation to other traffic routes through where goods from Mid European countries are transported (Vilke, 2005: 85). Northern Adriatic ports (Rijeka, Koper, Trieste, Venice and Ravenna) are small ports. Each of these ports have different development plans but, in varying degrees, common hinterlands and costumers (Twrđy and Batista, 2014: 363). All the ports in the North Adriatic region are those most deeply cut into the European mainland, which is not the case with the rest of the Mediterranean ports. The advantages of these geographical locations are in the fact that the shipping companies, by choosing the North Adriatic ports as their ports of discharge, choose the most cost-effective routes, since the goods that are shipped by means of sea or rivers have the lowest transportation costs in relation to other means of transport (Bendekovic et al, 2014: 271).

The North Adriatic ports of Koper, Trieste-Monfalcone and Rijeka share similar geo-traffic advantages. The advantage of the North Adriatic ports over those in the North and the Baltic Sea is in the shortest sea route between Europe and the Middle and Far East (Markovic et al, 2003: 125). The North Adriatic ports represent the closest sea exit for the continental countries in their hinterland, the Middle European countries in particular: Hungary, Austria, Slovakia and the Czech Republic, but, in relation to the overseas trade with the afore mentioned markets east of the Suez Canal, they also attract attention of Serbia and Montenegro, southern Germany (Bavaria), Switzerland, southern Poland and western Ukraine. By navigating to the northern end of the Adriatic, cheaper route is used to reach the final destination and the usage of more costly land transport is minimized (Vilke, 2005: 87).

The role of the ports, as a hub of land and sea transportation routes as well as the trans-shipment places of cargo from one vehicle to another vehicle, significantly expands and

diversifies. For business and development opportunities of ports transverse Pan-European corridors that ensure the ports uniform and modern way to plug in the connection between Central Europe and Middle East Europe are vital (Kesic et al, 2010: 94-98). The near-by fifth Pan-European transport corridor provides a quick link to 500 million European consumers. Large commercial and industrial hubs like Vienna, Munich and Milan are just few hours' drive away (Twrdy & Batista, 2014: 364).

Table 1. Traffic in Northern Adriatic ports, 2008-2015

PORT	TYPE OF CARGO	2008	2009	2010	2011	2012	2013	2014	2015	Index 2015/2008
Koper	Liquid bulk	2.875.365	2.667.298	2.727.013	2.922.891	3.194.636	2.840.588	3.073.620	3.297.225	1,15
	Dry bulk	7.900.610	5.575.403	6.363.557	6.769.845	7.280.490	6.987.806	6.724.354	7.295.426	0,92
	General Cargo	1.468.723	1.418.124	1.445.631	1.383.354	1.438.833	1.659.405	1.643.552	1.475.076	1,00
	<b>Total throughput (Tons)</b>	<b>12.246.706</b>	<b>9.662.834</b>	<b>10.538.211</b>	<b>11.078.101</b>	<b>11.915.971</b>	<b>11.489.812</b>	<b>11.443.540</b>	<b>12.069.742</b>	<b>0,99</b>
	<b>Container traffic (TEU)</b>	<b>353.880</b>	<b>343.165</b>	<b>476.731</b>	<b>589.314</b>	<b>570.744</b>	<b>600.441</b>	<b>674.033</b>	<b>790.736</b>	<b>2,23</b>
Rijeka	Liquid bulk	6.364.164	6.030.822	5.623.427	4.887.749	4.042.771	5.085.459	4.882.695	6.595.537	1,04
	Dry bulk	3.653.617	3.094.462	2.254.858	2.269.178	2.243.288	1.247.353	1.981.504	2.154.493	0,59
	General Cargo	2.373.810	2.112.870	2.305.019	2.233.453	2.267.942	2.354.867	2.158.577	2.150.391	0,91
	<b>Total throughput (Tons)</b>	<b>12.391.591</b>	<b>11.238.154</b>	<b>10.183.304</b>	<b>9.390.380</b>	<b>8.554.001</b>	<b>8.687.679</b>	<b>9.022.776</b>	<b>10.900.421</b>	<b>0,88</b>
	<b>Container traffic (TEU)</b>	<b>168.761</b>	<b>130.740</b>	<b>137.048</b>	<b>150.677</b>	<b>171.945</b>	<b>169.943</b>	<b>192.004</b>	<b>200.102</b>	<b>1,19</b>
Trieste	Liquid bulk	37.268.454	35.025.452	36.208.303	35.229.638	35.967.976	41.992.066	42.400.894	41.286.761	1,11
	Dry bulk	1.805.533	1.541.324	1.634.998	1.720.095	1.778.471	986.614	790.057	1.607.232	0,89
	General Cargo	9.205.120	7.826.546	9.790.887	11.284.244	11.460.423	13.607.028	13.962.980	14.238.885	1,55
	<b>Total throughput (Tons)</b>	<b>48.279.107</b>	<b>44.393.322</b>	<b>47.634.188</b>	<b>48.237.977</b>	<b>49.206.870</b>	<b>56.585.708</b>	<b>57.153.931</b>	<b>57.132.878</b>	<b>1,18</b>
	<b>Container traffic (TEU)</b>	<b>335.943</b>	<b>276.957</b>	<b>281.643</b>	<b>393.186</b>	<b>408.023</b>	<b>458.597</b>	<b>506.011</b>	<b>501.222</b>	<b>1,49</b>

Source: calculated by the author based on the statistical data of the ports observed

If the data in Table 1 is inspected, one can conclude that only the Port of Trieste has achieved higher level of liquid, dry and general cargo traffic, as well as the container traffic, than the one in the year 2008. So, the container traffic in 2015 increased by 49%, while the level of liquid, dry and general cargo traffic was raised by 18%. On the other hand, the Port of Koper increased the container traffic by 123% in 2015 in comparison to 2008; but, the level of liquid, dry and general cargo still remained under the traffic level of 2008. From the ports in question, it can be observed that the Port of Rijeka recorded poorest results for the period. Thus, the container traffic in 2015 was higher by only 19% than in 2008 and the level of liquid, dry and general cargo traffic was 12% lower than the level in 2008. The positive aspect regarding the Port of Rijeka is that liquid, dry and general cargo traffic in 2015 increased by 27.4% compared to the year 2012 (before the membership in the European Union), and the container traffic went higher by 16.4%, which points to the conclusion that accession to the European Union had a positive effect on the traffic in the Port of Rijeka, both container and liquid, dry and general cargo traffic.

To make plans for the port strategy means to set the business operation on the course of the basic long-term objectives, bringing it into line with both, internal, material and intangible resources and external conditions of the environment (Mezak et al, 2006: 10). The North Adriatic ports are located in close proximity to each other and they hold a special position in the European ports system, operating in a relatively closed system in which the market and customers are limited and therefore the ports are forced to co-operate while they compete with each other at the same time (Twrdy & Batista, 2014: 364). The need for cooperation among the ports of Rijeka, Koper and Trieste lies in the fact that their geographical and traffic position has not yet been properly utilized, or their role in the traffic of goods in Middle

European markets is secondary in relation to North European ports. The ultimate goal of cooperation among the ports of Rijeka, Koper and Trieste should be the formation of the unique North Adriatic port system area (Vilke 2005: 105).

With organizing and implementing a regional railway carrier along the Northern Adriatic traffic route, many advantages could be gained which would, consequently, result in increasing the speed and lowering the costs of transport. By achieving a combined, or multimodal international traffic chain on the Northern Adriatic route from the Ports of Rijeka, Koper and Trieste to traffic nodes of Middle Europe, preconditions for a successful and competitive emersion on the European and world market would be determined (Vilke 2005: 108).

### **2.3. The Port of Rijeka**

The Port of Rijeka is the most important port in the Republic of Croatia, and also the biggest port on the Adriatic sea. The Port of Rijeka is a port of national interest opened to national and international public traffic; it is conveniently oriented toward the world's seaborne routes. The city of Rijeka provides the shortest connection either inland or sea way between Central and East Central Europe to overseas destinations. The North Adriatic traffic direction is the shortest way by which Europe is connected with the Mediterranean, the Suez Canal and the Strait of Gibraltar with the world seaports (Kos et al, 2010: 190).

Important characteristic of the Port of Rijeka is its closeness to the capitals of neighbour countries (Austria, Bosnia and Herzegovina, the Czech Republic, Hungary, Serbia, Slovakia...) while most of them are from countries with large overseas goods exchange. Due to Croatian accession to the EU on the 1 July 2013, the Port of Rijeka finally has equal market conditions as her major competitors and it will have possibility to enter new business transactions.

The development of every port depends to a large extent on the advantages of its geographical and traffic position (Hlača et al, 2010: 381). The geographical position of the Adriatic Sea, which cuts deeply into Central Europe, with the Rijeka Port basin deep enough to accommodate the biggest vessels, offers considerable possibilities and creates outstanding preconditions for traffic-economic assessment of a wider significance (Hlača et al, 2010: 379). Comparative advantage of the Port of Rijeka with respect to other North Adriatic ports is:

- Mooring of vessels with a draught up to 20 m, therefore capable of receiving new generation ships in terms of technical and technological achievements (Kos et al, 2010),
- The possibility of using the Sava-Danube-Rhine river route, which is not the feature of other North Adriatic ports (Bendekovic et al, 2014: 272).

The sea route between the Suez Canal and the Port of Rijeka in the northern Adriatic extends to a distance of only 1,254 km, while the routes to the ports of the North Sea match nearly three times the distance. Therefore, the navigation from the Suez to the ports of the North or the Baltic Sea is 10 to 14 days longer (one direction only). Distances from the Port of Rijeka to the Mid and East European ports are shorter than those from Koper or Trieste (Mezak et al, 2006: 17).

Unique disadvantage of its geo-traffic position is that majority of road and rail connections pass through the center of the town, as the Port of Rijeka is situated practically in the center of the City of Rijeka. There are three Pan-European corridors passing through Croatia: the B and C branches of corridor V, corridor VII and corridor X. The major traffic corridors for the Port of Rijeka are branch B of corridor V and corridor X. Highways connect Rijeka through

Slovenia with Austria (Salzburg) and Italy (Trieste); and with Hungary through Zagreb (Bendekovic & Vuletic, 2013: 75). Favourable geographical position near the important traffic corridors was degraded by the poor quality of traffic routes, their inadequate capacity and functional obsolescence of the port equipment and facilities (Hlača et al, 2010: 381). Long-term strategic development of the Port of Rijeka can be defined as opting for a port dislocated in the port basins specialized to handle different types of cargo, concession from the side of highly-motivated and quality operators capable of acquiring adequate quantities of cargo necessary for putting the modern and technically advanced harbor capacities to a maximum use (Mezak et al, 2006: 11).

For the development of Port of Rijeka, whose market-share in the port catchments area is a small one, it is necessary to work out a strategy suitable for companies with a small market-share. The small market-shares, if competently managed, can be as profitable as the large-ones. Taking a long-term view, the Port of Rijeka will not manage to increase its market-share unless bearing in mind the following (Mezak et al, 2006: 13):

- Reduction of prices is not a good solution for the increase of the market-share since the competition (Trieste, Koper) will do the same thing and this could only lead to a lower income of both the port and its associated industries.
- It is necessary to become aware of own strengths and create such market segments (market niches) where these can be successfully implemented.
- The available resources should be used for the realization of a small number of chosen cost-effective projects and business activities.
- It is not easy to make managers acting like that.

The evaluation of the Port of Rijeka's geographical and traffic position is of interest to the entire country, national economy and transport sector in particular (Hlača et al, 2010: 381). Long-term strategic development of the Port of Rijeka can be defined as opting for a port dislocated in the port basins specialized to handle different types of cargo, concession from the side of highly-motivated and quality operators capable of acquiring adequate quantities of cargo necessary for putting the modern and technically advanced harbor capacities to a maximum use. The port's long-term strategy planning is an absolute priority for a successful integration into the global economic trends. The strategic objectives and, through that, the business policy and its implementation can be set up only after a clear definition of the port vision and mission framework. The far reaching idea of a desired long-terms strategic development of the Port of Rijeka, in other words the port vision, can be defined as opting for a port dislocated in the port basins specialized for handling different types of cargo, given in concession to highly motivated and quality operators capable of acquiring the necessary quantities of cargo so that the modern and technically advanced harbor facilities can be put to a maximum use (Mezak et al, 2006: 11-20).

No adequate connection of the Port of Rijeka to its catchment area is possible without a modern rail and road traffic. The Port of Rijeka is connected to its hinterland by two railway lines constructed in the 19th century, in accordance with the then prevailing possibilities and standards (Hlača et al, 2010: 379).

Croatia should stimulate construction of the new railroads with modernization of the existing ones, focusing on the international transport corridors (Hlača et al, 2014: 382). For better utilization of prosperous geo-traffic position of the Port of Rijeka, it is necessary to modernize the Rijeka-Zagreb railway in the near future and also to build multipurpose Danube-Sava

canal. Favourable geo-traffic position is not sufficient to create a significant port hub. Key role in exploiting the advantages of geo-traffic position have measures of traffic and economic policy (Bendekovic & Vuletic, 2013: 76). Present condition of the Croatian railway infrastructure and capacity, especially the Rijeka traffic route, reveals their inadequacy to meet a more demanding volume and quality that freight transport will impose in the future. The modernization of the Rijeka-Zagreb railway section is particularly important for the promotion of railway traffic on the Rijeka-Zagreb-Central Europe direction. Only the construction of a level railway track Rijeka-Josipdol-Karlovac-Zagreb would create significant preconditions for the Port of Rijeka. In order to make significant improvements in the freight transport, it should increase its volume and safety by reducing the operating time (Hlača et al, 2010: 387-388).

### 3. Analysis of financial statements of the Port of Rijeka

Analysis was conducted on the base of two groups of indicators - safety indicators and activity ratios. The bases for analysis of the mentioned indicators for the Port of Rijeka were annual reports (balance sheet, income statement and cash flow statement) of the Port of Rijeka for the period from 2010 to 2016. In 2011, the Port of Rijeka has sold its proprietary share to the strategic partner on the Container terminal of the Port of Rijeka which had strong positive impact on financial result.

#### 3.1. Safety indicators

Safety indicators have been observed through liquidity ratios and leverage ratios. Liquidity ratios are used in aim to determine a company's ability to pay off its short term liabilities (Brealey et al, 2007: 460).

If the value of the current ratio, that shows a company's ability to pay short-term obligations from current assets (Zager & Zager, 2008: 248), is observed, it can be seen that in 2015 and 2016 its value is satisfactory and that in 2016 the Port of Rijeka was able to cover the liabilities 3,90 times greater than those it has. As well, all other analysed liquidity ratios have improved its value in 2015 and 2016, but, even though the value of **coefficient of current liquidity** is much higher in 2016 than in previous years, it is still not on satisfactory level due to the fact that its value should be more than 1 in order for company to be able to settle its current liabilities that run out of charge. In 2016, the Port of Rijeka was able to cover just 5.8% of its current liabilities.

Table 2. Liquidity ratios of the Port of Rijeka 2010-2016

	2010	2011	2012	2013	2014	2015	2016
<b>Current ratio</b>	0,792	1,358	1,309	0,971	0,283	5,010	3,903
<b>Quick ratio</b>	0,768	1,334	1,292	0,952	0,272	4,991	3,888
<b>Coefficient of current liquidity</b>	0,013	0,005	0,009	0,014	0,007	0,047	0,058
<b>Working capital (000 HRK)</b>	-16.840	33.983	25.359	-2.061	-71.822	219.791	169.594
<b>Long term liquidity ratio</b>	0,616	0,699	0,715	0,743	0,630	0,637	0,774

Source: authors calculation based on annual financial statements of the Port of Rijeka

**The value of quick ratio** that measures a company's ability to ensure certain amount of money in short period, in 2015 and 2016 indicates that the Port of Rijeka has improved managing of its inventories. After the unsatisfactory value of quick ratio in 2013 and 2014, its value has

been improved and in 2015 and 2016 was much higher than the satisfactory border of 1. As well, positive value of **working capital** in the last two observed years show that the Port of Rijeka is able to finance current business activities. Finally, the **long term liquidity ratio**, whose value should be less than 1, is at satisfactory level in all the observed years.

Leverage ratios can be used for defining how much company is in charge and whether there is possibility for new debt. Leverage ratios show whether the company is able to manage its current liabilities. Those ratios are related to the structure of sources of assets and represent how much assets are financed from own sources and how much from external sources (Brealey et al., 2007: 459).

Table 3. Leverage ratios of the Port of Rijeka 2010-2016

	2010	2011	2012	2013	2014	2015	2016
<b>Financial leverage</b>	1,498	1,400	1,362	1,311	1,606	1,215	1,196
<b>Coefficient of funding</b>	0,492	0,374	0,337	0,311	0,550	0,197	0,179
<b>Debt ratio</b>	0,32849	0,267	0,247	0,237	0,342	0,162	0,149
<b>Time interest earned</b>	1,269	24,522	1,828	1,643	-0,168	-0,695	1,252
<b>Indebtedness factor</b>	17,838	1,318	11,680	12,874	37,140	10,362	10,250
<b>Cover rate I</b>	0,835	0,956	0,944	0,914	0,704	1,307	1,212
<b>Cover rate II</b>	0,984	1,093	1,077	1,046	0,867	1,447	1,309

Source: authors calculation based on annual financial statements of Port of Rijeka

**Financial leverage** puts in relation balance capital and total asset. It is one of major leverage ratios as it defines whether it is valid to use external sources of funding until business activity realizes the rate of return higher than the weighted average interest rate on which it pays interest on loan capital (Orsag, 2003: 514). In table 3 it can be seen that its value was decreasing in all observed years, except in 2014. As well, the **coefficient of funding** that puts in relation total liabilities and owner's capital, is decreasing in all observed year (except 2014). It can be seen that in 2016 total liabilities of the Port of Rijeka constitute 17.9% of its capital.

**The debt ratio** reflects how many times total liabilities are bigger than total assets. For a company and especially for investors, it is desirable that value of debt ratio is lower. In the observed period its value was decreasing in all years, except in 2014. Due to its value of 0.149 in 2016 it can be concluded that the Port of Rijeka does not have large debts. **The time interest earned** defines how many times company can cover interest expense from gross income. In 2011 its value was extremely high as a result of high gross income. While in 2014 and 2015 its value was negative, in 2016 the Port of Rijeka can settle 1.25 times its liabilities based on interest expense. **The indebtedness factor** reflects how many periods are necessary for a company to settle its liabilities. The value from 2016 shows that the Port of Rijeka needs 10.25 years to pay all liabilities if the level of income is equal to this from 31/12/2016. **The cover rate 1** shows the rate between capital and long term assets, while the **cover rate 2** puts in relation capital enlarged for long term liabilities to long term assets. When its value is growing, then company's liquidity is increasing while indebtedness is decreasing. The value of both coefficients was much higher in 2016 than in 2010 and that implicates that liquidity of the Port of Rijeka is increasing.



In general, when studying the values of liquidity indicators and indebtedness as shown in Tables 3 and 4, it can be concluded that all the values are at acceptable levels, being significantly better than in 2010.

### 3.2. Activity ratios

Based on activity ratios, it can be concluded how many units of revenue are produced from each unit of total or part of asset. Activity ratios present us with information about the rapidity of asset circulation during the business activities (Brealey et al., 2007: 462).

**The total asset turnover ratio** that is calculated as a relation of total revenues and total asset is crucial activity ratio. As its value in 2016 was 0.243 it can be defined that the Port of Rijeka through one year inverts its total asset 0.24 times through total revenues. It is of particular concern that the level of this coefficient was lower in 2016 than in 2010. The same can be noticed in the current asset turnover ratio and the accounts payable turnover ratio. **The current asset turnover ratio** reflects that in 2016 the Port of Rijeka inverted its current assets just 0.785 times through total revenues.

Table 4. Activity ratios of Port of Rijeka 2010-2016

	2010	2011	2012	2013	2014	2015	2016
<b>Total asset turnover ratio</b>	0,357	0,520	0,308	0,307	0,364	0,243	0,243
<b>Current asset turnover ratio</b>	2,889	2,550	1,778	2,641	6,524	0,661	0,785
<b>Receivables turnover ratio</b>	5,828	10,559	5,570	5,805	5,100	6,629	7,116
<b>Accounts Payable Turnover Ratio</b>	5,426	4,349	6,30	4,745	2,657	3,758	3,376
<b>Inventory turnover ratio</b>	24,674	24,478	42,444	43,914	63,970	65,385	69,542
<b>Accounts receivables collection period</b>	62,6	34,6	65,5	62,9	71,6	55,1	51,3
<b>Accounts Payable Days</b>	67,3	83,9	58,0	76,9	137,4	97,1	108,1

Source: authors calculation based on annual financial statements of the Port of Rijeka

It is preferable that value of the **receivables turnover ratio** is higher than value of competitors. If a company can charge its receivables it has enough money for launching new businesses, that final influence on increase of value of total asset turnover ratio and current asset turnover ratio. Its value for the observed company is more than satisfactory. It can be seen that the value of this coefficient has increased in the observed period and that in 2016 it was 7.116. The value of **accounts receivable collection period** shows that the Port of Rijeka in 2016 needed 51.3 days to charge its receivables. It is encouraging that its value has decreased by 18% when comparing the values in 2016 and 2010. On the other hand, the **inventory turnover ratio** that represents how many times a company has ordered inventories from its suppliers, has improved its value in the observed period. If its value is much higher than the value of industry average it can be concluded that company has certain problems during the purchase of inventories. On the contrary, if the value of inventory turnover ratio is lower than the value of industry average, it is possible to have problems in business transactions with the clients. In 2016, its value was higher by 181% than in 2010.

#### 4. Conclusion

The seaports are absolutely vital for trade and business development as the most important international traffic corridors and commodity flows through them dictating global trend of economic development. The role of modern seaports is particularly important for the general economic prosperity of a certain region.

All the ports in the North Adriatic region are those most deeply cut into the European mainland, which is not the case with the rest of the Mediterranean ports. Northern Adriatic ports (Rijeka, Koper, Trieste, Venice and Ravenna) are small ports. Each of these ports have different development plans but, in varying degrees, common hinterlands and costumers. As these ports are located very close to one another, they have to cooperate, but, at the same time, they are competing for their market share. With organizing and implementing a regional railway carrier along the Northern Adriatic traffic route, many advantages could be gained which would, consequently, result in increasing the speed and lowering the costs of transport. By achieving a combined, or multimodal international traffic chain on the Northern Adriatic route from the Ports of Rijeka, Koper and Trieste to traffic nodes of Middle Europe, preconditions for a successful and competitive emersion on the European and world market would be determined.

The Port of Rijeka is the most important port in the Republic of Croatia, and also the biggest port on the Adriatic sea. It is a port of national interest opened to national and international public traffic. The significance of the port of Rijeka has been recognized by the European Union, which considers it as a crucial point in strategy of the further development of multimodal European network. Important characteristic of the Port of Rijeka is its closeness to the capitals of neighbour countries while most of them are from countries with large overseas goods exchange. Favourable geographical position near the important traffic corridors was degraded by the poor quality of traffic routes, their inadequate capacity and functional obsolescence of the port equipment and facilities. For better utilization of prosperous geotrafic position of the Port of Rijeka, it is necessary to modernize the Rijeka-Zagreb railway in the near future and also to build multipurpose Danube-Sava canal. Without that a favourable geotrafic position is not sufficient to create a significant port hub.

Considering that Croatia became the European Union Member state in July 2013, to the port of Rijeka - the biggest Croatian port - same conditions have been provided as to its greatest competitors (Koper and Trieste). In order to establish wheather the Croatian membership in the European Union has had a positive effect on the competitiveness of the port of Rijeka, it has been conducted analysis of financial statements for the period from 2010 to 2016 on the base of two groups of indicators - safety indicators and activity ratios.

In general, when studying the values of liquidity indicators and activity ratios it can be concluded that almost all observed ratios are at acceptable levels, being significantly better than in 2010. Exception are:

- coefficient of current liquidity. Even tough it is much higher in 2016 than in previous years, it is still not on satisfactory level due to the fact that its value should be more than 1 in order for company to be able to settle its current liabilities that run out of charge. In 2016, the Port of Rijeka was able to cover just 5.8% of its current liabilities.

- The total asset turnover ratio that is calculated as a relation of total revenues and total asset is crucial activity ratio. As its value in 2016 was 0.243 it can be defined that the Port of Rijeka through one year inverts its total asset 0.24 times through total revenues. It is of particular concern that the level of this coefficient was lower in 2016 than in 2010.
- The current asset turnover ratio and the accounts payable turnover ratio which level in 2016 was also lower than in 2010. In 2016 the Port of Rijeka inverted its current assets just 0.785 times through total revenues.
- Accounts Payable Days which value also increased in the observed period. While in 2010 Port of Rijeka needed 67.3 days to settle its accounts payable obligations, in 2016 it needed 108.1 which represent increase of almost 40%.

Finally, due to conducted analysis of traffic and financial statements for the period from 2010 to 2016 it can be concluded that Croatian membership in European Union had positive effect on the competitiveness of Port of Rijeka but still there is much space for further increase. Precondition for achieving even greater competitiveness is investment in modernization of the Rijeka-Zagreb railway in the near future as well in the building of multipurpose Danube-Sava canal. Those will enable positioning Port of Rijeka as a crucial point in the European multimodal network and will strongly impact on its traffic.

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# Public Policy

Carlos Jalali

This stream looks on the application of policies, and the difference between theories and applications within those policies. Governance is an important topic and experiences may relate to sectors has political science, education, health, social security, etc.

## Application of Lagrange Multipliers in the Analysis of the Stolper-Samuelson Theorem

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**Abstract:** Stolper-Samuelson theorem is basic theorem in international trade theory and provides analytical extension of Heckscher-Ohlin trade theory. This paper provides a theoretical proof of Stolper-Samuelson theorem by introducing Lagrange multipliers while the problem of income optimization with more restrictions is tackled with the help of Karush-Kuhn-Tucker's optimization conditions. Lagrange multipliers in model are wages and rents which represent shadow prices. The model analyzes the imposition of tariffs on an imported good and the impact of changes on factor prices. Assuming that technical coefficients of production and factor abundance are constant, optimum production remains the same. Final conclusions can be reduced to the claim that an increase in the price of one good leads to an above proportional increase of income of the production factor relatively intensively used in the production of good which price has changed, according to the Stolper-Samuelson theorem.

**Keywords:** Heckscher-Ohlin theory, Stolper-Samuelson theorem, Lagrange multipliers, tariffs

### 1. Introduction

Stolper-Samuelson theorem is one of the most important theorems in international trade theory and provides analytical extension of Heckscher-Ohlin trade theory. Stolper-Samuelson theorem stresses that an increase in the price of one good, along with other conditions unchanged, above proportionally increases the real income of production factor intensively used in the production of good whose price has increased. On the other side, the income of other production factor decreases below proportionally. Wolfgang Stolper and Paul Samuelson were the first to show how Factor proportions model best explains government actions in protectionist policy. Papers that followed resulted as a reaction to their model and created controversies related to the validity of a model. The authors confirmed the hypothesis that trade liberalization harms the income of labour owners if custom restrictions on labour-intensive products are lowered. Such income redistribution has its social and political connotations taking over the function of taxes and transfers.

Purpose of this paper is to test Stolper-Samuelson theorem with the application of Lagrange multipliers. Theoretical part of the paper relies on the Factor proportions model, also known as the Heckscher-Ohlin model. As long as the assumptions of a model are satisfied the latter yields logically valid conclusions. On the quantitative side Karush-Kuhn-Tucker optimization conditions are used in order to solve multiple restrictions problem. The term shadow prices in this paper refer to the prices of inputs also referred to as the Lagrange multipliers. Moreover, on the theoretical side some basic assumptions of Factor proportions model (Heckscher-Ohlin trade theory) are laid out in order to carry out logically valid conclusions. In our paper we used model approach, i.e. explaining the subject through model assumptions, theorem definition and initial conditions. Lerner-Pearce diagram serves as an analytical tool to interpret shadow prices, while the theory substantially uses linear algebra, Lagrange function and Karush-Kuhn-Tucker optimization conditions.

Expected results manifest in analytical breakdown of Stolper-Samuelson theorem through rigorous mathematical logic. The result of a tariff imposition in a small country in theory are Lagrange multipliers or shadow prices and are interpreted according to the definition of the Theorem. If the results of the analysis indicate findings inline with the definition of Stolper-Samuelson theorem, Lagrange multipliers can be accepted as a suitable instrument for analysis of customs imposition on redistribution of income holders, namely workers and capital owners. The paper does not contain empirical analysis or real data. Value added resulting from this research reflect in deeper understanding of how tariff imposition in a small country changes input prices, most notably wages and rent as prices of labour and capital. Although, there are many papers in this field, additional research about connection between Stolper-Samuelson theorem and Lagrange multipliers are lacking. Implications of this paper are theoretical, nevertheless they serve as a tool for policy makers in the analysis of international trade barriers such as tariffs, quotas and other similar trade instruments.

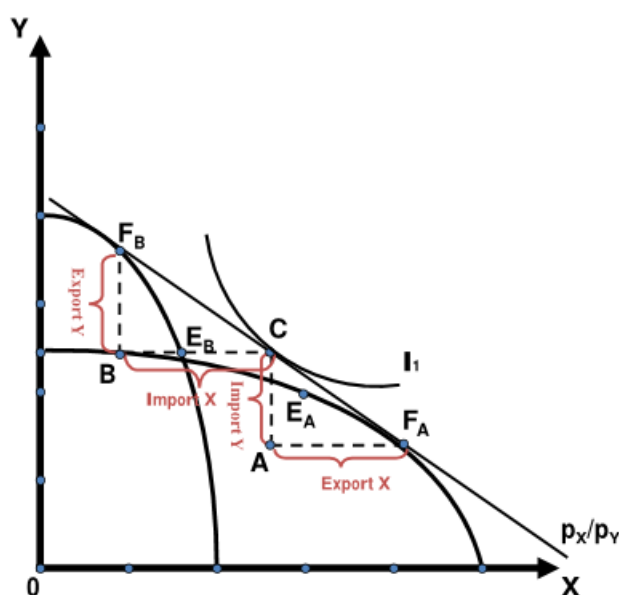
## **2. Theoretical background of the Stolper-Samuelson theorem**

Theoretical background of the Stolper-Samuelson theorem is closely related to the Heckscher-Ohlin theory of international trade. Heckscher-Ohlin theory of international trade is formulated by Swedish economists Eli Heckscher and Bertil Ohlin in early 1920's (Heckscher 1919, Ohlin 1933). It leans on David Ricardo's theory of comparative advantages and states that a capital-abundant country will export capital-intensive products while the labour-abundant country will export labour-intensive products. According to David Ricardo the source of comparative advantages lies in different relative labour productivity while comparative advantages based on Heckscher-Ohlin trade theory arises solely from relative factor abundance. Furthermore, Heckscher-Ohlin model assumes two factors of production, (labour and capital) and that is the main difference between these two classical theories of comparative advantages. The assumptions of the Heckscher-Ohlin's theory and Stolper-Samuelson theorem are derived from the base Heckscher-Ohlin theory and are according to Heckscher 1919 and Ohlin 1933 as follows:

- There are only two countries (country A and country B), two goods or products (X and Y) and two factors of production (labour (L) and capital (K)).

- Good X is labour-intensive while good Y is capital-intensive.
- Both countries use the same technology.
- Production functions are homogeneous with constant returns to scale.
- Differentiation in production is incomplete in both countries.
- Consumer preferences are identical in both countries.
- Goods and factor markets in both nations are perfectly competitive.
- There exists perfect mobility of factors of production within each country while cross-border factor mobility is not possible.
- There are no transportation costs, tariffs or other trade barriers.
- All production inputs are used Pareto optimally in both countries.
- Imports and exports between two countries are balanced.

As long as the assumptions of the model are met the conclusions resulting from the model will be accurate and consistent. The core of Heckscher-Ohlin theory is often explained with the following figure (Figure 1).

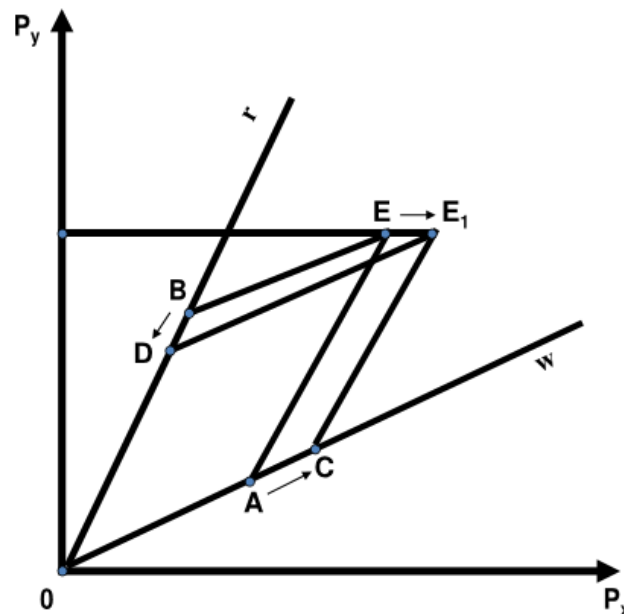


**Figure 1:** Heckscher-Ohlin theorem

Although countries have identical technology and same preferences in point C, minimal necessary condition for bilateral trade is relative difference between abundance of production factors between countries A and B. Stolper-Samuelson theorem is one of the key theorems in international trade theory, the theorem that has attracted the attention of economists, politicians and scientists across the globe for the last 70 years. Along with Heckscher-Ohlin Theorem, Factor price equalization theorem and Rybczynski theorem it represents the core of Heckscher-Ohlin trade theory. Stolper-Samuelson theorem is a fundamental microeconomic basis for analysis the impact of international trade on income from labour (wage) and capital (rent). The starting point of Stolper-Samuelson theorem is in Heckscher-Ohlin theory, namely the 2x2x2 model that encompasses two countries, two goods and two production factors.



First research in the field of trade policy and its influence on prices of production factors is associated with the work of Wolfgang Stolper and Nobel laureate Paul A. Samuelson in their seminal paper "Protection and Real Wages" from 1941. The aforementioned authors empirically tested the existence of causality between the trade policy decisions and consequential impact on factors' prices. Their analysis confirmed the argument that trade liberalization would be damaging to income owners if they reduce the customs restrictions on labour-intensive products. This redistribution of income has its social and thus political connotations, because it takes over the function of tax and transfers. We may wonder what the importance of this theorem is. Economic theory suggests that introduction of barriers to free trade has its costs and that the First Best Solution is free trade without any obstacles to trade. Second best solution concerns the situation where optimal solution can not be satisfied. Trade liberalization should, in theory, increase country's net social well-being. However, if partial interests are to be considered, domestic producers of country's protected imported good, which is the subject of liberalization, will have less and less profits. The question which arise is who takes the burden of trade liberalization and who reaps benefits from it. The answer is given by the Stolper-Samuelson theorem.



**Figure 2:** Stolper-Samuelson theorem

Stolper-Samuelson theorem emphasizes that the increase in the price of one good, along with other conditions unchanged, increases the real income of production factor which is intensively used in the production of good whose price has increased. In Figure 2 graphical representation of the Stolper-Samuelson theorem is given. According to Stolper and Samuelson theorem the rise in price of labour-intensive product X, other conditions unchanged, it will above-proportionally increase the price (income) of labour which is intensively used in production of product X while the income of capital will fall below-proportionally.

### 3. The proof of Stolper-Samuelson theorem and the use of Lagrange multipliers

The logic of Stolper-Samuelson theorem is explained, apart from descriptive methods, by strict mathematical logic, which implies knowledge of differential and matrix calculus. The following mathematical postulates are a shortened and purified version of the mathematical analysis of Stolper-Samuelson theorem (see Silberberg 1990 and Suranovic 2007).

Assume there are two countries in a perfectly competitive market (country A and country B). Both countries produce two goods (X and Y) with two factors of production (labour (L) and capital (K)). Country A is labour-abundant while country B is capital-abundant.

$$\left(\frac{K}{L}\right)_A \prec \left(\frac{K}{L}\right)_B \quad (1)$$

Good X is labour-intensive while good Y is capital-intensive.

$$\left(\frac{K}{L}\right)_X \prec \left(\frac{K}{L}\right)_Y \quad (2)$$

Production function is the function of both factors of production:

$$X = f^1(L_1, K_1) \quad (3)$$

$$Y = f^2(L_2, K_2) \quad (4)$$

where  $L_i$  and  $K_i$  are the quantities of production factors that are used in the production of goods X and Y.

Assume that production functions exhibit positive but decreasing returns to each factor ( $\frac{\partial f^i}{\partial L_i} > 0$ ,  $\frac{\partial f^i}{\partial K_i} > 0$  and  $\frac{\partial^2 f^i}{\partial L_i^2} < 0$ ,  $\frac{\partial^2 f^i}{\partial K_i^2} < 0$ ) and are characterized by constant returns to scale (CRS).

Model is constrained with fixed endowment of labour and capital which are assumed to be homogeneous and freely mobile between industries and four technical coefficients of production;  $a_{LX}$ ,  $a_{LY}$ ,  $a_{KX}$  and  $a_{KY}$ .

$$a_{LX}X + a_{LY}Y = L \quad (5)$$

$$a_{KX}X + a_{KY}Y = K \quad (6)$$

Taking into account model constraints quantities of production can be expressed as:

$$X_1 = \frac{L}{a_{LX}}, X_2 = \frac{K}{a_{KX}} \text{ and } Y_1 = \frac{L}{a_{LY}}, Y_2 = \frac{K}{a_{KY}} \quad (7)$$

The objective is to maximize national output (z):

$$z = p_X X + p_Y Y \quad (8)$$

subject to:

$$a_{LX}X + a_{LY}Y \leq L \quad (9)$$

$$a_{KX}X + a_{KY}Y \leq K \quad (10)$$

$$f^1(a_{LX}, a_{KX}) \geq 1 \quad (11)$$

$$f^2(a_{LY}, a_{KY}) \geq 1 \quad (12)$$

where  $p_X, p_Y, L$  and  $K$  are exogenous variables and  $z$  is endogenous variable.

This problem can be solved using Lagrange function and Lagrange multipliers. Lagrange function (Lagrange 1811) is given by expression (13):

$$\begin{aligned} MaxL = & p_X X + p_Y Y + w(L - a_{LX}X - a_{LY}Y) + r(K - a_{KX}X - a_{KY}Y) + \\ & + \lambda_1 [f^1(a_{LX}, a_{KX}) - 1] + \lambda_2 [f^2(a_{LY}, a_{KY}) - 1] \end{aligned} \quad (13)$$

where  $w, r, \lambda_1$  and  $\lambda_2$  are the Lagrange multipliers. Wage and rents are often referred to as the shadow prices of labour and capital.

Since this is a problem of optimization with multiple constraints, it can be generalized by using the Karush-Kuhn-Tucker optimization conditions (see Neralić 2008). Karush-Kuhn-Tucker optimum conditions were originally named after Harold W. Kuhn and Albert W. Tucker (Kuhn and Tucker 1951). It was later discovered that William Karush first stated these conditions in his 1939 master's thesis (Karush 1939).

The starting point of Stolper-Samuelson theorem is the equilibrium requirement of the company's zero profit where price is equal to marginal cost:

$$a_{LX}^* w + a_{KX}^* r = p_X \quad (14)$$

$$a_{LY}^* w + a_{KY}^* r = p_Y \quad (15)$$

Differentiating (14) with respect to  $p_X$  yields:

$$a_{LX}^* \frac{\partial w^*}{\partial p_X} + w^* \frac{\partial a_{LX}^*}{\partial p_X} + a_{KX}^* \frac{\partial r^*}{\partial p_X} + r^* \frac{\partial a_{KX}^*}{\partial p_X} = 1 \quad (16)$$

Rearranging the above equation it can be written:

$$a_{LX}^* \frac{\partial w^*}{\partial p_X} + a_{KX}^* \frac{\partial r^*}{\partial p_X} = 1 - w^* \frac{\partial a_{LX}^*}{\partial p_X} - r^* \frac{\partial a_{KX}^*}{\partial p_X} \quad (17)$$

It is possible to prove that  $w^* \frac{\partial a_{LX}^*}{\partial p_X} + r^* \frac{\partial a_{KX}^*}{\partial p_X} = 0$  giving equation (18) and differencing (15) giving expression (19).

$$a_{LX}^* \frac{\partial w^*}{\partial p_X} + a_{KX}^* \frac{\partial r^*}{\partial p_X} = 1 \quad (18)$$

$$a_{LY}^* \frac{\partial w^*}{\partial p_X} + a_{KY}^* \frac{\partial r^*}{\partial p_X} = 0 \quad (19)$$

The terms (18) and (19) can be solved as a system and displayed in matrix form

$$\begin{bmatrix} a_{LX}^* & a_{KX}^* \\ a_{LY}^* & a_{KY}^* \end{bmatrix} \begin{bmatrix} \frac{\partial w^*}{\partial p_X} \\ \frac{\partial r^*}{\partial p_X} \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \end{bmatrix} \quad (20)$$

Expression (20) can be solved using Cramer's Rule to get:

$$\frac{\partial w^*}{\partial p_X} = \frac{a_{KY}^*}{a_{LX}^* a_{KY}^* - a_{LY}^* a_{KX}^*} \quad (21)$$

$$\frac{\partial r^*}{\partial p_X} = \frac{-a_{LY}^*}{a_{LX}^* a_{KY}^* - a_{LY}^* a_{KX}^*} \quad (22)$$

where the term in nominator  $a_{LX}^* a_{KY}^* - a_{LY}^* a_{KX}^*$  is determinant of the first (left) matrix.

Final conclusions can be reduced to the claim that an increase in the price of one good leads to an above proportional increase of income of the production factor relatively intensively used in the production of good which price has changed, according to the Stolper-Samuelson theorem.

#### 4. Application of Lagrange multipliers in the analysis of the Stolper-Samuelson theorem

In this chapter is given an example of use of Lagrange multipliers in the situation of tariff imposition on a protected imported good Y in a country Utopia. Suppose that Utopia has 100 units of labour (L) and 80 units of capital (K). It is a small country that exports good X at a world price of 3 units and imports good Y at the same price. The assumption of the same price for both goods is taken due to free market conditions where prices of both goods are equal and amount 1. In this situation both countries can achieve larger welfare from trade.

$$\left( \frac{p_x}{p_y} \right)_A = \left( \frac{p_x}{p_y} \right)_B = 1 \quad (1)$$

Technical (input-output) coefficients of production are given in Table 1:

**Table 1:** Technical coefficients of labour and capital country Utopia

$i$	$X$	$Y$
$a_{Li}$	2	1
$a_{Ki}$	1	2

Technical coefficients of production are expressed in accordance with the factor intensity of labour and capital used in the production of labour-intensive and capital-intensive good. In graphical representations it is often assumed that the relationship between technical coefficients is in the ratio two to one (2:1).

First, we formulate goal function. The goal function is to maximize the national output ( $Q$ ) according to the expression (2):

$$\max Q = p_x x + p_y y \quad (2)$$

Constraint functions are determined from the available quantity of production factors ( $L$  and  $K$ ) and technical coefficients of production.

$$a_{Lx}x + a_{Ly}y \leq L \quad (3)$$

$$a_{Kx}x + a_{Ky}y \leq K \quad (4)$$

$$x > 0; y > 0 \quad (5)$$

The Lagrange function includes the goal function and two constraint functions in which Lagrange multipliers are wages ( $w$ ) and rent ( $r$ ). In this example wages and rent will represent shadow prices.

$$\max L = p_x x + p_y y + w(L - a_{Lx}x - a_{Ly}y) + r(K - a_{Kx}x - a_{Ky}y) \quad (6)$$

First order conditions are partial derivations of Lagrange function by  $x$ ,  $y$ ,  $w$  and  $r$ .

$$\frac{\partial L}{\partial x} = p_x - wa_{Lx} - ra_{Kx} = 3 - 2w - r = 0 \quad (7)$$

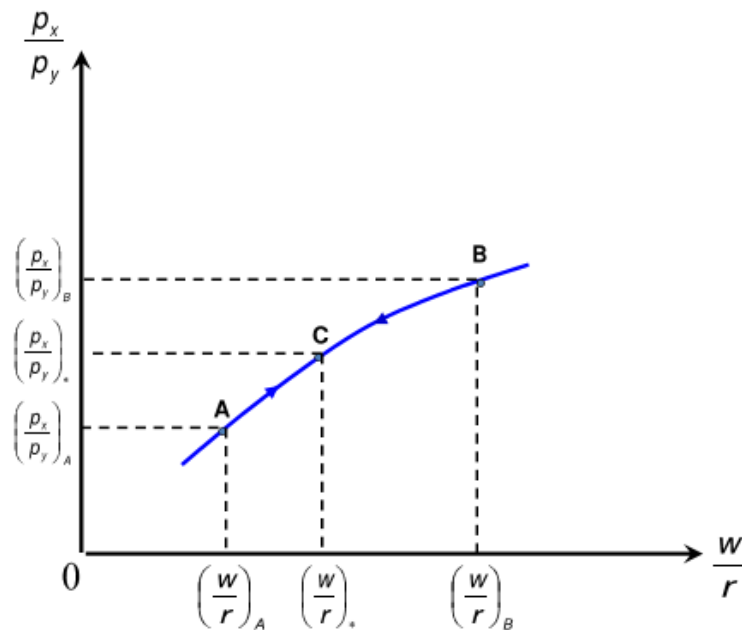
$$\frac{\partial L}{\partial y} = p_y - wa_{Ly} - ra_{Ky} = 3 - w - 2r = 0 \quad (8)$$

$$\frac{\partial L}{\partial w} = L - a_{Lx}x - a_{Ly}y = 100 - 2x - y = 0 \quad (9)$$

$$\frac{\partial L}{\partial r} = K - a_{Kx}x - a_{Ky}y = 80 - x - 2y = 0 \quad (10)$$

We calculate the optimum production quantities  $x^*$  i  $y^*$  with the existing constraints and the prices of production factors, wages and rents. The solution of system of 4 equations with

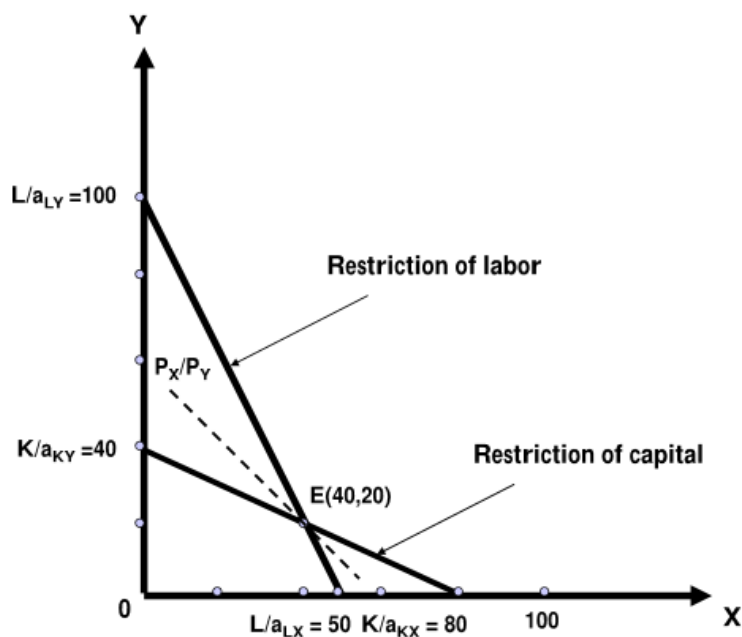
4 unknowns is:  $w = 1, r = 1, x^* = 40, y^* = 20$ . Since the prices of goods are equal, assuming free international trade and according to the Factor price equalization theorem, the factor prices and prices of goods should be equal (Figure 3).



**Figure 3:** Factor price equalization theorem

The free trade will equalize the prices of goods and production factors in countries A and B, despite the assumption of the Heckscher-Ohlin model that production factors are immobile across countries. We calculate national output at optimum production level:

$$Q^*(x^*, y^*) = p_x x^* + p_y y^* = 180 \quad (11)$$



**Figure 4:** Production restrictions in Heckscher-Ohlin model

Both production factors are fully used at optimum production quantities  $x^*$  and  $y^*$ . Lagrange multipliers  $w$  and  $r$  represent shadow prices (instead of  $\lambda_1$  i  $\lambda_2$ ). If the use of labour in production increases for a single unit or a single worker (from let us say 100 to 101), then the maximum cost that management is willing to pay for that worker (the marginal cost of labour) is one unit. Analogously, the same can be proven with one unit increase in capital use (the opportunity cost of one unit of capital).

In the case of imposition of import duty ( $t = 33\%$ ) on good Y the domestic price of this good in country Utopia will be changed from  $p_y = 3$  to  $p_y \cdot (1 + t\%) = 3 \cdot (1 + 0.33) = 4$  price units.

The goal function has been changed

$$\max Q = p_x(1 + t\%)x + p_y y \quad (12)$$

while the restriction functions remained the same

$$a_{Lx}x + a_{Ly}y \leq L \quad (13)$$

$$a_{Kx}x + a_{Ky}y \leq K \quad (14)$$

$$x > 0; y > 0 \quad (15)$$

Lagrange function is expressed as:

$$\max L = p_x(1 + t\%)x + p_y y + w(L - a_{Lx}x - a_{Ly}y) + r(K - a_{Kx}x - a_{Ky}y) \quad (16)$$

The first order conditions are the partial derivations of the Lagrange function by  $x$ ,  $y$ ,  $w$  and  $r$ .

$$\frac{\partial L}{\partial x} = p_x - wa_{Lx} - ra_{Kx} = 3 - 2w - r = 0 \quad (17)$$

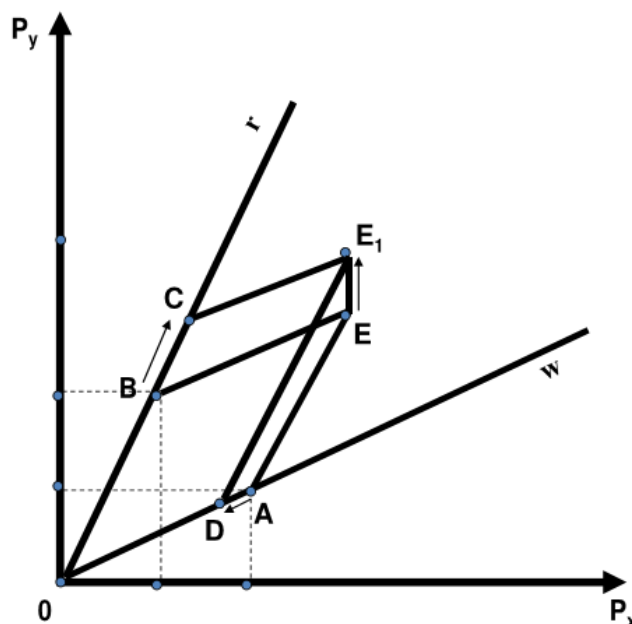
$$\frac{\partial L}{\partial y} = p_y - wa_{Ly} - ra_{Ky} = 4 - w - 2r = 0 \quad (18)$$

$$\frac{\partial L}{\partial w} = L - a_{Lx}x - a_{Ly}y = 100 - 2x - y = 0 \quad (19)$$

$$\frac{\partial L}{\partial r} = K - a_{Kx}x - a_{Ky}y = 80 - x - 2y = 0 \quad (20)$$

The solution of system of 4 equations and 4 unknowns is:  $w = \frac{2}{3}$ ;  $r = \frac{5}{3}$ ;  $x^* = 40$ ;  $y^* = 20$ .

Since the technical coefficients of production has not changed nor the quantity of production factors, the optimum value of the production of goods X and Y will remain the same ( $x^* = 40$ ;  $y^* = 20$ ).



**Figure 5:** The increase in price of good Y in the Stolper-Samuelson theorem

The imposition of import duty on capital-intensive good Y has protected the owners of capital as a factor that is more intensively used in the production of good which price has changed. For this reason the employer (management) will be willing to pay a below proportional lower amount of funds for the additional worker that is  $\frac{2}{3}$  price units in comparison with one price unit before the import duty imposition while the earnings from capital will rise above proportionally on  $\frac{5}{3}$  price units because Y is protected good.

Lagrange multipliers can be accepted as suitable instrument for analysis of customs imposition on redistribution of income holders, namely workers and capital owners. Moreover, researchers and scholars in the area of international economics could benefit from the paper as it defines the theoretical base for the empirical research in trade policy and public policy as well. Limitations of the analysis are related to strict assumptions of Stolper-Samuelson theorem that do not apply in real economy.

## 5. Conclusion

The aim of the paper is to test the Stolper-Samuelson theorem using Lagrange multipliers. After the theoretical background of the Stolper-Samuelson theorem the proof of Stolper-Samuelson theorem and Lagrange multipliers is presented. The problem of income optimization with multiple restrictions is tackled using Karush-Kuhn-Tucker's optimum conditions. Lagrange multipliers in the model are wages and rents which represent shadow prices. An example of Lagrange multipliers application is given in the situation of tariff



imposition on a protected imported good Y in a country Utopia and consequently impact on factor prices. Since the technical coefficients of production has not changed nor the quantity of production factors, the optimum value of the production of goods X and Y remained the same. The imposition of import duty on capital-intensive good Y has protected the owners of capital as a factor that is more intensively used in the production of good whose prices have changed. For this reason the employer (management) will be willing to pay a below proportional lower amount of funds for the additional worker that is  $\frac{2}{3}$  price units in comparison with one price unit before the import duty imposition while the earnings from capital will rise above proportionally on  $\frac{5}{3}$  price units because Y is protected good. Final conclusions can be reduced to the claim that an increase in the price of one good leads to an above proportional increase of income of the production factor relatively intensively used in the production of good which price has changed, according to the Stolper-Samuelson theorem.

It can be concluded that Lagrange multipliers can be accepted as suitable instrument for analysis of customs imposition on redistribution of income holders, namely workers and capital owners. Moreover, researchers and scholars in the area of international economics could benefit from the paper as it serves as the theoretical base for the empirical research in trade policy and public policy as well.

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# A Framework for Developing Sustainability Index for Ready-made Garments Sector in Bangladesh

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**Abstract:** Sustainability is a burning issue in today's corporations. In one hand it is providing the companies with the comparative advantage in business, on the other hand, it is helping all other stakeholders (including ecosystem) to receive their share. The issue of sustainability is very crucial for the industries where government regulations are not that strict or not imposed properly. Ready-made garments (RMG) sector of Bangladesh is one such industry. It brings more than 80% of export earnings for Bangladesh and employs more than four million people but it lacks strict monitoring of sustainable development. To assess and monitor sustainability a proper index has to be developed. This research serves as the primary step to developing a sustainability index for Bangladesh's RMG sector. Based on extensive in-depth literature review this research comes up with a framework for sustainability index. Both sustainability and RMG industry literature are considered as this sector has some unique characteristics. First of all, a working definition is established by reviewing existing definitions of sustainability; and then dimensions of sustainable development and variables of those dimensions are determined. Later from the findings of this literature review, a model is developed which is the framework as mentioned above. Based on findings and limitations of this research few further research are suggested at the end of this paper.

**Keywords:** Sustainability, index, Ready-made garments, Bangladesh

## 1. Introduction

From the dawn of civilization, human beings have been trying to uplift their circumstances. We, the modern civilized people, are the result of that relentless effort. We gained tremendous technological advances which made every aspect of our life easy and comfortable. Agricultural development bringing multiple crops to feed our people, industrialization helping hundreds of thousand people to employ, modern transportation system reduces the distance significantly, communication system let us communicate with anyone from any corner of the world, current drugs healing diseases which were beyond our imagination, TV, cooling/heating system, other entertainments making our lives enjoyable. In other words, development brought everything to live and enjoy our lives.

Roughly every twenty years worlds' economy is doubling, the population is doubling every half century, but natural resources are not growing at all (Meadows, 1998). But on the process of developing ourselves, we are exploiting natural resources, which endangered the ecosystem of the world. Development is a continuous and indispensable process, a fact that

we cannot deny. Now, the question is how we can continue our development process without doing any harm to the ecosystem and healthy social life. To find out the answer to these issues the term "sustainable development" or "sustainability" came into the scene. Nowadays biggest businesses of the world, such as Toyota, Honda, GE, Puma, Unilever and so on are keen to transform their business into green ones as without any doubt they know the major issues of the future business world (Benn, Dunphy, & Griffiths, 2014).

To proceed to sustainable development, we need to measure unsustainability first. To measure, we need to have proper indicators. As the nature of change is not same throughout the world, it is hard to frame common sets of indicators for all. Since governments of the world and the UN are mainly urging for the sustainable development, most of the measures have been developed to assess the sustainability of national, regional or communal level. Although some frameworks included "institutional" level assessment as the UN directed (UNCSD, 2001), far less work has been done to assess sustainability at the organization level (Veleva & Ellenbecker, 2000). Thus, author of this paper builds a framework for the sustainability of a specific sector of a specific country, where such development has become urgent.

### **1.1 Problem Statement**

In the late seventies, export-oriented apparel industry or readymade garments industry (RMG) started its journey in Bangladesh. By the help of guaranteed customer through Multi-Fibre Agreement (MFA) of GATT, some entrepreneur took the opportunity to boost their business and government of Bangladesh helped them duly at that time. In the four decades of the journey, RMG sector becomes leading export earning sector of the country, contributing almost 80% of the total export. It showed a remarkable growth in the export market from US\$ 12 million in 1984/85 to US\$ 21.5 Billion in 2012/13. Currently, there are around 4500 big, medium and small garments industries and almost four million people working (Salam & Mclean, 2014).

Although the country has seen booming growth of the industry, development of the economy and workforce, some issues also observed along with this development. Exploitation, social degradation, environmental pollution and so on are the residuals of this development. As this sector proved imperative for the economy and employment of this overpopulated country, survival and sustainable development of this sector has become a burning issue.

Furthermore, there is a new trend of "sustainable fashion" all over the world, especially in the developed countries, which are the major buyer of RMG products of Bangladesh. The term sustainable fashion defined as the production and distribution of clothes/garments following fair trade principles, which is environment and labour friendly as do not use hazardous chemical and other harmful materials, do not exploit labourers, follow ethical code of conduct and use recycle material as much as possible (Fletcher, 2008; Joergens, 2006). Hence, sustainable fashion covers both ethical (sweatshop- free fashion) and environmental (green fashion) aspects of sustainable development. Sustainable fashion and eco-labelling have become a new competitive advantage of this industry. Therefore, to survive in the race, the industry must address this issue. Yip (2010) pointed out five criteria for sustainable fashion, such as locally made, ethically produced, using recycled materials, using organic and naturally processed materials and lasts long. Therefore, sustainable fashion concept addresses all the criteria of sustainability of RMG sector.

## 1.2 Purpose of the Study

The primary objective of this paper is, as the title suggests, developing a sustainability index for RMG sector of Bangladesh. Therefore, the first concern of this article is to figure out RMG industry specific sustainable development (SD) indicators of all three aspects of SD, economic, environmental and social, based on previous literature.

As existing sustainable development scales do not provide unidirectional assessment or “simple measurement of SD” an effort has been given to create a simple but representative scale and assessment framework for SD in the ready-made garments sector of Bangladesh.

So, the research question of this research is:

- How could existing sustainability assessment methods be mapped to understand more about sustainability and to compare and contrast them to develop a representative index for RMG sector of Bangladesh?

Therefore, the research objective derived from the above-mentioned research question is:

- Develop a simple and readily usable sustainability index and methodology by comparing and contrasting existing as well as proposed sustainability assessment methods. As this paper is dealing with a particular sector of a country, more insight into the assessment tools is needed to segregate and modify them accordingly.

## 1.3 Research Methods

This research based on in-depth literature review of two research streams. In one hand literature search is conducted by the combination of terms such as sustainable development, corporate sustainability, TBL, corporate social responsibility, and so on. On the other hand, literature containing keywords such as ready-made garments industry, sustainable fashion, green fashion, clothing business and so on are also reviewed. Based on this extensive literature review a basic framework has been proposed along with indicators and indexes.

## 2 Literature review

### 2.1 Defining Sustainable Development

The term sustainable development literally means to be able to maintain progress/development over time. But it was interpreted differently in different sectors to fit their purpose. By early 1990's more than seventy definitions of sustainable development were discovered by Holmberg and Sandbrook (1992). Although, there are numbers of definition for this term, Boston Consulting Group (BCG) found that two-thirds of sustainability experts, who are mainly business leaders, define sustainable development using Brundtland Commission and TBL definition (BCG, 2009).

The word sustainability and sustainable development are used synonymously in this research like most of the scholars in this field. Either similar or not, both the term are related to development, now the question arises, what consists of development? Although development mainly refers financial development and growth in the resources; people are considered the major field to develop. As economist E. F. Schumacher in his famous book *Small is Beautiful*

argues, "Development does not start with goods: it starts with people and their education, organization and discipline. Without these three, all resources remain latent, untapped, potential" (pp. 140). This statement fits best in the field of HRD, as HRD scholars, people are the primary concern, and without developing them, any development comes to no use. In that case, we need a proper definition of sustainability for HRD. As HRD scholars are concerned about this issue for the last couple of years, we can have a handful of them. According to Docherty et al. (2002), sustainability encompasses three levels individual, organizational and societal. Sustainability at one level cannot be achieved by exploiting others because all these levels are closely related to each other and the organization's stakeholders (i.e. personnel, customers, owners, and society).

Some of the most used and related definition of sustainable development are explained below:

### **2.1.1 Brundtland commission**

In 1987 United Nations formed a commission named Brundtland Commission to assess the upcoming sustainability crisis of the world. That commission submitted a report titled "Our Common Future," where they defined sustainable development which is the most frequently used definition of SD (IISD, 2013). It states,

"Sustainable development is a development that meets the needs of current generations without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of 'needs', in particular, the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs." (WCED, 1987, pp.41)

Since Brundtland Commission's report, there are few shifts came in the SD literature; one noticeable shift could be changing focus from needs of poor to the environmental development and overall social wellbeing. Barkemeyer et al. (2011) explain this change as the result of growing concern over the issues like climate change.

### **2.1.2 Triple Bottom Line**

Triple Bottom Line (TBL) is the commonly used sustainability definition among corporations. John Elkington in his famous book *Cannibals with Fork* (1997) expresses concern about the misunderstanding of the companies of sustainable development from Brundtland Commission Report (Our Common Future). He also points out the lack of direction for the corporations to contribute towards sustainable development. Therefore, he came forward with the issues organizations need to address for sustainable development. He mentioned three dimensions of sustainability as three bottom lines of the sustainability process, which are interdependent. Bottom lines are compared to as moving continental plates as three dimensions fluctuate independently and by some other forces like political pressure (Elkington, 1997).

Sometimes TBL is compared with 3Ps (Profit, Planet, and People) and balance scorecard (The Economist, 2009) as an accounting tool to measure and report sustainability.

### **2.1.3 Sustainable fashion**

As this research focuses on garments industry, a look at the definition of sustainability in the fashion industry is also important. Sustainable fashion has become a new trend nowadays. People tend to buy clothes which contain an eco-label. Sustainable fashion can be defined as clothes come through a process which does not exploit labor (sweatshop), does not use chemicals and materials which are harmful to nature and human, follows ethical standards, uses recycled materials and lasts long (Shen et al., 2013, Joergens, 2006).

### **2.1.4 Corporate Social Responsibility (CSR)**

There is an unwritten or untold agreement between business and society. Businesses are expected to supply goods and services needed to the society by using scarce resources efficiently. In return, companies earn a profit, and there is no conflict between making the profit by the business and using the available resources of the society. But the problem arises as there is no certain measure to balance between these two activities. When profit-seeking surpasses social well-being or profit comes at the cost of long-term social damage there creates an imbalance. To rebalance this society-business relationship, the term CSR came into the scene. So, in short, CSR is a commitment from the business that their current profit objective would not come at the cost of damaging society in the long run (Cadbury, 2006).

There are numerous definitions of CSR and yet to find one accepted by all. Generally, CSR is defined as the voluntary activities of integrating social and environmental concerns in business operations by corporations (CoEC, 2001). Interestingly while defining CSR World Business Council for Sustainable Development emphasizes on the voluntary commitment by the organizations to improve the quality of social life (WBCSD, 1999). Whatever the definition the scholars are agreed on one point that CSR is a voluntary and optional activity of the businesses. Mostly, this is not abiding by the law; hence, the organizations are not obliged to follow any standard set of CSR activities.

### **2.1.5 Corporate Sustainability**

Primarily the term corporate sustainability coined to indicate sustainable development in the corporations. Hence, the definition of Brundtland Commission modified to fit corporations need. Adopting Brundtland commission's definition corporate sustainability is defined as meeting demand/needs of current stakeholders without compromising (the ability to meet) needs of future stakeholders (Dyllick & Hockerts, 2002; Artiach et al., 2010). Here stakeholders may include shareholders, employees, clients, local communities, suppliers, and so on (Dyllick & Hockerts, 2002).

But unlike national sustainability, corporate sustainability extended its area by adding some other ethical and management consideration. Suzanne, Dunphy and Griffith (2014) in their famous book "Organizational Change for Corporate Sustainability" considers ecological sustainability, CSR, leadership, community and so on in corporate sustainability.

## 2.2 Sustainability and the Ready-made Garments Industry

To develop sustainably, all the role players in the society has to take part actively as everyone has their responsibilities. Some authors (such as Deutz, 2009; Hoppe & Coenen, 2011) classify these role players into three major groups, government, consumers, and producers. This research focus on the producers' side, hence, the role of corporations would be discussed here.

Corporations have a major responsibility in the sustainable development of the society; their part in this process is regarded as their sustainable development. It comes in the form of reducing negative impacts of emission, exploitation of natural resources, bad practices in financial activities, unhealthy employee treatment and so on. Some argue that corporations' responsibility is not only reducing/ eliminating negative activities but also turned them into positive ones (Elkington, 1994; Hardjono & de Klein, 2004).

Industrial sector needs to take corporate sustainability seriously as it is blamed for being the major source of environmental and social degradation. Corporations have to address this responsibility by assessing and reporting the social and ecological impact of their day to day activities (Azapagic 2003; Azapagic and Perdan 2000). It is also necessary for their own development as the recent studies suggest that the number of the companies regularly report progress in sustainable development has increased geometrically (Hubbard 2009; KPMG 2011; Lozano and Huisingsh 2011; Schneider and Meins 2012). In 1993, when the world was literally waking up from a long sleep, only one out of ten top companies reports their corporate responsibility as revealed in the first KPMG survey of Corporate Responsibility Reporting. After twenty years, in December 2013, KPMG survey reports that 71 percent of the top listed companies report corporate responsibility, which is almost three quarter. The rate of reporting has increased in Asia Pacific zone more than any other part of the world, within two years the rate grew by 25 percent.

As being sustainable becomes a new trend all over the world, consumers are being conscious gradually about this issue. Boston Consulting Group (BCG) in their 2014 report states that sustainability is a new consumer value, especially among the luxury customers. To meet the demand of sustainability-aware customers, business should focus on sustainability issues. Like food industry, where the concept is well established and widely accepted, brought organic food to meet conscious customers need, and it has become a mainstream activity of the industry (Ritch, 2014). Eco-labelling is a similar concept in the fashion industry. People tend to buy eco-labelled clothes as they feel the responsibility towards environment and society. Definition of sustainable fashion has mentioned above. Since the term and its measurement is somewhat ambiguous, companies define and measure sustainability at their convenient way (BCG, 2009). As a result, the best practice of sustainability depends on few factors such as the type of product, organization structure, customer mindset and so on. To find the solution Joergens (2006) suggested companies should provide information to the customer how to choose the sustainable product. Although it has become a new trend in the fashion industry, there is no set standard from any side.

## **2.3 Dimensions and variables of Sustainable Development**

Sustainable development consists of development in three major areas, economic, environmental and social. From the Brundtland Commission report to the current time, researchers rarely deny the reality of adding these three in sustainable development. Later Elkington (1998) in his famous book “Cannibals with Forks: The Triple Bottom Line of 21st Century Business” brought the term triple bottom line (TBL), which gave the ground for these three dimensions of sustainable development. In these study author focused on the development of all three areas simultaneously.

Each of the three dimensions has several variables, the number of variables varies author to author or context to context. Some variables are industry specific, and some are general (RobecoSam, 2013). Here some variables are chosen which are suitable for Ready-made garments sector and accessible in Bangladeshi context.

### **2.3.1 Economic dimension**

The main objective of the profit oriented businesses organization is to earn money from the business and survive. The Caux Round Table believed that surviving is not the sufficient goal of the business rather business should always be viable and in good economic health (CRT, 2009). This dimension of sustainability is mainly involved in the production and distribution of goods and services that will help to upgrade the standard of living (Schmidheiny, 1992). The Economic dimension of sustainability is closely related to the social and environmental aspect (WECD, 1987). For example, people looking for basic survival elements such as food, clothing, and shelter will use the natural resources to fulfill their current needs at the cost of long-term destruction of the natural environment. And a society that is not able to provide economic security to its citizen ultimately compromise its health and well-being (WBCSD, 2002). That means in this dimension of sustainability, variables deal with bottom line and relate to the flow of money.

For the purpose of this paper author found some compatible economic variable both from general and sector specific pool, such as:

#### **2.3.1.1 Risk and crisis management**

Risk and crisis management is an important indicator of the economic dimension of sustainable development. Economic dimension does not only focus on financial growth or better performance but also focus on the long-term stable growth which consists of the elements like the ability to recover quickly, financial backups and so on (RobecoSAM, 2013). Areas to consider during risk and crisis management could be as follows:

- Insurance against natural and other disasters
- Basic coverage against income crisis
- Safety net during the event of market crisis

ISO defines the risk as the mixture of probability and consequences of an event (ISO, 2009), that indicates the chance of occurrence of some particular event and result of that. There are



several types of risks in the organization, but those can be categorized into two major groups such as strategic level and operational level risks (Drennan and McConnell, 2007).

On the other hand, crises could be defined as a situation requires a rapid response, but it should not be confused with emergencies. Unlike emergencies, crises pose a threat to the existing system even sometimes dilemma in decision making (Borodzicz, 2005).

### **2.3.1.2 Compliance**

Compliance describes the ability of an organization to act according to order, set of rules or request. Compliance can be either external rules that are imposed upon an organization as a whole or internal systems of control that are imposed to achieve compliance with the externally imposed rules. In the real world, it means both. Countries like Bangladesh, where anti-corruption laws are not properly implemented, companies are exposed to reputational and legal risks. Evidence of corrupt or illegal practice can result in exclusion from contracts financing authorities, international buyers, and overall international consumers.

Literature suggest that most of the garments factories in Bangladesh do not follow social and environmental regulations properly; as a result disallowing labour unions, unfair labour treatment, delaying salary payments, unhealthy working condition, disposal of hazardous waste in the public places and so on are very common occurring here (Rahman, et al., 1999; ILO, 2004; Khan, 2006).

### **2.3.1.3 Supply chain management**

Supply Chain is defined as "A set of three or more entities (organizations or individuals) directly involved in the upstream or downstream flows of products, services, finances and/or information from a source to a customer" (Mentzer et al., 2011, pp. 4). From the light of this definition supply chain management is defined as the coordination of business functions within any particular company and across the businesses within the specific supply chain to improve performance of both company and supply chain in the long run (Mentzer et al., 2011). Supply chain even can exist without managing it; each component of the supply chain works as an individual entity.

Outsourcing of production, services or business processes comes with outsourcing corporate responsibilities and corporate risks. Hence, the companies need to find strategies to manage the associated risks and opportunities which are not same as in-house production risks and opportunities. Furthermore, the company is in need of minimizing costs and time of delivery to satisfy the customers and increase profitability without negatively impacting the quality of the product or at high environmental or social costs.

This variable aims to identify sustainable supply chain management as an opportunity to improve long-term financial performance by the garments factories.

### **2.3.2 Environmental dimension**

Ecosystems are believed to have limited regeneration capacity and our regular activities (including business, personal and so on) have every chance to impact the environment negatively such as eroding land, air, water (Bansal, 2005), decreasing biodiversity,

deforestation, toxic spill (Doering *et al.*, 2002) and so on. So, the variables in this dimension should represent the measurement of the consumption and pollution of the natural resources and perception/awareness about that. Ideally, the variables have long range history of availability and could measure the impact of specific project or industry on the environment. Variables include here are:

### **2.3.2.1 Environmental Management System (EMS)**

As the concern over sustainable development growing all over the world, environmental management system became more and more important day by day. The customers nowadays are environment conscious; so, an environment-friendly tag on the product can change the game (Thomas, 2001).

Environment Management System (EMS) is believed to be one of the most used approaches to address environmental bottom line. Elements of EMS include setting up environmental policy with objectives and targets, adopting program with dateline to implement those goals, measuring and evaluating the effectiveness of the program and reviewing it time to time to match the program with organizations operation (Tibor and Feldman, 1996). We need to keep in mind that EMS is a process standard or measure not performance standard.

### **2.3.2.2 Energy use and emission to air**

Direct energy can come from sources including fossil fuels (e.g., coal, petroleum/oil, natural gas) burned on-site to generate electricity, steam, or heat. Emission to air makes the environment of the locality polluted by creating smoke, smog, acid rain, respiratory problem, blackening the buildings and so on. There are some common pollutants such as sulfur dioxide (SO<sub>2</sub>), Carbon Monoxide (CO), nitrogen oxides (NO<sub>x</sub>) and particulate matter (pm10) (Cole *et al.*, 2004). Electricity generation by power stations is the primary source of SO<sub>2</sub>, whereas NO<sub>x</sub> and CO are mostly produced by road transportation, industry and power stations (OECD, 1999). Hence, electricity generation by the facilities and bought electricity from third-party power company both could be harmful to the environment. So, the record of electricity use could be a good measure of environmental measurement of sustainable development.

### **2.3.2.3 Waste and wastewater management**

Waste and wastewater management is a process for evaluating the use of different waste and wastewater treatment methods to understand factory or facility's accountability toward environment (Yoshida, Takahashi & Takeda, 2009). Industrial activities such as uncontrolled open dumpsites, poor sewerage system and open burning of waste create several health hazards due to pathogens, contamination of water, vermin and so on (Bogner *et al.*, 2007). Sometimes due to relaxed government policy and implementation of environmental laws industrial waste neither collected nor managed.

Environmental consequences of poor waste management are well known, but wastage of resources is often ignored. Most of the manufacturers overlook the resources they lose due to bad or inefficient waste management. Reduce, reuse and recycle of waste might cut the cost of production, make the process and product greener and bring profit and reputation for the organization.

On the other hand, wastewater management ensures the quality of the waste water thrown to the public canals, rivers, lakes and other public water systems. It includes reducing suspended soils, biodegradable organics, pathogenic bacteria and nutrients (WBG). Through waste water management organizations make sure that their wastewater is not going to change the direction of the canal and river, not making a dead zone for fish by throwing BOD and not dumping anything that could be hazardous for public health.

#### **2.3.2.4 Chemical management**

These variable measures use and control of the harmful classified substances (here chemicals) (Valent et al., 2002). Some specific chemicals can be very harmful to biodiversity; use of such chemicals and intention to control usage of such chemical is an important measure of sustainable development.

Hazardous chemical, previously studied under hazardous waste, defined as the chemical that is flammable (having flash point less than 140 degree Fahrenheit), corrosive ( $2 > \text{pH} > 12.5$ ), toxic ( $\text{LC}_{50}$  or  $\text{LD}_{50}$ ), explosive or other characteristics, causes danger to health or environment, whether alone or when come into contact with other waste available (LaGrega et al., 2010). Management is needed to treat such hazardous chemicals, control use of those and replace those by organic one as those can pose a threat to the human body, environment, and ecosystem.

#### **2.3.3 Social dimension**

Although it seems very limited relation to business with social activities, it is important measuring and assessing organizations' impact on the social systems in which they operate, from local to the global level (Elkington 1998). Some social issues such as sweatshop, child labor, etc. occur due to cost cutting effort of the organizations and brands (Niinimäki, 2010). Some argue that big names in the fashion brand have a position in the market to merge their corporate values with sustainable fashion, which could eventually bring sustainable development in their product and the supply chain (Joy et al., 2012).

Reporting social dimension in sustainability assessment has come many forms such as: TBL tool (Daizy et al., 2013), CSR principles by United Nations Global Compact (EC 2011), ISO social responsibility standard, ISO 26000 (ISO, 2014), GRI sustainability reporting framework (GRI, 2014) and so on.

##### **2.3.3.1 Labour and workforce management**

Employees are the main driving force of the business. Good relations with employees are one of the most important factors for a business to be successful, especially, industries like ready-made garments characterized by organized labor.

Labor management includes but not limited to freedom of association and recognition of the right to collective bargaining, elimination of child labor, abolition of any form of forced labor and equality in term of gender and ethnicity (both in recruiting and remuneration). This variable also considers the conformance of the local laws and policies regarding labor affairs.

### 2.3.3.2 Workplace management

Safe and healthy working environment is another important measurement of social dimension. It not only means hygienic workplace but also adds fear free, discrimination free, and fairly treating organization. In workplace management issues like properly built factory building, safe machinery operation, sanitation, drinking water, workplace security and so on are included

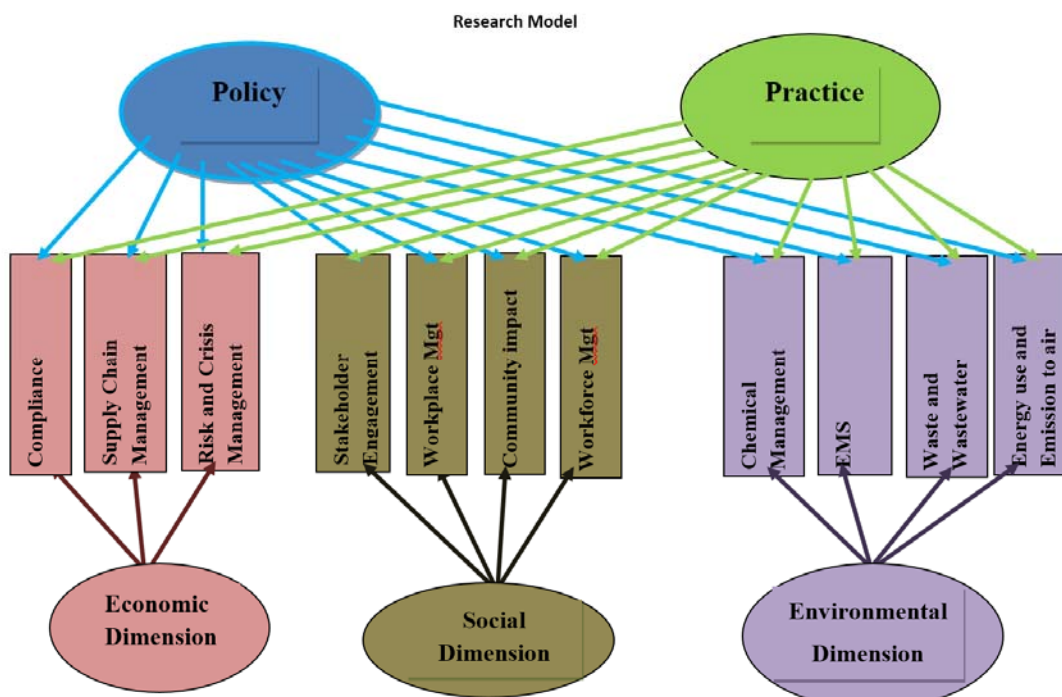
### 2.3.3.3 Community impact

Although the corporate philanthropic program is not directly related to production, it works as the catalyst for organizational success. Company's philanthropic activities associated with its business size measure the community impact of the business. This variable measures external engagement and community impact through corporate citizenship and corporate charitable activities. It also measures those from a cost/benefit perspective.

### 2.3.3.4 Stakeholder engagement

Stakeholder engagement matters a great deal in the discussed industry, some recent accidents, and man-made destructions are proof of that. Through stakeholder engagement, companies can create a positive relationship with the stakeholders (labor unions, regulators and local community) which in turn help to reduce unexpected financial and reputational loss (by the incidents such as strikes, sabotage and so on). Furthermore, easily accessible social media helps news to spread faster, both good and bad. People can share news and incidents through different social platform almost without any cost. Hence, constructive relationship with stakeholders may bring a good reputation for the company and might be praised by the community.

## 2.4 Research model



From the discussion above we ended up in following research model. The model depicted below is the construction of the proposed sustainability index which is mapped from existing literature and models. Sustainability index of this research also considers two components of sustainability in the organization, policy and practice. Therefore, the model is designed to assess from both policy and practice point of view.

### 2.5 Assessment tool

A simple tool named the Sustainability Barometer (IUCN, 2001) is proposed here to assess the level of sustainability using proposed index in the ready-made garments industry of Bangladesh. Although the author, Prescott-Allen, (2001) used this instrument to assess national sustainability in the number of countries using two dimensions, social and environmental, I would like to modify this tool to check sustainability using all three dimensions of this research.

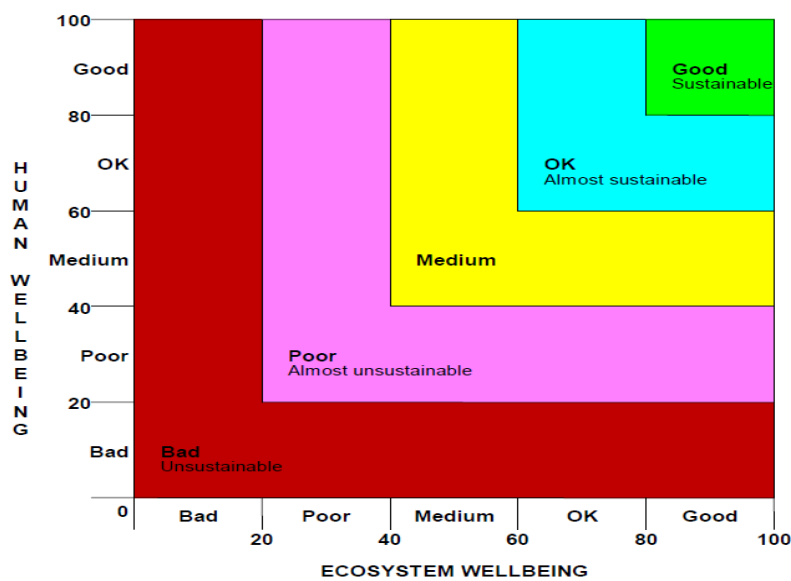


Figure 1: Barometer of sustainability (Adapted from Prescott-Allen, 2001)

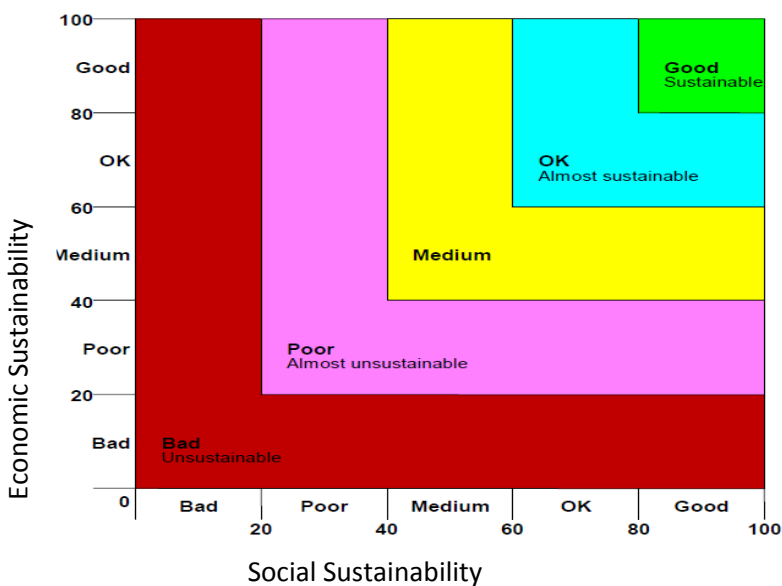


Figure 2: Barometer of sustainability (Socio-economic)

To use this two-dimension "Sustainable Barometer" in our three dimension model a modification of the existing tool is proposed. In this modified tool, there are two graphs: one containing social and environmental dimension, same as existing figure, and the other has socio-environmental measure along the X axis and economic dimension along the Y-axis. Here we only need to set the standard for the second graph.

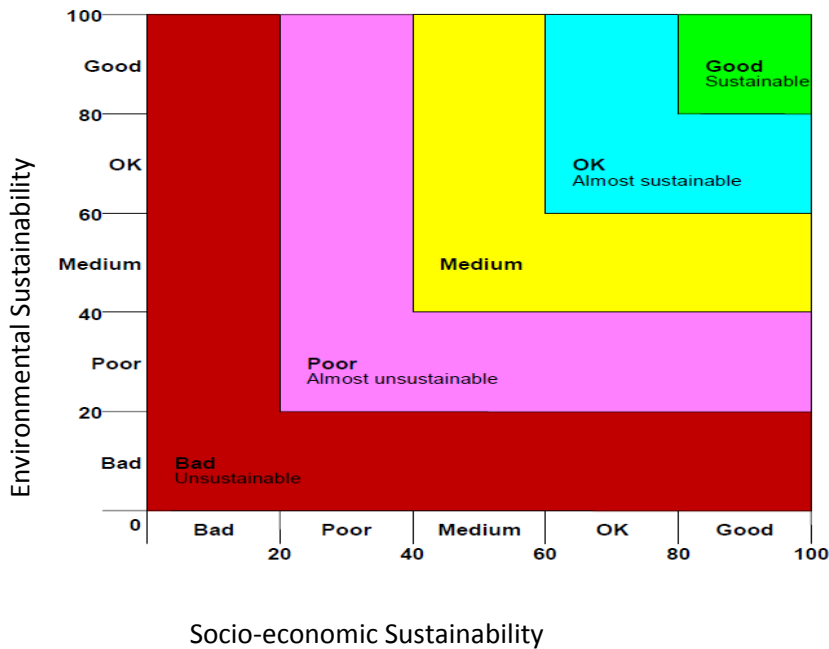


Figure 3: Barometer of Sustainability (Three dimensions)

### 3. Practical implication

Ready-made garments sector has become the lifeblood of Bangladesh's export. Besides, huge numbers of people are employed there; a statistics showed that about 18 to 20 million people are dependent on this sector (both directly and indirectly). For lack of sustainable practice very often factories of this industry face unavoidable adverse situations such as employee unrest, accidents, high turnover, low productivity and so on which eventually bring financial and reputational loss.

Making a sustainable business strategy and practicing that is urgent at this point for the factories of that industry. This framework may contribute to developing such strategy for them. Sustainability index proposed in this research will also help all the interested parties including government, factory owners, business associations and international buyers, to assess and monitor sustainable development in this sector.

### 4. Limitation and recommendation for future research

As usual, this research suffers from few limitations which should be mentioned to understand the research properly. First of all, this study adopted the variables from existing literature which is done in many areas of knowledge including different industries other than ready-

made garments (RMG) industry. That is why sector specific variables are weak and need to be developed for RMG sector. By testing and fine-tuning this model, it is possible to establish sector specific variables. Besides, there are several types of factories in RMG sector of Bangladesh; some are the direct supplier to the brands (Tier 1), some others are simply "sub-contractor." In such situation, it is hard to generalize as these organizations have different compliance and management style. Further research is needed to address this issue and assessing sustainability separately for separate groups of factories.

## 5. Conclusion

Ready-made garments sector has become the lifeblood of Bangladesh's export. Besides, huge numbers of people are employed there; a statistics showed that about 18 to 20 million people earn their livings from this sector (both directly and indirectly) (Bhuiyan, 2013). For lack of sustainable practice very often factories of this industry face unavoidable adverse situations such as employee unrest, accidents, high turnover, low productivity and so on which eventually bring financial and reputational loss.

Making a sustainable business strategy and practicing that is urgent at this point for the factories of that industry. This framework may contribute to developing such strategy for them. Sustainability index proposed in this research will also help all the interested parties including government, factory owners, business associations and international buyers, to assess and monitor sustainable development in this sector.

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## Long memory property of (un)employment in Croatia

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**Abstract:** Croatian labor market faces many challenges, from fragmentation and inappropriate structure to unfavorable dynamics. Unemployment in Croatia persists as one of the key labour market issues and thus, economic policies dealing with unemployment should be based on the anticipations regarding the evolution of unemployment or employment in the country. The purpose of this paper is to contribute to the empirical literature regarding labour market concerns by fitting the appropriate econometric model that reveals employment and unemployment properties and dynamics in Croatia. Unlike previous research that find employment and unemployment in Croatia to be integrated of order one, research results in this paper on a monthly data samples for the period from 2000-2015 indicate that employment and unemployment series in Croatia behave as a fractionally integrated process. Evaluating the models through standard information criteria, ARFIMA (1,0.44,1) is found to be the best fitted model for employment dynamics while ARFIMA (1,0.49,0) represents the best fitted model explaining unemployment dynamics. The results have shown that employment and unemployment processes in Croatia are weakly stationary and exhibit strong dependence between past observation, long memory, mean reversion and covariance stationarity.

**Keywords:** unemployment, fractional integration, ARFIMA, long memory, Croatia

### 1 Introduction

The state of the labor market is influenced by many heterogeneous factors, from demographic trends, degree of flexibility, pension system characteristics to the degree of compliance of the education system with the market needs and others. Croatian labor market faces many challenges, from fragmentation, inappropriate structure, and unfavorable dynamics to youth unemployment. Trends in the labor market are of cyclical nature throughout the year.

Furthermore, analyzing the causes and effects of unemployment in Europe over the past three decades has resulted in two competing schools of thought. One approach is to focus primarily on cyclical factors in generating unemployment. The main implication is that macroeconomic shocks have caused unemployment to deviate from a "natural" or nonaccelerating inflation rate of unemployment. The other school of thought is based on the hysteresis theory invoked by Blanchard and Summers (1986) and others, which argues that most of the unemployment increase is due to an increase in the nonaccelerating inflation rate of unemployment rather than in deviations therefrom.

The literature also provides many quantitative tools for modeling and forecasting employment and unemployment dynamics, as well as other macroeconomic variables. Kishor and Koenig (2012) showed how that Howrey's method for producing economic forecasts when data are subject to revision is easily generalized in research where data are produced by a sophisticated statistical agency. The proposed approach assumes that government estimates are efficient with a finite lag. It takes no stand on whether earlier revisions are the result of "news" or of reductions in "noise". The authors present asymptotic performance results in the scalar case and in each case it outperforms both conventional VAR analysis and the original Howrey method. They claim that it produces GDP forecasts that are competitive with those of professional forecasters. Milas and Rothman (2008) applied smooth transition vector error-correction models in their research of the unemployment rates of the four G-7 countries, the United States the United Kingdom Canada, and Japan. Camba-Mendez (2012) and Simionescu (2015) also used VAR models and Kalman filter to model and forecast the unemployment. Kurita (2010) showed that Autoregressive Fractionally Integrated Moving Average (ARFIMA) model forecasts for Japan's unemployment rate outperformed the AR(1) model predictions. Gil-Alana (2001) examined the UK unemployment by means of ARFIMA models using Sowell's (1992) estimation procedure. A model-selection strategy based on diagnostic tests on the residuals, along with likelihood criteria was adopted in the research to determine the correct model specification. The results of Gil-Alana (2001) suggest that the UK unemployment is well described as an ARFIMA model, with the order of integration fluctuating between 1 and 2. Thus, the standard approach of first differences leads to series with long memory behavior.

The purpose of this paper is to contribute to the empirical literature regarding labour market issues by fitting the appropriate econometric model that reveals employment and unemployment properties and dynamics. ARFIMA model captures long memory property of a time series, as well as the phenomenon of hysteresis in unemployment (see for example, Blanchard and Summers 1986) which might be additional argument for selection of ARFIMA as an empirical approach in this paper. The originality of the paper is in the application of new research methodology that allows order of integration of employment and unemployment series in Croatia to take any real number. ARFIMA model has not been used for analyzing the case of Croatia so far. The application of this model enables capturing short-term, as well as long-term properties and dynamics of employment and unemployment in Croatia, thus adding value to the paper as it represents an original contribution to the existing empirical research. The paper consists of five parts. After the introduction in which the main problem of the paper is shortly presented, the remainder of the paper is organized as follows. Section 2 provides some stylized facts of unemployment based on the existing empirical research results and gives context for unemployment dynamics in Croatia. Section 3 contains the description of research data and methodology. Section 4 discusses the results of the empirical analysis and the fifth section is the conclusion.

## **2 Stylized facts of unemployment in Croatia**

The role of employment is a fundamental for individuals to make their living and for the position of the economy. Labour is an important production factor and income earned by labour resources is an important source of income. Thus, labor market conditions are important for overall economic well-being.

According to the Croatian Pension Insurance Office data, at the end of 2015 there was 1.413,637 insured persons, i.e. employed persons, registered in the Republic of Croatia. Most of the insured persons were employed by legal entities (85.10%). In the year 2016 there was an increase in the number of employed persons in Croatia. There was also a positive trend regarding the increase of nominal and real wages. As far as unemployment is concerned, the registered unemployment rate in 2011 was 13.7% and it has recorded a growth trend until 2013 when it reached 17.2%. Exiting the period of crisis, the unemployment rate in Croatia has fallen as expected, and in 2016 it was 13.3% (241.860 persons) (CNB 2016).

However, unemployment in Croatia persists as one of the key labour market issues and thus, economic policies dealing with unemployment should be based on the anticipations regarding the evolution of unemployment or employment in the country. Without knowledge about the causes and dynamics of unemployment, policy makers cannot design appropriate and efficient employment policies. What is more, unrevealed properties of employment and unemployment may lead to inappropriate economic policy and consequences of it may have even adverse effects for the economy as a whole. Changes in unemployment rates may occur as a result of variation in the rate at which workers flow into the unemployment pool, variation in the rate at which unemployed workers exit the unemployment pool, or may occur as a combination of the two. Shimer (2007) points on substantial fluctuations in unemployed workers' job finding probability with business cycle, while the probability that a worker exits employment is comparatively acyclic. Evidence from Škare and Buterin (2015) points to a conclusion that unemployment in Croatia is a process with complex behavior having long-lasting, although not permanent effects.

Croatian labour market has been the topic of much previous research (Bejaković 2007; Bejaković 2016; Botrić 2008; Katić 2006; Pavlič et al. 2013). Many authors have tried to measure unemployment and to find possible actions for solving it. According to Bejaković (2007) unemployment in Croatia is the result of structural changes in the economy, liquidation and bankruptcy of companies, dismissal of employees, and reduced employment opportunities, but it is also a result of spatial and professional mismatch between supply and demand. Furthermore, in his paper Bejaković (2016) gives an overview of active employment policy evolution in Croatia over the past few decades. His analysis reveals that employment policies in the period 1992-2006 had modest number of unemployed persons included. Policies in the 2006-2008 period included somewhat larger number of unemployed but still small. During this period Croatia had to adjust to the EU active policy measures. In the following period from 2009-2014 the number of included unemployed people in the active employment policy measures grew eightfold according to the author. Finally, his conclusion is that although many policy measures were created and implemented over the years, there is still room for improvement. Analysis conducted by Botrić (2008) looks at the differences between the unemployed and employed on the Croatian labour market based on their individual characteristics. The basis for the analysis is the Croatian Central Bureau of Statistics' Labour Force Survey for the year 2006. The analysis was conducted separately for the male and the female subsample. The results imply that occupation, immigrant and marital status are significant predictors for both male and female population, while education, age and living in urban settlements have certain gender specificities. The empirical analysis revealed that age is significant for both male and female population, in addition to specific categories of occupation and marital status. Reservation wage is significant for male, while education for female population. Katić (2006) analyzed employment and participation rates, as well as

unemployment and its structure. She compared Croatian indicators to the other Central and Eastern European countries. For the analysis she used Blanchard's adjustment ratio to examine what was the primer form of transformation, whether inactivity or unemployment. She concluded that participation has been decreasing and calculations using Blanchard's adjustment ratio of 0.38 suggest that the most of the adjustment process during the transition period 1990-1997, while employment was decreasing, was through lower participation rather than higher unemployment. This implies that, while employment was decreasing, the majority of those who left employment transferred to inactivity (often encouraged by early retirement benefits) rather than becoming unemployed. Moore and Vamvakidis (2007) found persistently high unemployment and relatively low labor participation rates as a potential constraint of economic growth in Croatia. They examined the factors and constraints that affect recent and potential growth in Croatia, as well as policies that can influence it. On current productivity trends, they estimated Croatia's potential growth rate at 4–4½ percent, a result reasonably robust to different methodologies. To sustain growth at a higher rate in line with the authorities' aspirations, their analysis points to critical need to improve the business environment through further measures of reducing the administrative burden, legal uncertainties, and corruption. It also emphasizes the importance of attracting more greenfield foreign direct investment, and reforms to reduce the role of the state in the economy through fiscal consolidation and faster privatization. Kunovac (2014) reports rigid labour market and a high level of the legal protection of employees in Croatia. Given that the Act on Amendments to the Labour Act (OG 73/13) entered into force in Croatia in June 2013, in her paper she examines changes in employment protection legislation in Croatia and Central and Eastern European countries, as well as in Croatia's main trading partners during the period between 2008 and 2013. A cross-country comparison shows a strong downward trend in legal employment protection in most CEE countries during the observed period, primarily as concerns individual dismissal in the cases of regular employment contracts, while in the case of temporary employment the protection strengthened slightly. On the other hand, despite the adoption of amendments to the Labour Act, Croatian labour legislation governing employment protection for regular employment contracts remains relatively inflexible compared to that in other countries. Kunovac and Pufnik (2015) conducted a firm-based analysis. Their research shows that the illiquidity shock, the demand shock and unfavorable financing conditions were the most widespread economic shocks to which firms were exposed from 2010 to 2013. Firms adjusted to unfavorable economic conditions by reducing total costs, primarily labour costs. The dominant cost-cutting strategy was to reduce the number of employed persons, i.e. through individual layoffs, but also through the non-renewal of fixed-term contracts at expiration and a freeze on and reduction of new hires. According to the authors, significant number of firms change wages less frequently than once a year; one third of firms index wages in relation to inflation and collective agreements regulate wages for about a half of the employees in the private sector. Nestić et al. (2015) confirmed the wage gap between state-owned enterprises and private enterprises and higher average wage in the public sector. It seems that tourism sector plays an important role for the employment in Croatia. Pavlič et al. (2013) tested a relationship between tourism and employment in Croatia based on quarterly data for the period 2000-2012. The relationship is examined using Granger causality test and Johansen cointegration approach. The empirical research indicates that tourism has a positive effect on employment while co-integration test indicates that there is a long-term correlation between the two variables. In other words, they found employment in Croatia integrated of order one and cointegrated with tourism based on quarterly data for

the period 2000-2012. Botrić (2016) analyzed the size of the long-term unemployed share within the total number of unemployed population in Croatia. High portion of long-term unemployed people might be an indication of its persistence. The problem of persistent and high unemployment in Croatia is important and complex and derives out of labor supply and labor demand mismatch, but the vast specter of determinants is beyond the scope of this paper. As previously mentioned, this paper aims to contribute to the literature dealing with labour market issues by fitting the appropriate econometric model that reveals employment and unemployment properties and dynamics.

### 3 Data and methodology

The sample data consists of monthly and seasonally adjusted data (X-12 ARIMA) for employment and unemployment series in Croatia from January 2000 to January 2015. Data for the number of employed persons (employment series) are retrieved from the Croatian Bureau of Statistics and data for the number of persons unemployed, as a percentage of active population (unemployment series), are taken from the Eurostat database.

Due to labor migrations from Croatia to other countries, to capture potential migration effects we observe employment and unemployment registered in Croatia. Descriptive statistics for the observed series is provided in the Table 1.

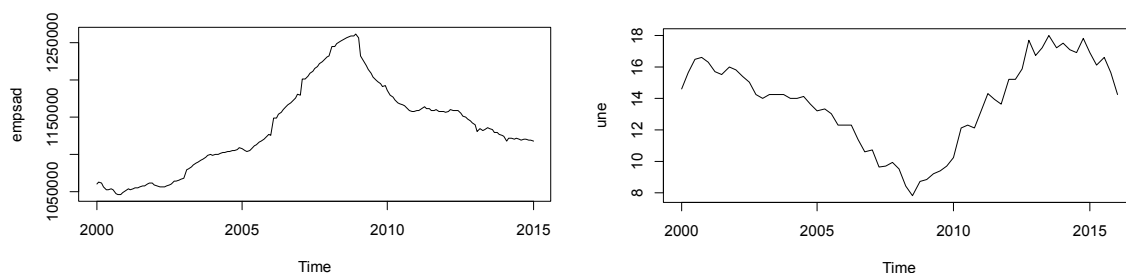
**Table 1:** Descriptive statistics

	employment	unemployment
Mean	1135999.	13.66
Median	1133236.	14.10
Maximum	1270848.	18.10
Minimum	1030042.	7.70
Std. Dev.	59877.85	2.73
Skewness	0.293673	-0.39
Kurtosis	2.295789	2.14
Observations	181	181

Source: the authors.

The evolution of employment and unemployment series for the observed period is illustrated in Figure 1.

Figure 1 shows employment growth and unemployment decline up to the year 2009 and after the year 2009, the trends changed and employment in Croatia started to decline with the unemployment rate almost doubling up to the end of year 2014.



**Figure 1:** Employment and unemployment in Croatia (Source: the authors)

In order to fit univariate model for employment and unemployment series in Croatia, first we conducted the unit root tests and examined stationarity, which consequently directed us to the AR(F)IMA model test.

Autoregressive Integrated Moving Average (ARIMA) model it is a well-known forecasting technique that projects the future values of a time series. The future value of a series or forecasts is entirely based on its own behavior in the past. ARIMA models are simple, robust and parsimonious while providing good results at the same time.

Time series  $Y_t$  fits ARIMA model if the  $d^{th}$  differences ( $\nabla^d Y_t$ ) follow a stationary ARIMA model. ARIMA process is described by the three main components (see for example, Cryer and Chan 2008):

- 1)  $p$  - order of the autoregressive component
- 2)  $d$  - order of integration or the number of differencing needed to arrive at a stationary ARMA( $p, q$ ) process
- 3)  $q$  - order of the moving average component.

The general ARIMA ( $p, d, q$ ) form is represented by the equation:

$$\Phi(L)(1-L)^d Y_t = \theta(L)\varepsilon_t \quad (1)$$

The corresponding AR and MA characteristic polynomial are given by equations (2) and (3) respectively:

$$\Phi(L) = (1 - \Phi_1 L - \Phi_2 L^2 - \dots - \Phi_p L^p) \quad (2)$$

$$\theta(L) = (1 - \theta_1 L - \theta_2 L^2 - \dots - \theta_q L^q) \quad (3)$$

Where:

$\Phi$  - the parameter estimate of the Autoregressive component,

$\theta$  - the parameter estimate of the Moving Average component,

$L$  - the lag or backward shift operator and

$\nabla$  - the difference operator that can be expressed by equation (4)

$$\nabla = (1 - L) \quad (4)$$

$\varepsilon_t$  - a random process with mean zero and  $var(\varepsilon_t) = \sigma_\varepsilon^2$ .

In the case where  $p = 0$ , the model described by the equations (1) to (3) becomes a moving average model of order  $q$  or MA ( $q$ ) and in the case of  $q = 0$  it becomes an autoregressive process of order  $p$  or AR ( $p$ ). Besides stationarity, the other requirement is invertibility or uniqueness of the covariance structure of the time series (Priestley 1981) allowing meaningful association of current moves with the history of the series (Box and Jenkins 1976). Stationarity and invertibility conditions for model described by the equation (1) require that equations (5) and (6) have roots outside the unit circle respectively

$$(1 - \Phi_1 L - \Phi_2 L^2 - \dots - \Phi_p L^p) = 0 \quad (5)$$

$$(1 - \theta_1 L - \theta_2 L^2 - \dots - \theta_q L^q) = 0. \quad (6)$$

In the case of standard ARIMA model, order of integration represented by the parameter  $d$  in the equation (1) is restricted to integer values. Order of integration  $d$  should be determined by using the unit root test and it's well known that unit-root tests cannot easily distinguish between a unit root and close alternatives, as originally noted by Elliott (1998). In case of



ARFIMA model, the parameter  $d$  is not restricted to integer values but allows assuming any real value. Stationary ARIMA process is considered to be a short memory, while ARFIMA process is characterized by its long memory property. In order to estimate a parametric ARFIMA model we used a maximum likelihood procedure developed by Sowell (1992).

#### 4 Research results and discussion

Time-series analysis begins with a unit root test and therefore, we used the unit root tests of Augmented Dickey-Fuller (1979) (ADF test) and Kwiatkowski et al. (1992) (KPSS test). ADF test considers the presence of a unit root, while the KPSS test assumes the stationarity under the null hypothesis and the alternative hypothesis is the presence of a unit root.

Table 2 summarizes unit root test results for the variables of interest, namely employment and unemployment.

**Table 2:** Unit root test results for employment and unemployment in Croatia

Unit root test					
series	ADF test			KPSS test	
	non constant	constant	constant and trend	constant	constant and trend
employment	0.437189	-1.582.534	-0.801352	0.836998*	0.361097*
$\Delta$ employment	-4.255.496*	-4.277.668*	-4.579.996*	-	-
unemployment	-0.805416	-1.017219	-1.001160	0.333431*	0.318281*
$\Delta$ unemployment	-8.042297*	-8.053042*	-8.032646*	-	-

Notes: \*, \*\*, \*\*\* denote significance at the 1%, 5% and 10% significance level, respectively.

Source: the authors.

ADF test for the observed series in levels does not reject the null hypothesis so there is evidence that employment and unemployment series in Croatia behave as  $I(1)$  processes. KPSS tests for the observed series does not reject the null hypothesis of  $I(0)$ . So, modeling these series either as  $I(0)$  or  $I(1)$  is too restrictive and shows characteristics typical for fractionally integrated processes. Following KPSS results in the Table 3, the observed series are stationary, so firstly we fitted ARIMA model for each of the observed series. The estimated model for each series after removing insignificant regressors is summarized in the Table 3.

Following the results in Table 3, the roots of the AR and MA polynomials for the employment amount 0.99 and -0.20 respectively. All of the roots are less than one in magnitude, indicating that the series is stationary and invertible but with a high level of persistence. The results are similar for the unemployment series since the root of AR polynomial for unemployment series amounts to 0.99.

Following the results from Table 3, we then estimated ARFIMA model using the maximum likelihood method as an estimator and insignificant regressors are eliminated from the model step by step. ARFIMA model estimates for employment and unemployment are presented in the Table 4.

**Table 3:** ARIMA(p,q) model estimates for employment and unemployment in Croatia

Model	Parameter	Coef.	Std. Err.	z	P>z
employment	constant	1102084	44266.1	24.90	0.000
	ARMA				
	AR(1)	.9955874	.0041393	240.52	0.000
	MA(1)	.19774	.0597322	3.31	0.001
	Sigma	4012.954	211.1709	19.00	0.000
	Log likelihood = -1761.202	Wald $\chi^2(3)$ = 58378.28	Prob > $\chi^2$ = 0.0000	AIC = 3530.404	BIC=3543.198
unemployment	constant	15.0073	3.485453	4.31	0.000
	ARMA				
	AR(1)	.9939187	.0059983	165.70	0.000
	Sigma	.2849374	.0141756	20.10	0.000
	Log likelihood = -31.7909	Wald $\chi^2(1)$ = 27456.75	Prob > $\chi^2$ = 0.0000	AIC = 69.5818	BIC= 79.17729

Source: the authors.

Jarque-Bera test of normality, ARCH test of heteroscedasticity and Ljung-Box diagnostic test indicate no misspecification of the models presented in the Table 4. Furthermore, the results in the Table 4 show that long memory or fractional integration parameter ( $d$ ) amounts 0.4397937 indicating employment series behave like fractionally integrated process. So, the series exhibits strong dependence between past observation, long memory, mean reversion and covariance stationarity. For  $0 < d < 0.5$  series covariance is stationary and shows long range dependence or persistence, revealing both short and long memory dynamics. The process is still mean reverting (returns to its equilibrium) and a hybrid between white noise and random walk.

As shown in the Table 4, fractional integration parameter for unemployment series in Croatia amounts 0.4895619 indicating similar pattern behavior. Thus, using Croatian employment and unemployment series as a unit root process in modeling would be inappropriate. The findings of this paper are consistent with Kurita (2010) who found ARFIMA model as the best fitted model to forecast Japan's unemployment rate. Research from Gil-Alana (2001) also suggests that the UK unemployment is well described as an ARFIMA model. Based on the research in this paper, the results are twofold. The econometric model fitted for the unemployment series implies that unemployment shocks in Croatia last for a long time. Similarly, persons employed stay employed for a long time; so consequently, policy measures towards increase in employment might be effective.

**Table 4:** ARFIMA (p, d, q) model estimates for employment and unemployment in Croatia

Model	Parameter	Coef.	Std. Err.	z	P>z
Employment (p=1,q=1)	constant	1108788	135443.1	8.19	0.000
	ARFIMA				
	AR(1)	.9765291	.013363	73.08	0.000
	MA(1)	-.2865681	.0968693	-2.96	0.003
	d	.4397937	.0698442	6.30	0.000
	Sigma^2	1.32e+07	1394671	9.48	0.000
	Log likelihood = -1744.7097	Wald chi^2(3) = 7436.89	Prob > chi^2 = 0.0000	AIC = 3495.419	BIC= 3505.015
Unemployment (p=1, q=0)	Constant	14.21252	13.03021	1.09	0.275
	ARFIMA				
	AR(1)	.9351745	.0237959	39.30	0.000
	d	.4895619	.0146396	33.44	0.000
	Sigma^2	.0514302	.0054247	9.48	0.000
	Log likelihood = 7.2771669	Wald chi^2(2) = 3216.15	Prob > chi^2 = 0.0000	AIC = - 6.554334	BIC= 6.239654

Source: the authors.

## 5 Concluding remarks

Croatian labor market is faced with challenges of persistent unemployment, market fragmentation and unfavorable dynamics. There are several conclusions that can be drawn out of the research presented in this paper. Firstly, recent literature points to a still rigid labour market with a high level of legal protection of employees in Croatia. Although measures of active employment policy are in place the results are still not satisfying. The newest package of active employment policy measures was introduced at the beginning of 2017 and includes 1.5 billion HRK, financed mostly from the state budget, with 650 million HRK from European Social Fund. From these measures new work places are expected to be created and thus, the government anticipates them to contribute to stability and economic growth. Secondly, unlike previous research that find employment and unemployment in Croatia to be integrated of order one, research results in this paper indicate that employment and unemployment series in Croatia behave like fractionally integrated process. Thirdly, ARFIMA model best captures short and long memory characteristics of employment and unemployment rate in Croatia. Eventually, employment and unemployment processes in Croatia are weakly stationary and exhibit persistence, long memory, mean reversion and covariance stationarity. Practical implications of the research results are viewed in the revealed and confirmed short-and long-term characteristics of (un)employment in Croatia that can be of use when designing

employment policy measures. If employment policy mix is not appropriate it can have even adverse effects on the economy and well-being.

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## Increasing importance of EU spending on business research and innovation - evidence from Poland

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**Abstract:** The problem of evaluation of R&D grants is important for evidence - based policymaking. Expenditures for research and innovation in EU budget are identified as a candidate for smart public spending because of its alleged growth effects. This is especially important nowadays - under difficult budgetary conditions in many EU countries and in light of the growing concerns over the common cohesion policy not bringing significant added value to the European Union. The study emphasizes the importance of innovation policy in Poland and in the whole European Union as an answer to globalization and competitiveness with the third countries. In line with theory-based impact evaluation approach, first we analyse the policy intervention logic by identifying the barriers and determining instruments that deal with them and second we describe the major achievements and mechanisms that influence overcoming those barriers.

**Keywords:** R&D; EU innovation policy; R&D subsidies; European Added Value; EU budget expenditure

### 1 Introduction

Innovation in the European economy is playing an important role in the process of increasing competitiveness between countries, regions and international organisations. Poland, like its regional peers in Central and Eastern European countries, has reached a stage of economic development, where the growth factors based on the competitive advantages of low labour costs and importing modern technologies are not sufficient to successfully close the catching-up process. Innovations performed by corporate sector are regarded as a crucial factor for future sustainable economic growth. Companies however tend to under-invest in R&D due to existing market failures and it is justification for public policy intervention both at national and supranational level.

Faced with the growing number of opinions that the Common Cohesion Policy does not bring significant added value to the EU Member States and therefore needs to be redefined and put more emphasis on funding other areas, including research and technological development, the authors of this paper attempt to demonstrate that from the year 2000 growing EU funds dedicated to the development of enterprises' innovativeness correlated with the private expenditure increase on research and innovation could contribute to stimulate business investments in the same area.

As for evaluation of EU policy on research and development, we derive our view point from the assumption that it is not intended to limit member states' actions, but to support those national initiatives that were considered the most effective (Durousset, 1992). The introduction of financial instruments combining EU budget support with loans by the EIB Group (eg. European Fund for Strategic Investments), as well as from other financial entities, is seen as one way of expanding the reach of the EU budget and increasing its effectiveness (Núñez Ferrer and Katarivas 2014).

The aim of the article is to show the use of EU grants for R&D in companies and predict their influence on the overall level of innovativeness in Poland in the period 2014 – 2020, together with identifying changes in the financing of research and innovation from the EU budget with the medium term perspective.

## **2 Literature review**

The relationship between economic growth and innovation and R&D is well established in the literature: starting from the early work of constructive destruction Schumpeter (1934), through the neoclassical growth model of Solow (1956) – indentifying technical progress as the only source of sustainable per capita income growth, to endogenous growth theories of Romer (1990), Aghion and Howitt (1998) and later works of Barro and Sala-i-Martin (2004) and Jones (2005) ect. Influenced by these theoretical findings, governments implemented different policy instruments directed at stimulating innovations, which should led to high and sustainable economic growth (Dimos and Pugh 2016).

Eurostat defines innovative enterprises as companies “that introduce new or significantly improved products (goods or services) to the market, or enterprises that implement new or significantly improved processes or a new organisational or marketing method, which has not been used before. Innovations are based on the results of new technological developments, new combinations of existing technology or the utilization of other knowledge acquired by the enterprise”. In the context of evaluating national policies it is advisable to adopt a wider definition of innovation. In this perspective, innovation is not just the development and introduction of new products and technologies, but also the imitation and diffusion of knowledge and technology. The imitation of existing technology and organizational systems can be innovative on a local scale (in a given area or in a particular industry). The diffusion of advanced technologies in sectors that are not considered high technology is often a much more important source of productivity growth in the economy than the development of new technologies and organizational principles (Bartkiewicz, Dębowski 2010, p. 14-16). Competitiveness by creating innovative products and services in the state economy is treated here as new opportunities for business, employment and for the rise in quality of life demanded by the society.

Although innovation activity is not limited to research and development (R&D), it is widely accepted that R&D is the most important part of innovation activity. The innovation system consists of public research institutions (e.g. universities and governmental research institutes) and companies performing R&D and other innovation activities. The main obligation of public research institutions is centered around basic research, while R&D in firms usually are intended at quick commercialization of R&D outcomes and for this reason business R&D is considered to be more directly connected with economic prosperity. According to

developments in neoclassical theory from the 1950s and 1960s (e.g. Arrow, 1962), firms tend to underinvest in research and innovations. The most important issues connected with above recognition can be summarized into the following issues:

- Knowledge (R&D) has public good characteristics, namely non-rivalry and non-excludability, which cause that a firm can never appropriate all the benefits of its R&D, but it has to bear the entire costs of R&D and therefore the incentive to invest in knowledge is weak. This is connected with knowledge spill-over effect. Consequently social rate of return on R&D is higher than private rate of return and as a result the level of R&D is suboptimal from social point of view (Warwick 2013).
- Uncertainty - innovation is a high risk activity, a firm can not be sure of the desired result of the technological change obtained in terms of output, but also cannot be sure about the market success of an innovation.
- Capital market failure – due to the uncertainty of R&D projects and intangible nature of R&D outcomes, it is very difficult to raise external capital for financing R&D activities. Financial constraints create more severe problem for R&D than in other types of investment.

Market failures create strong theoretical justification for government intervention in supporting business R&D. Public policy intervention into stimulating corporate R&D include mainly two types of actions: (1) creating legal framework for efficient intellectual property rights (IP) protection, which is directed at dealing with appropriability problems in R&D and (2) providing financial support aimed at preventing financial constraints in founding innovative firms. Financial instruments of innovation policy can be in the form of: R&D subsidies (grants) and R&D tax incentives. R&D tax incentives are regarded as market-based instruments, which support research activities in firms, but guarantee the firm free choice which R&D investments to undertake. R&D subsidies are defined as direct and highly selective type of state support (Westmore 2013).

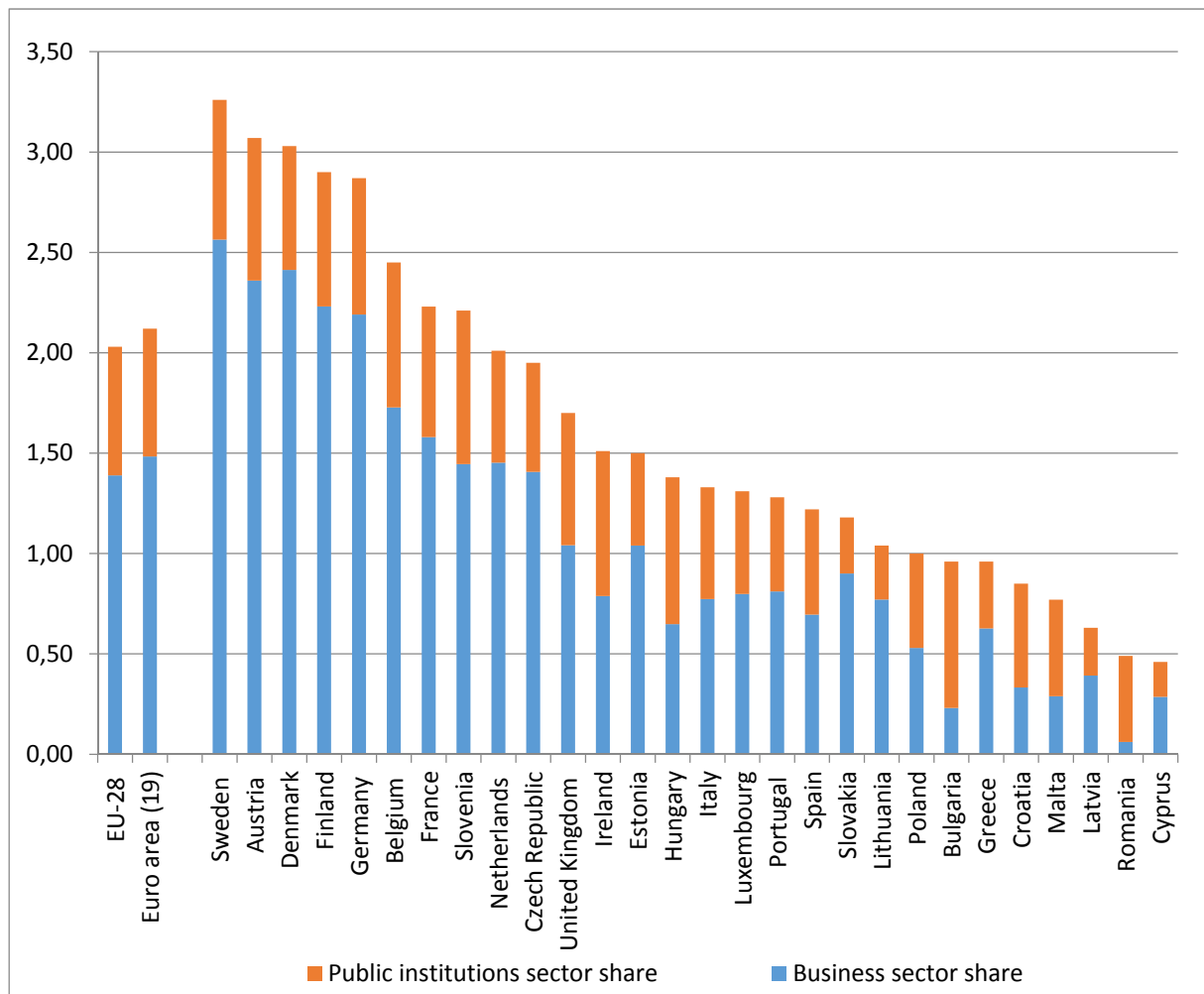
Although the economic literature provides solid foundations on the relationship between economic growth and innovation, much more controversies exist on the question of possible crowding-out effect of public support given to firms performing research and innovation activities. It is not obvious whether public spending causes increasing the overall level of investment on R&D resulting in desired additionality effect (crowding –in effect) or replaces private expenditures on R&D, resulting in “crowding out effect”. Starting from 1960. the empirical studies on this research problem have been performed and they have yielded ambiguous findings. It is worth to notice however that the majority of studies after 2000. on firm level data show that public R&D subsidies are positively associated with private outlays on R&D (Alonso-Borego et al. 2014). This may imply that policy design of direct state support for innovative firms has improved over time.

### **3 R&D overview in Poland**

Poland, like most of Central European countries, has experienced strong economic performance over the past 25 years which resulted in narrowing the income gap between Poland and highly developed countries. Poland is also the only OECD country that didn't fall into recession during the global economic crisis of 2007–2009. The remarkable performance is mainly due to productivity gains in recent period. The converging to EU 15 has been



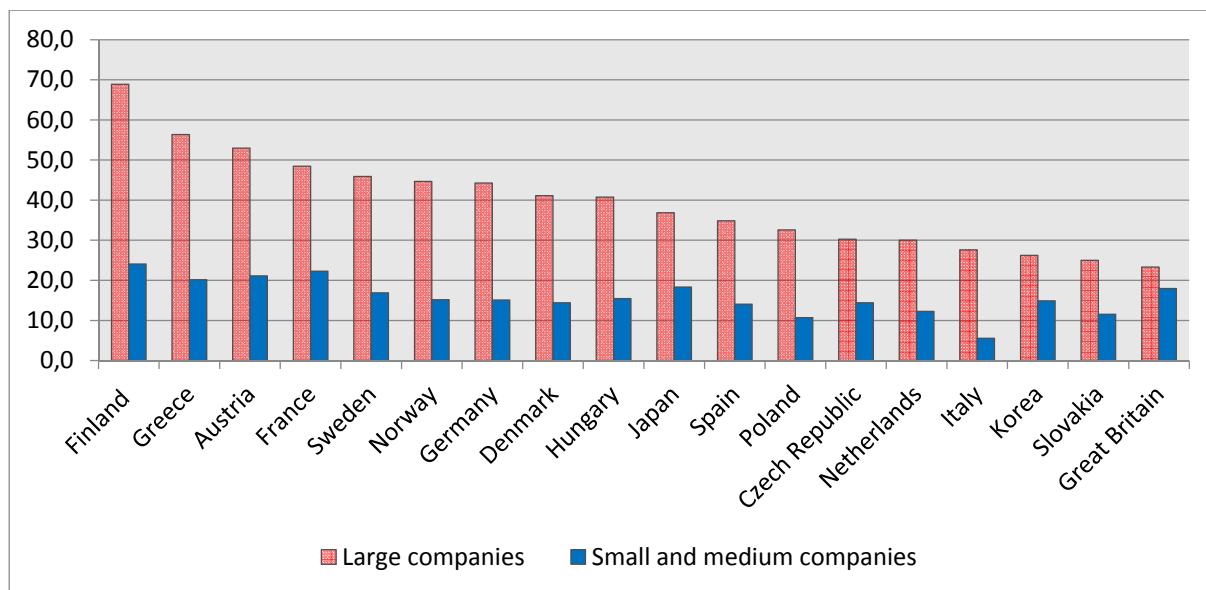
successful so far, but the factors of that economic growth based on low labour costs are running out and the country is threatened by “middle-income trap”. Poland’s per capita income is almost 40% lower than OECD average, the productivity catch-up process is slowing, unfavorable demographic prospects are a serious growth barrier, innovation performance is low (measured e.g. by composite indicator of EU: the Summary Innovation Index), total expenditures for R&D in Poland and business spending on R&D (BERD) are among the lowest in EU (Figure 1).



**Figure 1:** Gross domestic expenditure on R&D (% GDP), with business enterprise sector share 2015

Source: Eurostat.

The structure of production is unfavourable with bias toward low – and medium-low technologies. Research and development sector in Poland is based on public research institutions (universities and public research institutes) and although the share of corporate expenditure is rising over time (from 30% in 2011 to 47% in 2015), it is still on the low end for EU countries. According to Community Innovation Survey (2012) – within a harmonized framework developed by Eurostat, companies in Poland are less inclined to cooperate with public research institutions than in other EU countries. Only 32,6% of large companies and 10,7% of small and medium companies in Poland cooperate in any form with public research institutions (Figure 2).



**Figure 2:** Share of innovative companies in Poland cooperating with public research institutions, 2012

Source: Eurostat: *Community Innovation Survey (CIS2012)*.

It is commonly believed that without extraordinary effort made in the area of Research, Development & Innovation, the prospects of future economic growth are unpromising. In this sense situation of Poland is representative for the majority of Eastern and Central European Countries and there seems to be wide agreement concerning the necessity of providing government stimulus for R&D intensive firms.

Polish system of R&D support has been mainly subsidy driven. From 2005 to 2015 there was tax relief for R&D, but only restricted to acquisition of intangible assets (so called New Technology Tax Relief). Under new government policy for innovation a new R&D tax allowance has been introduced, replacing the previous fiscal scheme. In effect from 1 January 2016 –the new regulations on supporting innovation activity were valid, extending the scope of eligible deductions from corporate income tax. Still it is too early for the comprehensive evaluation of the changes introduced by new regulations in tax framework and EU subsidies for R&D are the most important form of research support.

#### 4 Supporting corporate R&D by the European Union

Possible changes in the structure of expenditures from the EU budget and the question of European added value have been presented in the European institutions documents and publications (European Commission 2011b; European Commission 2016b, European Commission 2016c); European Parliament 2016) and scientific papers (Núñez Ferrer and Figueira 2011; Molino and Zuleeg 2011; Rubio 2011; Bachtler, Mendez and Polverari 2016; Bachtler, Mendez and Wishlade 2016).

European added value in R&I sector is interpreted by the European Commission (2011a, p. 41-55) as necessity to public intervention not only on the national level which is insufficient to overcome market failures. Taking into account low public expenditure on R&I, incoherent investments and inefficient activities it is crucial to stress the value of the EU policy and

funding on this field. Nowadays transnational coordination of projects and resources is essential to create competitive environment towards e.g. the United States and Asia. This critical mass is understood as scale, scientific and technical complexity and quality of implemented projects. That is why subsidiarity and additionality rules constitute the core of EAV and “without the EU programmes, most of these strategically important research and innovation actions would simply not take place or be far less ambitious. (...)They would have been carried out on a smaller scale (with less money, with fewer partners), with a reduced scope (less ambitious), and at a later stage or over a longer period of time.”

It should be stressed that one of the main goals of the EU innovation policy is to stimulate member states to coherent strategies increasing the competitiveness of enterprises. In consequence, the added value of EU public expenditure on innovation could be defined as the capacity to boost public and private actions on national, regional and local level rather than to achieve similar results at a lower cost or the ability to achieve better results at an identical cost. That is why here it is better to use the term "leverage effect" referring to the capacity of public expenditure to mobilize private investment (Núñez Ferrer and Figueira 2011). If public policy is more effective in delivering private expenditure when implemented at Community level, EU intervention is then justified (Barbier-Gauchard 2011). Moreover in some cases the European level allows to select the best proposals for research projects, to reduce the costs of the evaluation of the proposals, to promote cross-border cooperation and to allow a specialization of the research of high quality (Ritzen, Soete 2011). However it is also necessary promoting 'smart specialization' in R&D and innovation at regional and local level adapted to their territory which is called modern cohesion policy enhancing European added value of spending (Molino and Zuleeg, 2011, p. 12 and 23). This would require using the structural funds more effectively with preconditions and making them conditional on the achievement of specific objectives (Barbier-Gauchard, Rubio 2012).

It is difficult to clearly quantify the amount of EU spending on research and development, as they are in different programmes and funds. It can only be estimated that since the 1960s they have accounted for only 5% of total EU expenditure.

Internal affairs of each state such as: education, health care, research and development, infrastructural investment, culture or social affairs have gradually begun to become part of the Community budget from the second part of 1960s. It could be noted that since the beginning of the European Communities existence, expenditure on research policy concerned nuclear energy at first and after extended to other activities. At the onset of the European Communities, internal action was limited to a few issues primarily related to social policy. The first framework programme for Community research was launched for 1984-1987 as one of the new policies financed by the EC budget. The Single European Act and the prospect of the internal market have broadened the scope of Community action for research and technological development (title VI of the SEA).

EC policy on research and development was not intended to limit member states' actions, but to support those national initiatives considered to be most effective. Financial support from the Community budget depended on the type of project undertaken (Durousset 1992, p. 92):

- direct actions at selected research centers (research on nuclear energy, solar energy, industrial technology and environmental protection) fully financed by the Community budget,

- indirect actions included in sectorial programmes - costs partially covered by the Community funds and the rest by research centers, universities and businesses,
- activities carried out in cooperation with many centers, including industrial centers, research centers, laboratories – work coordination delivered by the European Commission without providing funds.

The emphasis on technological development in the European Union has initially led to further deepening the gap between the rich and poor regions of the Union. This was due to the fact that the largest companies and the most developed regions received the majority of R&D funding. In order to counteract unfavorable trends, the VALUE and CRAFT programmes were created to allow smaller companies to use the latest research and to collaborate with larger companies. The STRIDE Community Initiative, on the other hand, has respected the principle that the means for technological development in the 1990s should be channeled to Objective 1 and Objective 2 of the structural policy (Laffan 1997, p. 126).

In the 1993-1999 Financial perspective the European Commission decided to strengthen the competitiveness of European industry including research. Agenda 2000 recorded a gradual increase in internal policy spending, including private investors in building transport, energy and telecommunications networks. Multiannual programmes have allowed mobilization of sufficient resources to strengthen competitiveness and socio-economic cohesion in the context of EU enlargement, especially through combating unemployment and its effects and protecting the environment. The increase in funds was also due to the inclusion of new states in internal policy tasks.

Indeed, the consciousness of being behind the US in terms of creating and disseminating knowledge has prompted European leaders to establish the goal of becoming "the most competitive knowledge-based economy and the most dynamic in the world by 2010" at the Lisbon European Summit in March 2000. Two years later, it was translated into specific European objective to allocate around 3% of GDP for research and innovation by 2010 (Ritzen and Soete 2011).

In February 2004, the European Commission presented the 2007-2013 Financial Perspectives, based on a new expenditure structure, which refers to the priorities of the European Union for the coming years (European Commission 2004). Over the past decade, it could be observe an evolution in EU R&D spending. More emphasis was put on commercialization, so that innovation starts as one of the competitive advantages of enterprises. Funds collected in the budget of the European Union should have supported the implementation of the priorities of the Lisbon Strategy assuming a significant increase of the competitiveness of the EU economy. In order to strengthen technological development, the 7th Framework Programme has been created to establish European Technology Initiatives, to raise the level of research by provoking competition among research groups at European level, and to strengthen coordination in national research programmes as well as collaborative actions in science, technology and engineering.

The connection of cohesion policy with the Lisbon Strategy was also at regional and local level, involving regional and local actors and social partners, especially in areas such as innovation, the knowledge economy, new information and communication technologies, employment, human capital, entrepreneurship, support to small and medium enterprises and access to venture capital. For the new programming period 2014-2020 the European Commission presented new financial instrument which constitutes the element of the Innovation Union

flagship initiative. Innovation Union is a part of Europe 2020 Strategy with three priorities: making the EU more competitive on the global, innovation field, faster commercialisation of ideas and closer and more effective cooperation of European institution, state and local authorities and business. Horizon 2020 – with almost EUR 80bn of funding - was the EC proposal for the creation of a new common strategic programme for research and innovation (European Commission 2011), bringing together instruments that existed in the previous Multiannual financial framework to meet Lisbon goals (the 7th Research framework programme, the Competitiveness and Innovation Framework programme and the European Institute for Innovation and Technology). The main approach was to treat innovation not only as a launch of new products, but also taking into consideration processes, systems and the use of European strengths in design, creativity, service and social innovation (European Commission 2014a).

It is worth to underline, that financial crisis 2008 has a powerful influence on the cohesion policy realized by EU. In 2008 European Commission published European Economic Recovery Plan (European Commission, 2008) with two broad priorities: development of innovative economy and preventing climate changes and promoting energy security. In 2010 Agenda 2020 Strategy was created keeping the objective, that the European Union as a whole should invest at least 3% of GDP (2% of private funds and 1% of public expenditure) in research and development to be more competitive towards the rest of the world. The failure of the Lisbon strategy resulted from the lack of political will and coherence of programmes for the whole EU accompanied by the crisis of 2008.

It needs to be stressed that European structural and investments funds like European Regional Development Fund and European Agricultural Fund for Rural Development are incorporated in many investments where R&I play also an important role.

Another tool encouraging investments is the European Fund for Strategic Investment created in 2015 as a new initiative which mobilises public and private funds in many investments areas where one of the sector is research, development and innovation. Selection is based on the competitive base without geographical preferences. Public funds come from national sources but the most important are loans and guarantees offered by the European Investment Bank. EFSI is based on the idea of leverage where guarantees from EU budget and EBI should release about EUR 500bn to 2020 (European Commission 2016a). EFSI authorities choose the best projects which fulfill several conditions: economic viability resulting from cost / benefit assessment, coherence with the European Union's policies, fulfillment of the principle of additionality, according to which the project would have no chance of being implemented without the EFIS, even if other EU support instruments were provided and technical feasibility of the project.

In the draft opinion of the Commission of Territorial Cohesion and EU Budget of the Committee of the Regions of 2 March 2017 it is underlined that cohesion policy contributes to the reduction of differences between countries and regions by fostering innovation activities of companies. It points out that (European Committee of the Regions 2017) “the ESIFs are not comparable with centrally managed initiatives such as the EFSI. While the EFSI generates investments at European and national level in the form of individual projects, the use of ESIFs in connection with the regional innovation strategies provides for the sustainable strengthening of economic, social and territorial cohesion within regional and local authorities, ensuring the balanced and harmonious development of the EU as a whole. (...)

Both tools – the ESIFs and EFSI – are mutually complementary and must not conflict with each other”.

## 5 EU subsidies for business R&D in Poland

Poland is the biggest beneficiary of EU funds. In the EU 2014 – 2020 perspectives Poland is expected to obtain more than EUR 100bn. Under difficult budgetary conditions, it is crucial for the government to ensure efficiency of public spending on research and innovation programmes and enhance its leverage over private investment. The public sector plays a significant role in the Innovation Union initiative by: creating a regulatory base with rules and instruments which could enable to develop innovative ideas and solutions, stimulating private investment, spending public funds on R&I infrastructure, new ideas and their implementation and finally, by enhancing stronger collaboration between public and private entities.

By analyzing EU spending on research and development for Poland (Table 1), it can be seen that before the accession, in the period 2000-2003, the average amount was EUR 12.4m, so that in 2004 it would increase to EUR 31.3m, while the average in 2004-2006 amounted to EUR 37.4m. Over the period 2007-2013, two programmes, the Competitiveness and Innovation and the 7th Research Framework Programme, were awarded EUR 56.9m annually. In turn, from the Horizon 2020 programme only in the first two years of its operation, EUR 92m out of EUR 17 041.6m has been obtained. The European Commission estimates (2014, p. 218) that in previous MFF 2007-2013 around EUR 9.4bn (of the EUR 67bn of Structural Funds allocated to Poland; 14% of the total) was dedicated to RDI.

**Table 1:** Projects implemented in Poland under RDI activities (ESIF and agricultural funds excluded) in the period 2000-2015 (in EUR m)

Source of financing	Amount for Poland	Total EU amount	Polish share in total expenditure (2/3) in %
1	2	3	4
2000-2006			
Research and technological development	161.7	27 417.0	0.59
2007-2013			
Competitiveness and innovation	22.7	2 672.6	0.85
7th Research framework programme	375.5	49 765.7	0.75
2014-2020			
Horizon 2020	92.0	17 041.6	0.54
European Fund for Strategic Investment	380.0* / 1 288.0**	1 508.0* / 4 462.0**	25.20* / 28.87**

\*EFSI financing

\*\*total investment related to EFSI initiative

Source: Authors' own research based on the European Commission data.

Analysis of the use of R&D funds in Polish operational programmes using the ESIF (European Structural and Investment Funds) indicates that the most important sources of funds are the European Regional Development Fund with a small share of the European Agricultural Fund for Rural Development (Table 2). The Smart Growth Operational Programme is the core of the financial support for enterprise innovation, for which EUR 8.6bn is allocated. Its priorities include, inter alia, the increase in research activity of enterprises, the development and commercialization of innovative products, services and technology, the development of research and development centers in enterprises, the support of start-up firms and the internationalization of companies. Support for innovation at regional level is also offered by sixteen regional operational programmes where each of the Polish region decided to choose smart specialisations to be developed.

**Table 2:** Spending on strengthening research, technological development and innovation in Poland 2014-2020 (EUR)

Type of programme	Type of fund	EU amount	National amount	EU co-financing (%)
Poland - Rural Development Programme (National)	EAFRD	84 627 076.00	48 371 629.03	63.63
ROP 1 to ROP 16 Regional Operational Programme for 16 Voivodeship 2014-2020	ERDF	2 235 372 312.00	414 934 613.00	85.00 (80.00 for ROP 7)
OP Smart growth	ERDF	6 116 056 353.00	1 119 239 952.00	80.00-85.00

**Source:** Authors' own research based on the European Commission data.

In order to investigate the impact of public spending on business research and innovation in Poland and other EU member states, it could be used Pearson correlation analysis. For calculations it has been chosen the period 2000-2015, which is from the beginning of the first financial perspective in which Poland participated as a candidate and as a member of the European Union. It has been found strong positive correlation between these variables (the Pearson correlation coefficient is 0.861), which is statistically significant ( $p$ -value  $<0.001$ ). Results could be interpreted also in reverse: as the influence of business spending on public finance, but the literature review and other studies mentioned above indicate that rather public expenditure (including EU funds) stimulate private investments (Table 3).

**Table 3:** R&D expenditure (GERD) – findings

	Mean	Minimum	Maximum	Standard deviation
Public sector spending on business	380.85	0.012000	2910.8	684.79
Business own spending	4492.0	2.2010	53977.0	9203.3

Source: Authors' own research based on the Eurostat data.

The high positive correlation between public R&D expenditures on businesses and those within firms can lead to the conclusion that public funds (whether national, foreign or EU) stimulate businesses to make their own extra spending. However, the higher expenditure on

R&D does not imply bigger effects (improved innovation capacity) (Veugelers 2016). This is often the so-called additionality principle, i.e., the dependence of receiving public funds on own financial contribution, but simultaneously it cannot be excluded the appearance of a deadweight loss, i.e. the implementation of private R&I expenditure even without public support. The effect of a deadweight loss is defined as the degree to which projects would be implemented in a hypothetical situation, where public support would not be granted (including the EU financial aid) (Lenihan, 2004).

In evaluating policy intervention it is usually underlined an importance of quantifiable casual effects of undertaken policy instruments. In this type of study, described also as counterfactual impact evaluations, the focus is on proper measuring the actual contribution of the public intervention and the main difficulty lies within differentiating the influence of policy tool and other factors independent from this policy intervention. The key issue here is to determine the direction and size of change in studied result indicators caused by the intervention itself. Searching for the casual link between a policy treatment and change in a given phenomenon (reflected in targeted indicators) is often the subject of economic research. It is usually based on advanced statistical methods e.g. propensity score matching, difference-in-difference, instrumental variables and randomised controlled trials. The potential endogeneity and selection bias are core issues encountered in econometric analysis used in counterfactual impact evaluations (Czarnitzki and Toivanen 2013).

**Table 4:** Target achievements for European Structural and Investment Funds 2014-2020- indicators for Research and Innovation priority for Poland

Indicator	Target Value	Measurement unit
Number of firms receiving support	10 774	Enterprises
Number of firms receiving grants	10 022	Enterprises
Number of firms receiving financial instrument support (non-grants)	430	Enterprises
Number of firms receiving non-financial support (advice)	292	Enterprises
Number of firms with support for R&I to introduce new to the market products	76	Enterprises
New direct jobs in supported firms	16 237	Full time equivalents
Private investment matching public support to enterprises (grants)	3 179 527 317	EUR
Private investment matching public support to enterprises (non-grants)	289 558 000	EUR
Number of firms cooperating with research institutions	5 572	Enterprises
Number of new researchers in supported entities	426	Full time equivalents
Number of researchers working in improved research infrastructure facilities	2 408	Full time equivalents

Source: European Commission

Besides the popularity of casual effect evaluations, the European Commission seems to favourise the broader approach in assessing the EU initiatives, which is known as theory-based impact evaluations (European Commission 2014b). It answers the question of “why and how” the particular type of intervention work, not only on the size of its contribution. Its value stems from the fact that policy makers requires different types of information to implement



evidence-based policy making and to be accountable to citizens. Special emphasis is put on policy achievements measured by results indicators. Table 4 presents indicators for Poland for the period 2014 – 2020.

## 6 Conclusions

Taking into consideration the European Parliament opinion (2016) about the role of programmes and projects concerning R&I for competitiveness support in the EU the amount of spending in this category should be maintained, if not increased, bearing in mind other challenges such as security, defence and migration.

After 2020 we could consider that more frequently via the EU budget some innovative financial instruments (FIs) will create the leverage effect, but their effectiveness must be strongly justified (Núñez Ferrer and Figueira 2011; Haase 2016; Bachtler, Mendez and Polverari 2016; European Commission 2016b; European Commission 2016c). The EP (2016) outlines that “a shift from traditional financing to more innovative instruments is not advisable in all policy areas, as not all policies are entirely market-driven; highlights that financial instruments provide an alternative and complementary way of funding”. The combination of funding from the EU budget with loans and guarantees by the EIB Group, other public and private loans, loans guarantees, venture capital (equity, seed money and mezzanine loans) would be needed for business R&I. In effect the role of the EU financing would be strengthened by other resources what could lead to better effectiveness and larger scale of EU activity. The private involvement is indispensable when it comes to cover high costs of testing at industrial scale or marketing (Núñez Ferrer and Katarivas 2014). However it seems that during next MFF financial instruments will be treated still as complementary tool for public sector and delivering of public goods but their influence on business innovation is recommended.

The problem of evaluation of R&D grants is important for evidence-based policymaking. Expenditures for research and innovation in EU budget are identified as a candidate for smart public spending because of its alleged growth effects. This is especially important nowadays - under difficult budgetary conditions in many EU countries and in light of the growing concerns over the common cohesion policy not bringing significant added value to the European Union.

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## Index of Authors

<b>A</b>			
Alsufyev, Artem	637	Frączek, Bożena	224
Azevedo Lobo, Carla	498	Franc, Sanja	727
<b>B</b>		<b>G</b>	
Baković, Tomislav	682	Gavrilova, Tatiana	637
Bejinaru, Ruxandra	575	Gonzalez Hernandez, Luz Maria	400
Bilas, Vlatka	727	Grabińska, Barbara	738
Bilińska-Reformat, Katarzyna	263	Grisold, Thomas	509
Block, Madeleine	572	Gutlić, Selma	94
Bosilj Vuksic, Vesna	161	<b>H</b>	
Bošnjak, Mile	727	Hatch, Andrew P.	351
Bratianu, Constantin	18	Hermeling, Anke	68
Brozović, Mateja	78	<b>J</b>	
Bušljeta Banks, Ivana	94	Jošić, Hrvoje	698
<b>C</b>		Jošić, Mislav	698
Caganova, Dagmar	139	<b>K</b>	
Cardoso, Pedro	380	Kaewpijit, Juthamas	557
Cesário, Francisco	395	Kharabsheh, Radwan	108
Chien-I Chen, Sonia	108	Khazieva, Natalia	139, 342
Chiripuci, Bogdan Cristian	127	Kieźel, Małgorzata	224
Cole, Crystal	483	Kinghorn, Johann	576
<b>D</b>		Kljajić Dervić, Mirela	94
Dadić, Mario	186	Knego, Nikola	148
Damić, Mate	682	Knežević, Blaženka	210, 288
Delić, Mia	148	Kokoulina, Liudmila	637
Dewalska–Opitek, Anna	248	Kolesar, Suzana	210
dos Santos Costa, Sandra Cristina	413, 525	Kovalev, Aleksandr	139
Dragicevic, Nikolina	457	Kragulj, Florian	470
Dumičić, Ksenija	288	Kubelskiy, Miroslav	589
Dužević, Ines	148	Kudryavtsev, Dmitry	589
<b>E</b>		Kyaw, Thiri	557
Ehlen, Corry	545	<b>L</b>	
Esparza Hernández, Carlos Alberto	645	Leal, Carmem Teresa	444, 616, 626, 668
<b>F</b>		Lee, WB	457
Fahrenbach, Florian	304, 470	Lopes da Cruz, Maria	668
Fašnik, Maja	432	Loureiro, Marlene	626
Fatović, Marin	197	Liu, Gang	529
Findneider, Thomas	21	<b>M</b>	
		Madeira, Carlos	380

Majewska, Justyna	430	Škrobot, Petra	210
Mak, Chee Wai	366, 557	Smetana, Judy B.	329
Maldonado, Isabel	498	Sousa, Maria José	524
Mamić Sacer, Ivana	42	Srića, Velimir	15
Mandić, Miroslav	235	Stabryła-Chudzio, Katarzyna	738
Marques, Carla Susana	616	Stefańska, Magdalena	224
Maszczyk, Teresa	55	Suša Vugec, Dalia	161
McLean, Gary N.	13, 400		
Meeh-Bunse, Gunther	68	<b>T</b>	
Morais, Carlos P.	413, 525	Todirica, Ioana Claudia	127
		Tomé, Eduardo	
<b>N</b>			323, 351, 395, 413, 524, 525, 572
Naletina, Dora	682	Truskolaski, Szymon	430
Neumann, Gaby	656	Tsui, Eric	457, 529
<b>O</b>		<b>V</b>	
Oliveira, Cidália	600	Veretennik, Elena	342
		Viedma Marti, José María	25
<b>P</b>		Vlahovic, Nikola	273
Pavić, Ivana	28, 42	Vuković, Dijana	42
Peixeira Marques, Carlos	616, 668		
Pejic Bach, Mirjana	161, 432	<b>W</b>	
Perić, Tunjo	197	Welfel, Sherrie	329
Peschl, Markus F.	21, 509	Wiehoczek, Joanna	248
Pešić, Saša	172		
Petkovic, Goran	172	<b>Z</b>	
Petričević, Duje	186	Žager, Katarina	28
Phaopat, Nopparat	366	Žmuk, Berislav	288
Pinho, José Carlos	600	Zoroja, Jovana	432
Pinto, Vera Lúcia	323		
Plazibat, Ivana	186		
<b>R</b>			
Ratten, Vanessa	616		
Rep, Ana	28		
Reformat, Beata	263		
Rodrigues, Ana Paula	380		
Rodrigues, Ricardo	444		
Rogers, MeLisa	329		
Rukavina, Ivana	308		
<b>S</b>			
Salam, Md Abdus	710		
Schomaker, Stefan	68		
See-To, Eric W.K.	529		
Sehic, Jutta	301		
Sever Mališ, Sanja	78		
Silva, Anabela	600		
Silva, Rui	444, 626		
Skočibušić, Ivana	235		

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