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Enhancing Learning Through Service

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Abstract

Service learning is a pedagogical approach in bringing course learning goals and community service together. It involves application of what has been learned in the course into something practical and useful for transfer to the community. It enhances students' cognitive abilities of higher order thinking skills as it requires them to process curricular learning from mere understanding to application, analysis, evaluation, and creation / formulation of appropriate activities relevant and responsive to the needs of the community. It also immerses the students into the areas of decision making and problem solving.

This paper tells about the experiences of the graduate students enrolled in the course, "Group Process and Program Development", during the 1st semester of academic year 2016-2017. The course aimed to benefit the students as they realize the depth of their understanding of the course and to connect them to the needs of the community. It culminated with service learning. It engaged the students in planning as a group to come up with a psycho-educational seminar workshop and to implement it at the Iloilo Children Welfare Foundation.

This experiential learning was found to benefit both the 15 graduate students and the 27 adolescent participants. For the students, the experience facilitated the cognitive abilities towards higher order thinking skills, helped develop cooperation and tolerance, and enhanced their group process skills. The participants on the other hand, gained better understanding of themselves, were enlightened about the realities of being an adolescent, and realized the need to cope and adjust to these realities.

Keywords: service learning, pedagogical approach, group process, psycho-educational workshop

Comparing learners' learning styles and teachers' teaching styles in physics classrooms of two secondary schools in Beira, Mozambique

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Abstract

The occurrence of learning difficulties in the areas of natural sciences is quite old, especially in Mozambique. For solving this problem, in physics education several strategies have been carried out aiming to reduce the level of abstraction in learning concepts, phenomena description and treatment of laws. Nevertheless, in the classroom, each student has a specific way of internalizing the taught contents. Likewise, the teacher has a favorite way of preparing and administering classes. Both these styles, teaching versus learning, do not often coincide in real cases. Empirically some teachers seek to diversify the learning activities for their learners. Therefore, this study seeks to understand different ways in which every student better internalizes the information being delivered in a class. The results of this study are useful helping teachers with planning classes because learner's needs were considered. The focus of the current study is on the learning styles (Visual, Auditory and Kinesthetic VAK), which were identified by research developed by Neuropsychology program (Alvarez, 2001) and (Felder & Silverman, 1988). The VAK learning styles are based on the use of sensory channels as vision, hearing, touch and movement. Visual learners learn visually by means of charts, graphs, and pictures. Auditory learners learn by listening to lectures and reading. Kinesthetic learners learn by doing. This research inferred the predominant VAK learning styles in learners of two Secondary Schools in Beira Mozambique. Following variables were considered for studying VAK learning styles of the learners: gender, teaching strategies adopted in physics classes and the learners interest level for physics. The study involved a sample of 159 learners from the 8th to 12th grade aged 12 to 20 years, of which 87 were girls and 72 were boys. **Results:** It was found that most of the learners learning style was kinesthetic and the majority (73%) of physics classes were conducted by using of an auditory teaching style. From the t test [the mean difference sig (2 tailed) was 0.164)], there was no significant difference in learning style of boys and girls in the selected sample. Also, it was found that learners are more likely to Biology than Chemistry, Physics and Mathematics.

Keywords: Visual, Auditory, Kinesthetic, learning Physics, teaching style

1. INTRODUCTION

In the Modern Education, the knowledge of how learners like and are able to learn content is fundamental. This information is less privileged in the Mozambique education lessons. It is perceived as a learning style, to the set of factors of cognitive, emotional and physiological that serves as relatively stable indicators to explain the different ways in which an individual perceives, interacts and reacts in a learning environment. This research took place in Sofala Province at Beira City. The study diagnosed the VAK learning styles of learners and its relationship with physics teachers teaching styles. It was based on neuropsychology and pedagogy program that highlighted three styles of learning, associated with sensory channels; Visual, Auditory and Kinesthetic (VAK). The paper addresses the following four research questions: (a) What is the most prevalent learning style of learners in general secondary education? (B) What is the teaching style most prevalent in physics teachers of general secondary education? (C) Are there differences between the learning styles of boys and girls in schools? (D) What is the level of learners interest in physics comparing to other subjects?

2. Theoretical framework

The theoretical framework of this research is based on the learning styles developed by neuropsychology and pedagogy program, Alvarez (2001), Felder & Silverman (1988), Duckett&Tatarkowski cited Gallert (2005 (Amaral, 2007) and learning styles tests (Haun, 2012).

Brown (2000) defines learning styles as the manner in which individuals perceive and process information in learning situations. He argues that learning style preference is one aspect of learning style, and refers to the choice of one learning situation or condition over another. Celcia-Murcia (2001) defines learning styles as the general approaches—for example, global or analytic, auditory or visual—that learners use in acquiring a new language or in learning any other subject.

Gilakjani (2012), analyzing Visual, Auditory, Kinaesthetic Learning Styles and Their Impacts on English Language Teaching in Iran with 100 learners, found that Iranian university learners preferred learning style was visual.

Also, Akplotsyi & Mahdjoubi, (2011) analyzing the effects of learning styles on engaging children in school projects with 151 children of primary school found that preferences for engagement methods differed significantly between the three learning style modalities.

Up to now, there are results of studies done in Mozambique aiming to know the different ways to make learners being engaged on what they learn. Although many researchers are interested in developing models of teaching physics using IT, experiments, analogies, sometimes playful environments, only to mention, results show that learners are having learning difficult. That's why, this study is intending to analyze to problem from the starting point. All teaching resources might be used through learners needs to make the leaning meaningful.

Nevertheless, Gholami & Bgheri (2013), studying relationship between VAK Learning Styles and Problem Solving Styles regarding Gender and Learners' Fields of Study with 102 learners from Boushehr Islamic Azad University in Iran, they found that there is a positive relationship between VAK learning styles and problem solving styles and also, the fields of study did not have an effect on VAK learning styles and problem solving styles even the gender has no effect on VAK learning styles, but it has an effect on problem solving styles.

Dunn and Dunn (1978), only 20-30% of school age children appear to be auditory learners, 40% are visual learners, and 30-40% are tactile/kinaesthetic or visual/tactile learners. Barbe and Milone (1981) stated that for grade school children the most frequent modality strengths are visual (30%) or mixed (30%), followed by auditory (25%), and then by kinaesthetic (15%). Price, Dunn, and Sanders (1980) found that very young children are the most tactile/kinesthetic, that there is a gradual development of visual strengths through the elementary grades, and that only in fifth or sixth grade can most youngsters learn and retain information through the auditory sense. Carbo (1983), investigating the perceptual styles of readers, found that good readers prefer to learn through their visual and auditory senses, while poor readers have a stronger preference for tactile and kinesthetic learning.

2.1 VAK learning styles

Starting from the idea that an "individual builds models of reality that allows himself to know much of the world that surrounds him" (Moreno Sastre, Bovet and Leal, 2000, p. 78), several authors emphasize the diagnosis of VAK style of learners as an identification tool to be made at the beginning of a learning process.

Visual style: This style allows to grasp the message through images, which facilitates the absorption of a large amount of information quickly. Visualization helps establish relationships more easily between different ideas and concepts. This system is triggered when, for example, teacher is presenting maps, figures, schemes to learners. Visual learners need visual stimulation billboards, video and movies. They must have written instructions if they are working well in the classroom (Oxford, 1995).

Auditory style: Permits to learn information through sounds, as when we hear explanations or even when we provide information to others. This system is not very effective in dealing with concepts, but it plays crucial role in learning languages and music, for example.

Kinesthetic style: This system acts as combining information to our body movements or perception of what happens to us internally. It is the mechanism that acts naturally when we learn a sport, for example, or when automate behavior so that you can run it without us to think how we are doing. Though a slower learning system, it is much more durable and deeper than from the other systems. We can easily remember a list of words that visualize or hear, but never forget, for example, how to realize an experiment already done.

3. Methodology

The methodology used in this research was the bibliographical research and also predominated the VAK 20 questions test (Haun, 2012) divided into two parts. The objective of the first part was to diagnose the VAK learning style of learners and the second part to diagnose the VAK teaching style of teachers. A sample of 159 learners was

selected randomly. The classes should be assisted by different teachers so it was possible to obtain an overview of the physics classes at the two schools. Each question had three options A, B, C referring to Visual styles, Auditorium and Kinesthetic respectively. The style was identified by counting the number of times in each respondent chose a particular option (A, B or C). For example, the greater the number of times to choose option A student would have Visual style auditorium B and C Kinesthetic. There are cases where the number of times the respondent chose a particular option were the same, thus the learning style was represented as combined.

The test took place on March 2006, during 25 minutes so that teachers should have time for them to fulfill other activities in their lesson plan.

Finally, data analysis was quantitative and interpretive information given by the sources with the aid of t-test and descriptive statistical of frequencies. The program used for data analyze was SPSS 20.

4. Findings
The data led the researchers to following results:

Graph 1: Identified learning styles among the learners
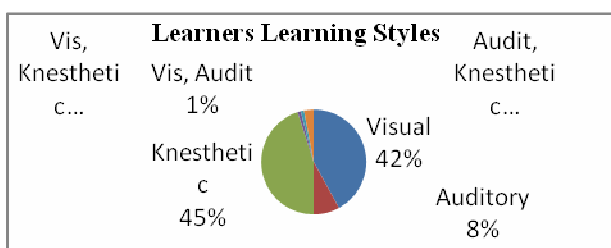
Graph 2: Identified teaching styles
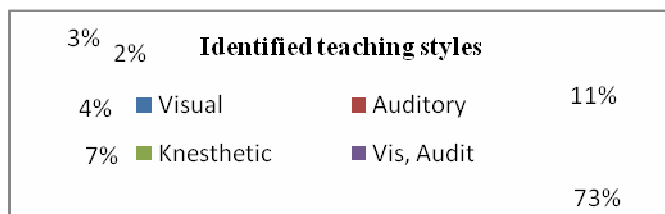
Graph 3: The learners' preference for the subjects
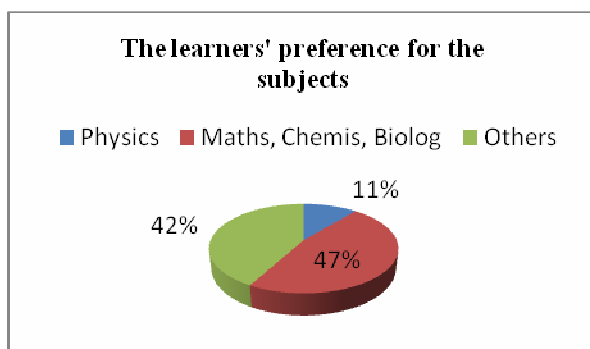
4) Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Learning style of learners	Equal variances assumed	.419	.518	-1.399	157	.164
	Equal variances not assumed			-1.382	142.300	.169

Table 1: T Test Comparing learning style by gender

The graph 1) shows that learners have more kinesthetic profile, which means that they prefer learning by doing through touch and movement. However, the natural sciences such as physics are learned best through mental and practical work using hands. (Höttecke, 2000). This feature makes this empirical science, because observation and experimentation should always be present.

The graph 2) shows that the model of classes in the surveyed classes is more auditory, based on exhibitions and dictation notes, made by the teacher. And the activity of the learners was to be mere listeners. In this style, it gives little opportunity for learners to develop the ability of observation and experimentation that is fundamental in learning science.

The graph 3) illustrates that learners have no sympathy with the discipline of physics. Of categorized data it was found that learners have higher affinity to learn the discipline Biology in the range of disciplines of natural sciences and mathematics. This may be being influenced by the nature of the discipline that most closely matches the style of the learners and more moves away from the style of the dominant classes, as noted; classes are more audits for more kinesthetic learners.

Nevertheless, for the learning of physics better become effective, the diversification of learning activities is essential. That is, resorting to the use of maps, diagrams, videos, observed phenomena of the day-to-day, study visits and experiments in the home or school environment. The challenge of learning based on problem solving can improve learners' interest in physics, since they have an opportunity to observe and learn by doing.

4. Discussion

The results indicate that only 11% of learners have physics as the favorite subject, 47.0% sympathy in learning science disciplines other than physics, i.e. Chemistry, Biology and Mathematics with a higher incidence in Biology. Nevertheless, 42% prefer other subjects of the curriculum. Results also indicate that 45% of the sample favours a kinesthetic learning style such as the use of touch and motion for learning, this is, learning by doing. Only 8% of the sample prefers learning through hearing, that is, learning by listening, but 42% prefer learning through watching. The remaining 5% indicate to favour learning through combining several VAK learning styles.

In contrast, the majority (73%) of physics classes is conducted by using an auditory teaching style, that is, teachers are making the exposition and the learners as simple listeners, as well as copying notes. Physics is an empirical science and this implies that observation and experimentation play a crucial role. The study of physics would be more fruitful if the teaching styles applied by the teachers were more kinesthetic and visual. However,, the results indicate that these two strategies were identified in only about 2% of the lessons.

It was noted from the t test, measuring the difference in learning styles by gender, that (p value> 0.05) was 0.518 then, the same variances assumed. However, the mean difference sig (2 tailed) was 0.164 and it is concluded that there is no significant difference in learning style of boys and girls in the selected sample.

6. Conclusions

The research allowed giving some indicators of the teaching and learning of physics in secondary schools. The VAK style diagnosed in learners allowed realize that while teachers are interested in exposing the content, learners need to learn by doing. A study conducted by Specific Diagnostic Studies in U.S, also found that, 29% of all learners in elementary and secondary schools are visual, 34% auditory and 37% learn best through kinesthetic / tactile modes (Miller, 2001). This suggests that the style of the classes most of the time does not meet the learners' needs. Could also realize that there is no an appropriate style for girls and boys in learning, but the styles depend on individual characteristics developed. Other reflection is that, teachers must diagnose the learning style of their learners soon at the beginning of classes for the better plan. This planning can diversify activities and objects for learning beyond the basic (experimental and lectures), can also favor the use of technological means and

simulations., playful environments, study visits, interpreting graphs, use of audiovisual media, observation and interpretation of phenomena, only to mention but a few.

Acknowledgements

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Appendix A. Test Model VAK (Haun, 2012). http://oblogderedacao.blogspot.de/2012/09/dicas-de-estudo-estilos-de-aprendizagem.html

Age in 2016: _____, favorite subject_____ Gender_____ Grade / Class__
___
1. I like to solve exercises:
[A] written [b] oral [c] performing tasks (practicing)
2. I like to win this one:
[A] beautiful [b] sound [c] helpful
3. I have an easier time remembering the people:
[A] the face [b] name [c] attitudes
4. I learn more easily:
[A] reading [b] listening [c] making
5. Activities that suit me:
[A] photo / painting [b] music / oratorio [c] sculpture / dance
----
6. Most of the time, I prefer:
[A] observe [b] listen [c] do
7. Remembering happy times, I have in mind:
[A] scenes [b] sounds [c] the sensations
8. On vacation, I like to:
[A] visit beautiful places [b] stand in silent places [c] participate in activities
9. I value in people mainly:
[A] the appearance [b] what they say [c] what they do
10. I realize that someone like me:
[A] the way I look at [b] by the way you talk to me [c] the attitudes that manifest
----
11. My favorite car has to be mainly:
[A] new / beautiful [b] silent, to be able to talk and listen to music [c] spacious / well equipped
12. When I buy something, I look for:
[A] good look at the product [b] listen to the seller [c] experience
13. I make decisions based on that:
[A] I see [b] listen [c] I
14. What in excess bothers me most is:
[A] agglomeration [b] light [c] noise
15. Feature I like most:
[A] color [b] tune [c] tasty
----
16. In a show, I value more:
[A] light [b] tribune [c] gesticulation
17. While I expect a person, I look for:
[A] observe the environment / read something [b] listen to music / eavesdrop [c] walk / move your hands
18. I enthusiastically me more when others:
[A] show [b] speak [c] do
19. To comfort someone, I look for:
[A] show the way [b] take word of comfort [c] offer money
20. What gives me the most pleasure is:
[A] visit an exhibition [b] watch a musical show [c] play in an amusement park
When would study Morning [a] Of late [b] From the night [c]
21. I like to study
[A] With teacher's explanation [b] read and transcribe the note [c] Practicing with my hand

Tick taking into account that 1 is the lowest frequency attitude and 5 the highest frequency that is:
 Never (1) Rarely (2) Sometimes (3) Often (4) Always (5)

Response Scale	1	2	3	4	5
Most of the time my Physics classes are characterized by					
Video classes					
Resolution exercises					
Conducting experiments					
Interpretation of Graphs					
Passing notes					
Images Illustration under					
Illustration of photographs					
Listen to audio discs					
Listen explanation of theories in the context					
Observe the deduction formulas under					
Read book student in the room					
Attend classes with Data-Show aid					
Lessons with real-life examples					

Prosocial Tendencies Measure For Preservice Teachers

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Abstract

The current research has examined the level of prosocial tendecies of presevice teachersparticipating in pedagogical formation training at the educational faculty of Haci Bektaş Veli University in Nevşehir and to determine whether they differ according to some variables. The descriptive survey model was used in the study. The sample of the research consists of 267 students. The data was collected using the 'prosocial tendecies scale' that was developed by Carlo and Randall (2002). The data was analyzed using arithmetical mean, ANOVA and Mann-Whitney U tests which mesure whether preservice teachers' prosocial tendecies differ according to gender, age group and professional field variables. The results of the research stated that the general status of preservice teachers' prosocial tendencies was found as 'medium'; the males has higher mean range than females; the age group of 30-40 has higher mean range than the age group of 18-30.

Keywords: Preservice teachers, prosocial behavior

1. INTRODUCTION

Various research studiesshow that educators, parents and the public emphasize importance of students' social–emotional competence, character and health as well as importance of the academic performance of students (Rose and Gallup, 2000). Educational agenda aim to not only contribute the improvement of students' academic achievementbut also focuses on helping students on social and emotional behaviors such as interactingwith society respectfully; practicing positive, safe, and healthy behaviors; contributing ethically and responsibly to their peer group, family, school and community; having basic qualifications, work habits and values for employment area and engaged citizenship (Jackson and Davis, 2000).

Teachersare responsible for training students on advanced social and emotional behaviors. These teachers manage classroom by developing advanced social and emotional classroom climate and so they contribute the development of desired student outcomes in classroom. Classroom environment supportsrespectful communication skills, problem solving, supporting individualism and students' needs, avoiding conflicts and smooth transitions from one type of activity to another (La Paro andPianta, 2003).

Kumru and others (2012), Kumru and others (2004), Carlo and Randall (2002), Carlo and others (1999), Fabes and others (1999) were studied in the current research. These studies aimed to measure the attitudes of teacher candidates towards prosocial tendencies and determining whether their attitudes differ according to gender, age group, branchvariables. The current research has examined the level of prosocialtendecies of presevice teachers participating in pedagogical formation training at the educational faculty of HaciBektaşVeli University in Nevşehir and to determine whether they differ according to some variables. The descriptive survey model was used in the study.

2. Prosocial tendencies measure

Altruism: Altruistic prosocial behaviors involve voluntary helping or concerning for the needs and welfare of another (Eisenberg and Fabes, 1998; cited in Carlo and Randall, 2002).

*Compliant:*Helping others in respond a verbal or nonverbal request is characterized as compliant prosocial behaviors (Eisenberg *and others*, 1981; cited in Carlo and Randall, 2002).

Emotional: Helping others under emotionally evocative situations is defined emotional prosocial behaviors (Hoffman, 1982; cited in Carlo and Randall, 2002).

Public: People are likely to be motivated to show prosocial tendencies in front of an audience. They desire to gain the approval and respect of others (e.g., parents, peers) at least (Buhrmesterand others, 1992; cited in Carlo and Randall, 2002).

Anonymous: Helping anyone without having knowledge of him or her was characterized as Anonymous prosocial behaviors. (Carlo and Randall, 2002).

*Dire:*Helping in crisis or emergency circumstances was defined as dire prosocial behaviors (Carlo and Randall, 2002).

3. Method

The current study was designed according to quantitative research methods. The descriptive survey model was used in the study.

3.1. Participants

The work group of the research consists of 267 studentsparticipating in the pedagogical formation curriculum at NevsehirHaciBektaşVeliUniversity Faculty of Education. The data collection tool was distributed to 300 teachers, but 274 returned from the teachers. 92 of the teachers who participated in the research were male, and 182 were female. Professional fields of the teacher candidates were fine arts, Turkish language and literature, physical education, theology, health science, philosophy, tourism and gastronomy. While 236 of the teacher candidates were in the age range of 18-30, 24 were in the range of 30-40. 140 were from the inner Anatolia region, 22 were from the eastern Anatolia region, 16 were from the Marmara Region, 11 from were the Aegean Region, 40 were from the Mediterranean Region, 18 were from the Black Sea Region and 26 were from the South Eastern Anatolia Region.

3.2. Instruments

Prosocial tendencies measure (PTM) designed by Carlo and Randall (2002) was used in the current study. Scale is designed as 5 likert type scale.

3.3. Data analysis

The arithmetic mean was looked at to measure prosocial tendencies of preservice teacherswho participated in pedagogical formation training. The arithmetic mean of 1.00-1.79 was accepted as fairly low, 1.80-2.59 was accepted as low, 2.60-3.39 was medium, 3.40-4.19 was high and 4.20-5.00 fairly high. Statistical calculations done with the data of the study show normal distribution according to professional field and the region variables; however statistical calculations did not show normal distribution for gender and age variables by considering the values of kurtosis and skewness. Kalaycı's (2009) criteria were taken into account related to which test should be used. Therefore, Mann-Whitney U test was used to test whether prosocial tendencies of preservice teachers differaccording to gender and age variables; ANOVA test was used to test whether prosocial tendencies of preservice teachers differaccording to professional field variable.

4. Findings

4.1. Arithmetic mean of *preservice teachers'* prosocial tendencies

Table 1 shows the arithmetic mean and the level of preservice teachers' prosocial tendencies.

Table 1.*Arithmetic mean of preservice teachers' prosocial tendencies*

	N	Mean	Level
Public	267	1,7980	Fairly low
Emotional	274	3,8586	High
Altruism	274	2,2275	Low
Dire	274	3,6479	High
Compliant	274	4,1296	High
Anonymous	274	4,1172	High
Total	274	3,2965	Medium

According to the findings in Table 1, the general status of *preservice teachers'* prosocial tendencies was found as 'medium'. The level of showing the prosocial tendencies related to the 'Public' factor was found to be 'fairly low', the level of prosocial tendencies belonging to the 'Altruism' factor was found to be 'low' and the level showing the prosocial tendencies related to the other factors was found as 'high'.

4.2. Preservice teachers' prosocial tendencies according to gender variable

According to Mann-Whitney U test which was used to explain whether preservice teachers' prosocial tendencies differ according to gender variable. The numbers of N, p, and mean range are placed in Table 2.

Table 2. *Preservice teachers' prosocial tendencies according to gender variable*

	N	$p < 0.05$	Mean Range	
Public	Female 182 Male 92 Total 274	,000	Female	124,88
			Male	162,46
Emotional	Female 182 Male 92 Total 274	,794	Female	136,62
			Male	139,24
Altruism	Female 182 Male 92 Total 274	,000	Female	125,51
			Male	161,21
Dire	Female 182 Male 92 Total 274	,042	Female	130,62
			Male	151,10
Compliant	Female 182 Male 92 Total 274	,225	Female	141,50
			Male	129,59
Anonymous	Female 182 Male 92 Total 274	,421	Female	140,22
			Male	132,12
Total	Female 182 Male 92 Total 274	,039	Female	130,49
			Male	151,36

Preservice teachers' prosocialtendencies vary meaningfully according to gender variable (p <.05). Only anonymous, compliant and emotional factors do not differ meaningfully according to gender variable. Looking at the findings, the mean range of males was higher than females. However, prosocial tendencies of females were higher than males only in anonymous, compliant factors.

4.3. Preservice teachers' prosocial tendencies according to age variable

According to Mann-Whitney U test which was used to test whether preservice teachers' prosocial tendencies differ according to age variable, preservice teachers' the numbers of N, p, and mean range are placed in Table 3.

Table 3. Preservice teachers' prosocial tendencies according to age variable

	N		p<0.05	Mean Range	
Public	18-30 30-40 Total	'236' '24' 260	,602	18-30 30-40	131,26 122,98
Emotional	18-30 30-40 Total	'236' '24' 260	,666	18-30 30-40	131,14 124,23
Altruism	18-30 30-40 Total	'236' '24' 260	,864	18-30 30-40	130,75 128,00
Dire	18-30 30-40 Total	'236' '24' 260	,742	18-30 30-40	130,01 135,27
Compliant	18-30 30-40 Total	'236' '24' 260	,632	18-30 30-40	129,81 137,29
Anonymous	18-30 30-40 Total	'236' '24' 260	,660	18-30 30-40	129,85 136,90
Total	18-30 30-40 Total	'236' '24' 260	,945	18-30 30-40	130,40 131,50

Preservice teachers' prosocialtendeciesdo notdiffermeaningfullyaccording to age variable (p <.05). The age group of 30-40 has higher mean range than the age group of 18-30.However, preservice teachers' prosocialtendencies in the age range of 18-30 years only in the factor of public, emotional and altruismwere higher than teacher candidates in the age range of 30-40 years.

4.4. Preservice teachers' prosocial tendencies according to professional field variable

As a result of the ANOVA test, presevice teachers' prosocialtendenciesdo not vary significantly according to professional field variable(p <.05). Table 4 shows the arithmetic mean and the level of prosocial tendencies of teachers participating in the survey according to the variable of the professional field.

Table 4. *Preservice teachers' prosocial tendencies according to professional field variable*

Professional field	N	Mean	Level	Subject	N	Mean	Level
Fine arts	42	3,4337	High	**History**	20	3,2310	Medium
Turkish language	87	3,2889	Medium	**Philosophy**	38	3,1028	Medium
Phyisical education	19	3,5048	High	**Tourism**	17	3,3868	Medium
Religion	13	3,1055	Medium	**Gastronomy**	9	3,3309	Medium
Health science	20	3,1325	Medium	**Total**	265	3,2832	Medium

The general situation of preservice teachers' prosocial tendencieswas 'medium' according to the professional field variable.Preservice teachers studying only in the subject area of arts and physical education were found to have a high tendency to demonstrate prosocial.

5. Discussion, results

According to the findings; the general status of preservice teachers' prosocial tendencies was found as 'medium'. Moreover, paticipants' answers about public were fairly low. The public factor was about helping people under society pressure. However, paticipants' answers about altruism were low. The altruism factor was about helping people without expectation. These findings show that participants' tendencies were not pushing the boundaries related to prosocial. The findings of Carlo and Randall (2002) supported the factors of public, dire, emotional and compliant; but the factor of altruism is fairly high in the research of Carlo and Randall (2002).

The general situation of preservice teachers' prosocial tendencies differs meaningfully according to gender variable (p <.05). While the preservice teachers' prosocial tendencies do not differ meaningfully according to gender variable in the factor of public, altruism, dire in favour of male, the preservice teachers' prosocial tendencies do not differ meaningfully according to gender variable in the factor of anonymous, compliant and emotional. However, The findings of Carlo and Randall (2002), Fabesand others, (1999) were in favour of female. According to the current research; male could show prosocial tendencies in front of peoplerather than female owing to the finding of public factor and could show prosocial tendencies without any expectation rather than female owing to the finding of altruism factor, moreover, male could show prosocial tendencies under dire situations rather than female owing to the finding of direfactor. The research of Carlo and others (1999) found that gaining others' approval is more important for adolescent boys than adolescent girls. According to the current research; Prosocial tendencies of females were higher than males only in anonymous, compliant factors. According to the research of Kumru and others (2004); males show more prosocial tendencies in front of people than female; females tend to show emotional, compliant and anonymous prosocial tendencies. Kumru and others (2012) found that gender and age group differences were very small on some types of prosocial behaviors.

According to the current research;preservice teachers' prosocialtendecies do not differ meaningfully according to age variable. The mean range of 30-40 was higher than the mean range of 18-30. However, the group of 18-30 years was higher than the group of 30-40 years only in the factor of public, emotional and altruism.

According to the current research, the general situation of preservice teachers' prosocial tendencies was 'medium' according to the professional field variable. Preservice teachers studying only in the subject area of arts and physical education were found to have a high tendency to demonstrate prosocial.

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An exploring of prospective mathematics teachers' technology based mathematics activities produced in dynamic geometry class

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Abstract

The aim of the case study was to explore the prospective mathematics teachers' (PMTs) GeoGebra activities produced in dynamic geometry class in terms of the aim, mathematical content and effectiveness of the activity. In 2016-2017 fall semesters, the research was conducted with the participation of 45 PMTs in the dynamic geometry course. The data collection methods was documentation (final projects, lesson plans, GeoGebra construction reports). The data were analyzed through qualitative analysis methods. According to results the aim of the activities were concrete exploration of mathematical concepts, experimentation to discover a mathematical relationship, conjecturing a mathematical axiom, modeling a mathematics problem and representing a geometric proof. The mathematical content of the activities mostly concentrate on geometry learning area. The activities were effective since it supports students conceptual learning. PMTs should have the technical skills and mathematical knowledge of content and teaching to provide concrete examples for effective usage of educational technology in mathematics teaching. There is a need for programs that train PMTs in order to fulfill their profession.

Keywords: prospective mathematics teacher, technology integration, technology based mathematics education, GeoGebra, techno-pedagogical content knowledge

1. INTRODUCTION

Teacher training programs and professional development initiatives should integrate technology with educational aims into the courses to develop teachers' knowledge of pedagogy, content and educational technology. In order to support their teaching and enhance student learning teachers need to learn how to use specific technologies in mathematics education such as GeoGebra, Cabri 3D, Tinker Plots, Geometry Sketchpad, Logo etc. (National Council for Accreditation of Teacher Education Standards, 2002).

To achieve the technological goals, teachers have to be prepared for their new roles in a technology based environment (Thompson & Kersaint, 2002) and their technology integration should go well beyond teaching technical skills (Kim & Baylor, 2008). Therefore, many teacher training programs and professional development initiatives integrate technology, with educational aims, into the courses to develop prospective teachers' (PMTs) knowledge of technology (Katic, 2008; Koehler & Mishra, 2005).

This study investigate PMT's dynamic geometry activities in terms of the aim, mathematical content and effectiveness of the activity. The purpose of the present study is to explore mathematics teachers' dynamic geometry activities produced as a final project in a course offered at a public university in the fall semesters of 2016-2017 academic year. During the course dynamic geometry software used in teaching mathematics with active mathematical experiments and problem oriented teaching. The course focused on learning of geometry, algebra and statistics topics via inquiry-based teaching with attention to the quality of mathematical knowledge and educational technology needed for teaching these topics in middle schools in computer lab environment. In the content of the

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course mathematics activities were presented using dynamic geometry software to build mathematics concepts to junior university students. Students observed and constructed the activities one by one using software and enrolled in discussion about the pros and cons of the activities in terms of learning mathematics concepts.

The following questions were the research questions of the study:

What are the most preferred topics that PMTs used GeoGebra to teach in curriculum?

What were the aims of the activities?

2. LITERATURE REVIEW

In 20th century technology age PMTs are entering a teaching field that requires them to use educational technology professionally. Mathematics teachers need to learn how to use specific technologies in their teaching. Due to the lack of a clear definition of technology integration as well as the vagueness of the criteria used assess the quality of technology-based lessons there is need for studies to frame this issue. Integration of technology-based courses in teacher education programs to develop PMTs' techno-pedagogical content knowledge (TPACK) is urgently needed in the field of teacher education (Koehler & Mishra, 2005).

2.1. Geometry Education

Geometry is a complex network of concepts, ways of reasoning, and representation systems which is used to conceptualize and analyze physical and imagined spatial environments (Battista, 2007). There are four goals for geometry content for this issue; namely; Shapes and properties, Transformation, Location and Visualization (Van De Walle, 2007). It has traditionally been seen as one of the difficult areas of the mathematics curriculum in terms of teaching and learning (Aszalos, & Bako, 2004; Royal Society/JMC 2001). Spatial reasoning which is important (Accascina & Rogora, 2006;Van De Walle, 2007) geometry area can define as an intuition about shapes and the relationships among them (Van De Walle, 2007, p.408). Ability to visualize mentally objects and spatial relationships are included by spatial sense to turn things around in your mind (Van De Walle, 2007). Rich experiences with shape and spatial relationships support students develop spatial sense (Accascina & Rogora, 2006; Van De Walle, 2007). Physical manipulation of objects, using construction kits, paper folding, producing drawings, making models and dynamic geometry software are commonly used geometry materials to teach (Suh & Moyer, 2007). The recognition of shapes in the environment, developing relationships between two and three-dimensional objects, and the ability to draw and recognize objects from different perspectives (Van De Walle, 2007, p.408) are easier with dynamic geometry software to support students develop spatial thinking ability (King & Schattschneider, 1997).

2.2. Dynamic Geometry Sowftware

Dynamic Geometry Software (DGS) such as GeoGebra, Cabri and Geometer's Sketchpad have appeared over the last decade as a critical new tool in teaching geometry (Whiteley, 2000). DGS is a valuable tool for teaching geometry in schools (Kondor, 2004). DGS is originally designed for teaching geometry in secondary schools, these programs include the classical 'ruler and compass' constructions as well as isometries (Whiteley, 2000). Dynamic geometry softwares provides "an accurate constructor for any ruler-and straightedge construction in Euclidean geometry" (King & Schattschneider, 1997, p.2). Cognitive technologies such as micro worlds and dynamic geometry tools provide computer worlds in which students can express, develop, and investigate mathematical ideas (Heid, 1997). DGS allows variables to vary, makes possible a number of representations of functions, and allows functions to be manipulated and transformed (NTCM, 2000). Using the software in activities that involve representing the problem or mathematical objects dynamically, identifying and exploring conjectures and relations, and looking for argument to support those conjectures (Santos-Trigo, Reyes-Rodriguez & Espinosa-Perez, 2007). Students can explore, conjecture, construct and explain geometrical relationships comparing and contrasting, synthesizing, analyzing, and evaluating (Jones, 2000; Cradler, McNabb & Burchett, 2002). With the help of DGS student can observe geometric concepts and their relationship while some properties of the figure remain constant and some keep changing. Students can discover relationships and propose hypothesis. Moreover they can accept or reject hypothesis. Many relations, properties, and generalizations that cannot be handled in traditional settings can be easily addressed in this way (Güven, 2007). Teachers who want to use technology should believe that technology can help them to achieve higher level goals more effectively (Chen, 2008). Using technology in instruction makes

teaching effective since it helps learners to visualize geometrical concepts in their minds and encourage them to generate their own explanations and to distinguish their ideas from those presented in class.

This study aims to contribute to the literature by investigating PMTs' DGS activities in mathematics classrooms and how well they addressed mathematical concepts in the curriculum.

3. METHOD

3.1. Design of Study

In order to investigate PMTs' DGS projects, qualitative research methods used in this study.

3.2. Participants

In 2016-2017 fall semesters, the research was conducted with the participation of 45 PMTs in the dynamic geometry course. The participants of this research are 45 PMT who have currently enrolled in a dynamic geometry class. They were observed during the class sessions and enrolled in focus group interviews for each class session and reflected on teaching activities prepared with GeoGebra and Cabri 3D software.

3.3. Data Collection

The data were collected from 45 PMTs' GeoGebra projects in Dynamic geometry classes for middle school mathematics majors being taught at a public university in Turkey. The course focuses on learning of geometry and algebra topics via inquiry-based teaching with attention to the quality of mathematical knowledge needed for teaching these topics in middle schools. The data collection methods were documentation (final projects, lesson plans, GeoGebra construction reports). The main source of the data was prospective teachers' final projects. The outline of the course is presented in Figure 1.

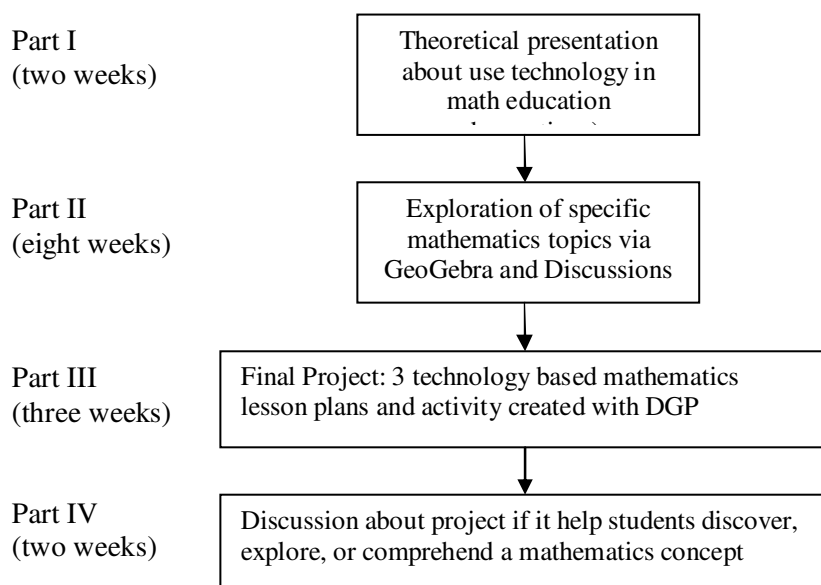|	
Part I (two weeks)	Theoretical presentation about use technology in math education
Part II (eight weeks)	Exploration of specific mathematics topics via GeoGebra and Discussions
Part III (three weeks)	Final Project: 3 technology based mathematics lesson plans and activity created with DGP
Part IV (two weeks)	Discussion about project if it help students discover, explore, or comprehend a mathematics concept

Figure 1. Outline of the course

At the end of the course, PMTs constructed two GeoGebra or Cabri 3D activities and prepared lesson plans, activity sheets for them regarding how they experience teaching/learning of dynamic geometry software and how they see the role of it in math curriculum.

3.4. Data Analysis

The data were analyzed through qualitative data analysis methods. In final projects students expected to clarify the kind of content-specific technologies and instructional interventions that they experienced and detailed how educational technology support them to have students make sense about mathematics concepts. Document analysis was conducted with the help of a expert researcher. The data from PSTs' final projects were independently examined, coded and compared by the researchers through the meetings. During the coding process, the consensus among researchers has usually been reached. Disagreements were discussed until an agreement was reached. At the end we identified categories within the data when searching for patterns and themes to gain a deeper understanding of the final projects.

4. RESULTS AND DISCUSSIONS

Dynamic Geometry Software enabled the students find many opportunities for investigating mathematical relationships, hypothesizing, exploring, conjecturing, creating, discovering principles and making generalizations, in mathematics education. These opportunities tried to provided to PMTs through a course in the content of this study. At the end of the course, the PMTs were assigned to construct a project involving mathematical investigation and discovery activities. This paper presents some examples of the mathematical activities created by the PMTs during their project work.

PMTs constructed two content-specific educational technology applications in their projects. In these plans PMTs clarified the kind of content-specific technologies and instructional interventions that they used and detailed how they integrate technology into mathematics education. The qualitative analysis of the data revealed that dynamic geometry activities were effective since it support students learning and motivation. According to results the aim of the activities were concrete exploration of mathematical concepts, experimentation to discover a mathematical relationship, conjecturing a mathematical axiom, modeling a mathematics problem and representing a proof a formulation. The subject of the mathematics was geometry learning area. PMTs should have the technical skills and mathematical knowledge of content and teaching to provide concrete examples for effective usage of educational technology in mathematics teaching.

The detailed investigation of the data showed that PMTs used educational technology for five main aim; basic exploration of mathematics concepts, experimentation, conjecturing, problem solving and proof formulation. An example activity of each category presented below.

The first category of activity is concrete exploration. In her project PMT-a constructed a tetrahedron step by step and then explored its features; sides, edges, faces, height, diagonal height, opened tetrahedron etc. From this point of view, a DGS can have a specific contribution providing controlled representations of geometrical objects and its features to mathematics education.

Concrete exploration
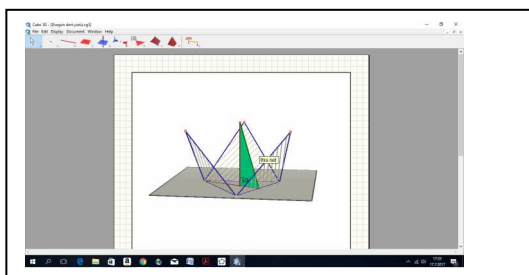
Figure.2. Drawing regular tetrahedron and exploring its features via Cabri 3D

The second category of activity is experimentation. In his project PMT-b constructed a dynamic triangle which can transform acute, right or obtuse, and made an experiment about its height. It is aimed that at the end of the activity students conclude that height of an acute triangle is inside the triangle, height of a right triangle are perpendicular sides and height of an obtuse triangle is outside the triangle. In this activity students made an experiment via GeoGebra program to find the height of a triangle.

Experimentation
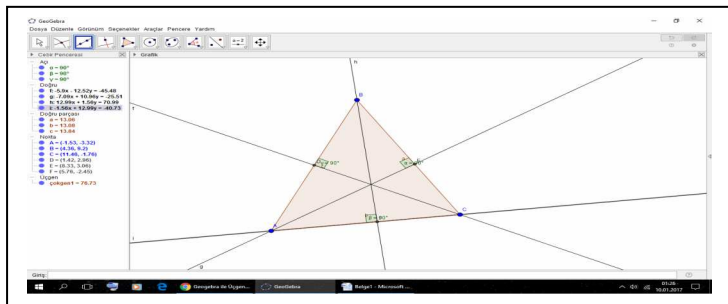
Figure 2. Height of an acute triangle is inside the triangle

The third category of activity is conjecturing. In his project PMT-c constructed a dynamic quadrilateral whose interior angles It is aimed that at the end of the activity students conclude that sum of the interior angles of the rectangle is 360 degrees. In this activity students represented a mathematical conjecture via GeoGebra program.

Conjecturing
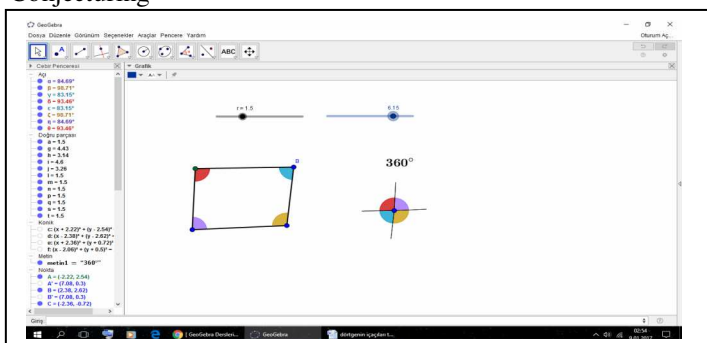
Figure 3. The sum of the interior angles of the rectangle is 360 degrees.

The fourth activity category is problem solving. In her project PMT-d modeled a mathematics problem via GeoGebra software. This activity support teachers to explain the problem to the students.

Problem Solving

How many centimeters is the shortest route that monkey A can reach the banana at the point D at the point?
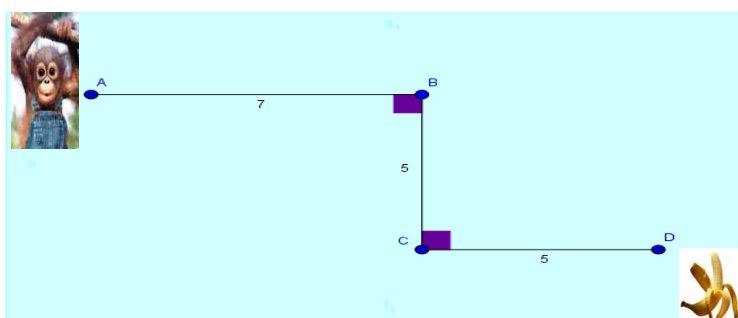
Figure 4. Problem solving

The last activity category is making proof representation with DGS. In his project PMT-e presented a theorem via GeoGebra software. This activity support students to see the theorem is true for all values, even if representation is not accept as a real proof.

Proof representation
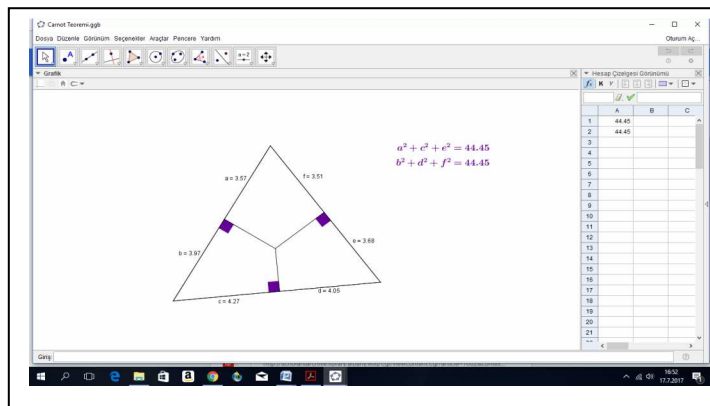
Figure 5: Carnot Theorem

PMTs also presented pythagoras theorem and seva theorem via DGS.

Dynamic Geometry software is a powerful tool for teaching and learning Mathematics since it can provide new ways to learn and to teach geometry (Belfort & Guimarães, 2004; Oldknow, & Tetlow, 2008). However, constructing instructional materials is not at a simple task. Therefore, it is worthwhile to give teachers candidates the opportunity to make an attempt at it.

5. CONCLUSION

Current mathematics curriculum in Turkey, encourage the use of DGS for teaching and learning activities. If it is expected teachers to reliase the potential of these packages, it is better start to provide them with rich learning experiences supported by DGS environments. To train teachers who can use new technologies effectively, Ministry of Turkish Education established Directorate General For Innovation and Education [Eğitim Teknolojileri Genel Müdürlüğü] in 1998. It provides educational technology facilities to learners and prepare learning environments for efficient applications all over the country. Most of the schools have Asymmetric Digital Subscriber Line (ADSL) and computer lab. It is easier now to provide students rich learning experiences supported by DGS.

The software architecture provides a major new opportunity for curriculum developers to produce interactive resources (manipulatives) which will improve users' abilities to visualise in 3D (Baki, Kösa & Karakuş, 2008; Oldknow, & Tetlow, 2008). Geometry curriculum can be enriched by using different technologies such as Cabri 3D, Geometry sketchpad.

To promote DGS use by teachers there is still considerable need for classroom resources delivering good ideas for teachers to incorporate into classroom practice.

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A Research on Drawing Tablet Use (Turkish Sample)

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Abstract

The rapid development in technology resulted in an inevitable change in plastic arts and the use of alternative techniques in addition to traditional ones. In this process, the computer revolution influenced the art world deeply. The creating and communicating behaviors of artists have varied due to computer technologies. Providing unlimited opportunities to artists, computers have become a powerful tool for them. They had a chance to express themselves and demonstrate their creativity differently thanks to computers.

The emergence of pixel made it easier to change images and design them in one's own way. The artist, who had a chance to change the form, color, and style of the image in seconds thanks to this, found an opportunity to direct its art without traditional methods. Moreover, he/she learnt how to obtain homogeneous surfaces among varied images in his/her montage and collage works through layer logic. These aspects provided new environments for many artists to create infinite possibilities on the image.

Graphic tablet is a good example of the technologies mentioned. After the years of using keyboard and mouse as the basic elements of computer inputs, tablet use and tablets demonstrated a dramatic increase and development in the latest versions of computer inputs (Dikerson, Williams& Browning,2009: 16). Drawing with mouse is difficult while drawing on tablet is much easier and enjoying. Tablet pen has a pinpoint which has pressure sensitivity and enables unique drawing ways, and it provides the opportunity to imitate any traditional techniques in a digital environment.

The population of this study was composed of the universities in Turkey, which had both faculty of fine arts department of painting and faculty of education department of fine arts division of art teaching. Within this context, there were 14 universities and 28 faculties. In this study based on the comparisons between the universities, questionnaires were responded by 964 participants, and the data were analyzed using IBM SPSS package software.The basic aim of the study was to determine the participants' ownership of drawing tablets and to what extent they know how to use them. Non-experimental descriptive research design, which is a qualitative research model, was used in this study. "The Technology Perceptions Questionnaire" was used as the data collection tool. Instructions for practitioners were prepared in order to standardize the data collection process. The responded questionnaires were collected from universities within six months. The data was analyzed using IBM SPSS 22 software. The study was composed of four parts. In the Introduction section, the historical development and use of drawing tablet, which is the theoretical foundation of the study, was provided. After the literature review, the purpose and problems of the study were presented. In the second part, the method of the research was focused. In the third part, the findings were presented. In the final part, the general results were discussed and some implications related to the findings were presented.

Keywords: Drawing Tablet, Technology, Art Education

1. INTRODUCTION

With the development of technology, novel concepts and devices found a place in artists' lives. Graphic tablet is a good example of that.After the years of using keyboard and mouse as the basic elements of computer inputs, tablet use and tablets demonstrated a dramatic increase and development in the latest versions of computer inputs (Dikerson, Williams& Browning,2009: 16). Drawing with mouse is difficult while it became much easier and enjoying to draw on the tablet. Tablet pen not only imitated the pencil, pen, or brush but had a pinpoint which had pressure sensitivity and enabled unique drawing ways.

If some basic information about tablet use is planned to be given, it will be appropriate to start with tablet selection. LappazandWocamtablets can be preferred. If the pen is planned to be used professionally, then the pressure of the model is of great importance. Depending on the model, it is the tablet or the pen that determines the pressure. The pressure levels vary among 128, 256, 512, 1024, and 2048. If a selection is needed, a tablet with 1024 pressure level should be chosen (Kahraman, 2014: 5). It must be noted that today's tablets that are developed at 2048 pressure level based on the developments in this field.

The resolution is as important as the pen. Resolution affects the definition and smoothness of the lines. At least a resolution of 2000 ıpshould be preferred. 4000 ıp, on the other hand, ensures a better resolution. Reporting or responding speed is the speed of the communication between the computer and the tablet. Report per second is used as the unit. As the rps increases, the refreshment rate increases as weel. 100 rps is advised(Kahraman, 2014: 5).

Some artists may prefer to use tablets for directly drawing on computer or sketch images. However, other artists such as David Hockney, Barbara Nessim, Kenneth A. Huff, and Lynn Pocock create traditional designs to base their digital works (Wands, 2006: 32-34)."Viktor Koen combines traditional and digital techniques to create images reflecting high realism with fantasy elements. Imaging software is now sophisticated and provides opportunity of a full control over both every way of digital image creation and advanced image enhancement, automation, and output preferences"(Wands, 2006: 32-34).

The price of personal computers decreased in 1990s, and artist candidates studying at departments related to fine arts began to come to class with their own laptops. As the first artist to draw on the screen using Q.Paintboxsoftware in his studio, David Hockneyproduced numerical images using developing hardware and software (Türker, 2011: 155).

With the contribution of technology to art, artists working with tools such as computers, monitors, scanners, printers, and graphic tablets processed the photos as they wanted using pixel based software. They also worked on bigger forms using vector based software and created novel images using three-dimensional modelling (Türker, 2011: 155).

The transition from the drawings on traditional canvas to the numerical drawings doesn't imply that traditional material is left and they are less important (Türker, 2006: 145). The opportunities provided by tablet, which is seen as an ordinary tool in 21st century, are kept to develop and increase.

2. METHOD

2.1. Research Model:

In this study, non-experimental descriptive research design, which is a quantitative research model, was used. The basic principle of quantitative studies is to measure and express the findings in numeric values after gathering the data using tools determined earlier (Creswell, 2012: 22).

Descriptive methods aim at revealing the present situation of the problem as it is. The basic characteristic of these methods is to study the present situation in its own conditions and as it is. Descriptive study requires data gathering in order to test the hypotheses or answer the questions. Descriptive data are generally obtained through observation, questionnaire, or test.

2.2. Population and Sample:

The population of this study was composed of the universities in Turkey, which had both faculty of fine arts department of painting and faculty of education department of fine arts division of art teaching.

The sample was composed of students studying atfaculty of fine arts department of painting and faculty of education department of fine arts division of art teaching during 2014-2015 academic year.

2.3. Data Collection Tools:

The quantitative data of this study were collected using The Technology Perceptions Questionnaire, of which validity and reliability studies were conducted earlier. The data were analyzed using IBM SPSS 22 software.Instructions for practitioners were prepared in order to standardize the data collection process. Moreover, a pilot study was conducted before the main study.

2.4. Data Collection Process:

The third-year and fourth-year students in 14 universities – 28 faculties filled in the Technology Perceptions Questionnaire. The universities where the data collection process was conducted are presented below:

DokuzEylülUniversity - Faculty of Fine Arts
DokuzEylülUniversity - Faculty of Education

Marmara University - Faculty of Fine Arts
Marmara University - Faculty of Education
GaziUniversity - Faculty of Fine Arts
GaziUniversity - Faculty of Education
Hatay Mustafa Kemal University - Faculty of Fine Arts
Hatay Mustafa Kemal University – Faculty of Education
YüzüncüYılUniversity - Faculty of Fine Arts
YüzüncüYılUniversity - Faculty of Education
TrakyaUniversity - Faculty of Fine Arts
TrakyaUniversity - Faculty of Education
İnönüUniversity - Faculty of Fine Arts
İnönüUniversity - Faculty of Education
Onsekiz Mart University - Faculty of Fine Arts
Onsekiz Mart University - Faculty of Education
Abantİzzet BaysalUniversity - Faculty of Fine Arts
Abantİzzet BaysalUniversity - Faculty of Education
Atatürk University – Faculty of Fine Arts
Atatürk University – Faculty of Education
UludağUniversity – Faculty of Fine Arts
UludağUniversity – Faculty of Education
AnadoluUniversity – Faculty of Fine Arts
AnadoluUniversity – Faculty of Education
MuğlaSıtkıKoçmanUniversity - Faculty of Fine Arts
MuğlaSıtkıKoçmanUniversity - Faculty of Education
CumhuriyetUniversity – Faculty of Fine Arts
CumhuriyetUniversity – Faculty of Education

2.5. Data Analysis: The data were analyzed quantitatively using IBM SPSS 22 software.

3. FINDINGS AND INTERPRETATION
In this section, the findings are presented in tables and interpreted.

Table.1 Demographics

	f	%
Gender		
Female	694	72
Male	269	28
Age		
19	14	1.5
20	132	14
21	225	23
22	197	20
23	133	14
24	87	9
25	66	7
26	28	3

Year		
3rd year	473	49
4th year	489	51
Pocket Money		
100 Turkish Liras or below	2	4,0
101-200 Turkish Liras	1	2,0
201-300 Turkish Liras	18	36,0
301-400 Turkish Liras	4	8,0
401-500 Turkish Liras	7	14,0
501 Turkish Liras or above	7	14,0

Table.2 Ownership of Drawing Tablet

	f	%
DokuzEylülUniversity		
Yes	7	9
No	70	91
Marmara University		
Yes	36	27
No	96	72
GaziUniversity		
Yes	12	15
No	68	85
Mustafa Kemal University		
Yes	8	9
No	80	90
YüzüncüYılUniversity		
Yes	0	0
No	41	100
TrakyaUniversity		
Yes	4	6
No	61	94
İnönüUniversity		
Yes	2	4
No	47	96
Onsekiz Mart University		
Yes	6	10
No	55	90
AbantİzzetBaysalUniversity		
Yes	10	13
No	68	87
Atatürk University		
Yes	4	4

No	98	94
UludağUniversity		
Yes	3	7
No	40	93
AnadoluUniversity		
Yes	6	13
No	40	87
MuğlaSıtkıKoçmanUniversity		
Yes	5	9
No	48	91
CumhuriyetUniversity		
Yes	5	11
No	40	89

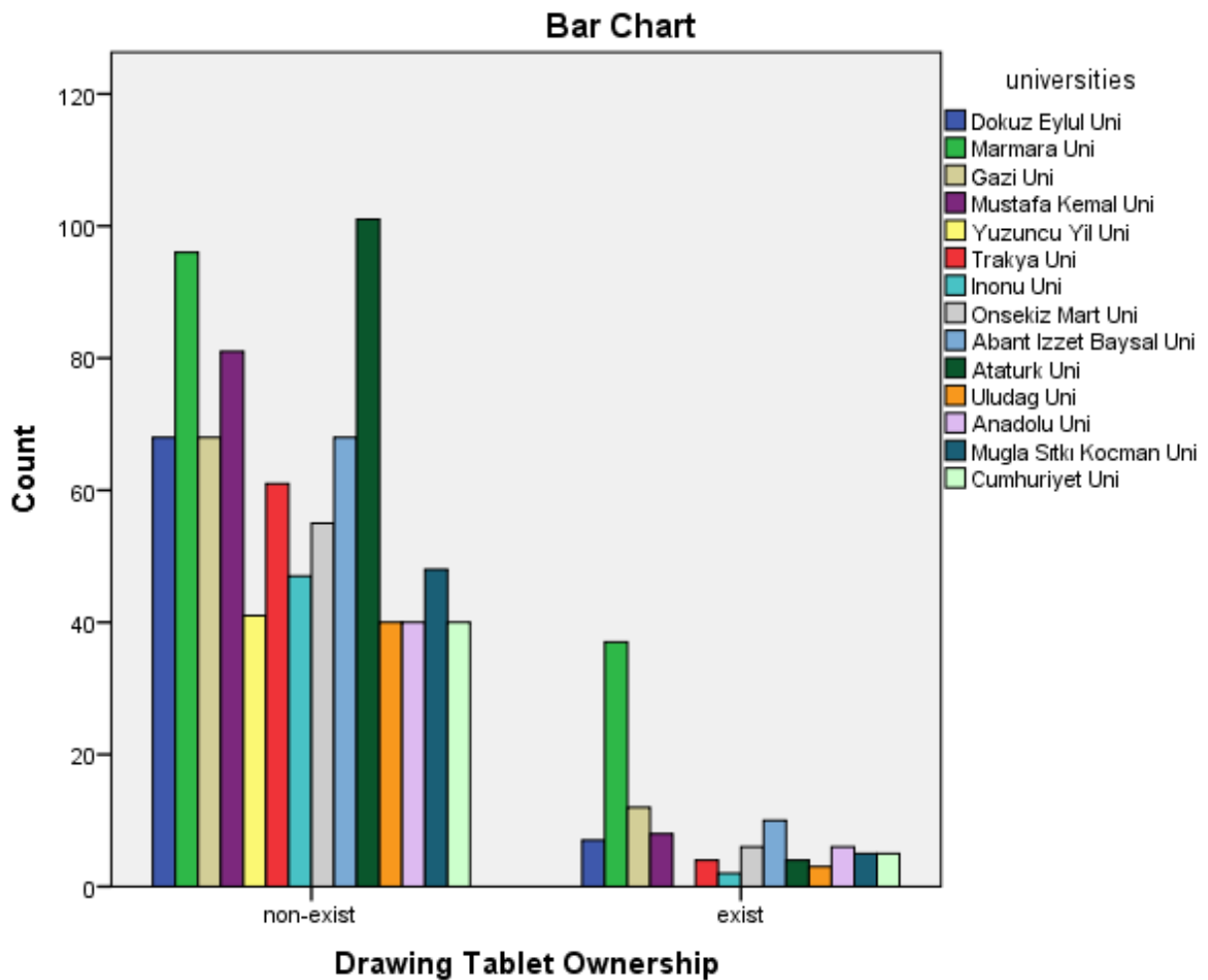**Table.2 Ownership of Drawing Tablet**

Table.4Knowledge Level of Drawing Tablet Use

	I don't know at all	I know a little	I know at a medium level	I know well	I know very well		
	%	%	%	%	%	M	SD
DokuzEylülUniversity	47	14	17	17	5	1.57	1.080
Marmara University	21	23	23	14	19	1.74	1.085
GaziUniversity	30	29	19	16	6	1.69	0.949
Mustafa Kemal University	60	16	14	4	6	1.38	1.206
YüzüncüYılUniversity	42	19	12	15	12	1.22	0.475
TrakyaUniversity	46	22	15	14	3	1.45	0.791
İnönüUniversity	57	16	20	2	4	1.10	0.368
Onsekiz Mart University	39	28	20	8	5	2.11	1.170
Abantİzzetbaysaluniversity	27	24	22	8	19	2.68	1.446
Atatürk University	44	24	10	13	9	2.17	1.351
UludağUniversity	51	23	12	9	5	1.93	1.203
AnadoluUniversity	33	33	22	7	7	2.22	1.172
MuğlaSıtkıKoçmanUniversity	40	23	17	7	9	1.71	1.006
CumhuriyetUniversity	40	27	18	11	4	1.47	0.815

Of the participants from DokuzEylülUniversity, 47% expressed that they didn't know how to use a drawing tablet at all; 14% knew a little; 17% knew at a medium level; 17% knew well; and 5% knew very well.

Of the participants from Marmara University, 21% expressed that they didn't know how to use a drawing tablet at all; 23% knew a little; 23% knew at a medium level; 14% knew well; and 19% knew very well.

Of the participants from GaziUniversity, 30% expressed that they didn't know how to use a drawing tablet at all; 29% knew a little; 19% knew at a medium level; 4% knew well; and 6% knew very well.

Of the participants from Mustafa Kemal University, 60% expressed that they didn't know how to use a drawing tablet at all; 16% knew a little; 14% knew at a medium level; 4% knew well; and 6% knew very well.

Of the participants from YüzüncüYılUniversity, 42% expressed that they didn't know how to use a drawing tablet at all; 19% knew a little; 12% knew at a medium level; 15% knew well; and 12% knew very well.

Of the participants from TrakyaUniversity, 46% expressed that they didn't know how to use a drawing tablet at all; 22% knew a little; 15% knew at a medium level; 14% knew well; and 3% knew very well.

Of the participants from İnönüUniversity, 57% expressed that they didn't know how to use a drawing tablet at all; 16% knew a little; 20% knew at a medium level; 2% knew well; and 4% knew very well.

Of the participants from Onsekiz Mart University, 39% expressed that they didn't know how to use a drawing tablet at all; 28% knew a little; 20% knew at a medium level; 8% knew well; and 5% knew very well.

Of the participants from Abantİzzetbaysaluniversity, 27% expressed that they didn't know how to use a drawing tablet at all; 24% knew a little; 22% knew at a medium level; 8% knew well; and 19% knew very well.

Of the participants from Atatürk University, 44% expressed that they didn't know how to use a drawing tablet at all; 24% knew a little; 10% knew at a medium level; 13% knew well; and 9% knew very well.

Of the participants from UludağUniversity, 51% expressed that they didn't know how to use a drawing tablet at all; 23% knew a little; 12% knew at a medium level; 9% knew well; and 5% knew very well.

Of the participants from AnadoluUniversity, 33% expressed that they didn't know how to use a drawing tablet at all; 33% knew a little; 22% knew at a medium level; 7% knew well; and 7% knew very well.

Of the participants from MuğlaSıtkıKoçmanUniversity, 40% expressed that they didn't know how to use a drawing tablet at all; 23% knew a little; 17% knew at a medium level; 7% knew well; and 9% knew very well.

Of the participants from CumhuriyetUniversity, 40% expressed that they didn't know how to use a drawing tablet at all; 27% knew a little; 18% knew at a medium level; 11% knew well; and 4% knew very well.

CONCLUSION

When the demographics were examined, it was observed that the majority of participants (72%) were female. The reason behind this situation might be the fact that female students prefer art departments more than male students.

The age of the participants ranged from 18 to 65. 612 of the participants were studying at faculty of education while 352 were studying at faculty of fine arts. It is known that education faculty has quota for more students than faculty of fine arts.

49% of the participants were third-year students while 51% of them were fourth-year students. It can be stated that our participants were almost equal in terms of grade levels.

Among the universities in the study, it can be expressed that students studying at Marmara, Gazi, and İnönü universities had this technology more than the students from other universities. Although 11% of the participants owned the technology of drawing tablet, 89% of them didn't own this technology. The high costs and lack of awareness related to drawing tablets might be the reason behind this situation. It is thought that the costs of drawing tablets around 1000 TL-7000 TL might be too much for the students' budgets.

When the students' knowledge about how to use drawing tablets, it was observed that participants from Marmara, YüzüncüYıl, Abantİzzetbaysal, DokuzEylül, andGaziuniversities responded this question more positively.

Students' knowledge about how to use drawing tablets was high considering the ownership situation. Its reason might be the opportunities provided by the universities. Moreover, these universities are located in relatively bigger cities. Therefore, even if the students didn't own this technology, they could access this technology more easily.

The rapid change and developments in the age of science and technology changed the art and art education. The approach projecting the use of new and contemporary tools brought experimentalism, creativity, and originality to this field.

Undoubtedly, the integration of art educators and artists, who are the ones that teach the necessity of art to new generations, to the new age requires them to learn materials and hardware related to their field. The universities have to provide their students with this technology since it is difficult for students to own it on their own. Moreover, the academics should include the use of contemporary tools in their curriculum and teach their students how to use drawing tablets.

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The Examination of Measurement Invariance of Motivations to Become a Teacher Scale in Terms of Department and Gender

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Abstract

Measurement instruments used in psychology or education are expected to work similarly in different groups in order to make meaningful comparisons and assessments across these groups. This issue is handled via conducting measurement invariance (MI) tests on data collecting tools. Usually only a single parameter is addressed in MI studies and one of the most frequently examined parameter is gender. In Turkey, measurement invariance studies are still limited in number and they concentrate also on the gender variable. In this study, factor structure of 9-items Motivations to Become a Teacher Scale developed for international Teacher Education and Development Study in Mathematics (TEDS-M) and measurement invariance of these factors in terms of department and gender were examined. For this aim, the 5-stage method recommended by was used. This method is based on the progressive application of different models from the least restricted through the most restricted one. The study sample consisted of 1878 preservice teachers from four different departments from 16 different universities randomly selected in Turkey. The data was analyzed using multi-group confirmatory factor analysis in Lisrel 8.80 software. In order to determine invariance, several fit indices were used together. According to 5-stage analysis outputs, it was concluded that the scale had two factors such as "intrinsic motivation" and "extrinsic motivation", these factors had measurement invariance in terms of department and gender and the Scale could be used to compare different departments and sexes.

Keywords: motivations to become a teacher, measurement invariance (MI), preservice teachers, intrinsic motivation, extrinsic motivation

1. INTRODUCTION

Motivation has been classically defined as a function of the value placed on certain goals and the perceived likelihood that a behavior will lead to those goals (De Jong and Fawcett, 1981). Although the term has emerged from observation of inner mechanisms of action (Maslow, 1973), it's also effected from outer causes, it forces the person to act and is one of the most significant variables in determining why someone does something in a particular way (Efklides, Kuhl and Sorrentino, 2001). This deep inner mechanism, which is fueled and controlled by several inner(intrinsic) and outer (extrinsic) factors (Bastick, 2000), acts on every decision a human being takes one of which is choosing a profession. The motivation to choose a profession was defined as the orientation of a person to the profession which she/he sees most fulfilling and promising (Atav and Altınoğlu, 2013). The motivation to become a teacher might explain how determined, decisive and ambitious someone is to teach. The motivation for becoming a teacher was found related to engagement in and commitment to the profession (Fokkens-Bruinsma & Canrinus, 2012a; Roness & Smith, 2010; Sinclair et al., 2006). Several inner and outer factors are probably effecting this mood.

So far, many studies in EU (e.g. Berger and D'ascoli, 2012, Roness and Smith, 2009; 2010; Bruinsma and Jansen, 2010) Australia (e.g. Spittle, Jackson, & Casey, 2009), China (Lin, Shi, Wang, Zhang, & Hui, 2012), US (Smith & Pantana, 2010) and Turkey (Çermik, Doğan and Şahin, 2010; Eren and Tezel, 2010; Şeker, Deniz ve Görgen, 2015) were conducted in order to identify the motivations of in-service and pre-service teachers to choose the teaching profession. The literature shows that there are basically two latent variable groups acting on these decisions which are intrinsic and extrinsic factors (Bastick, 2000). Intrinsic factors include reasons such as "love for a specific subject", "love for spending time with kids", and extrinsic factors include reasons such as "long term job security" (Bastick, 2000; Roness and Smith, 2010).

By identifying the motivations of (preservice teachers) to become a teacher, possible solutions for the retention of teachers in the teaching profession (Ministry of Education, Culture, & Science, 2007; Sinclair, Dowson, & McInerney, 2006) might be developed. Identifying and improving teacher motivation might increase job satisfaction (Fokkens-Bruinsma & Canrinus, 2012) and allow teachers improve pupils' motivation (Atkinson, 2000; Lam, Cheng, & Ma, 2009). Longitudinal studies might also identify the motivations of the "best achieving" pre-

service and in-service teachers in order to make plans to attract more of these to teaching profession (Tatto et al., 2008). In addition, motivationally advantaged groups in terms of demographic variables might be determined (Neves de Jesus and Lens, 2005).

As mentioned above, many studies have explored the motivation to become a teacher though it was criticized that these studies had used weak methodologies (Sinclair et al., 2006) or not provided evidence for the validity of the scales used across different contexts (Watt & Richardson, 2012). Motivations to become a teacher should be compared across groups, but to be able to make meaningful comparisons, the measurement instruments should have construct validity. Construct validity of a measurement instrument means that it really measures the construct it is intended to. Construct validation is the basic prerequisite to the proper interpretation of a test score (Rock and Werts, 1979). However, successfully measuring the construct in the entire sample doesn't even suffice that the construct will measure the construct in homogenous subgroups such as females successfully. This concept is defined as measurement invariance and is needed to be able to compare these groups meaningfully (Başusta and Gelbal, 2015) but usually is not tested (Byrne 1989). The number of studies on the measurement invariance of instruments are scarce (Kalender, 2015) and no studies were encountered yet on the MI of scales measuring motivations to become a teacher. At this point, TEDS-M Intentions/Motivation to be a teacher" scale (Tatto et al., 2008) which was adapted from English into Turkish and shown to be valid and reliable (total variance explained by the whole scale = % 50, alpha = 0.75 Mc Donald Omega = 0.85, item-total correlations above 0.54) is an important and robust measurement instrument (Aydın and Çelik, 2017). The original scale and its Turkish form has nine items, three of which are related to extrinsic reasons and the remaining six are related to intrinsic reasons. The original scale was used in international comparative study Teacher Education and Development Study in Mathematics (TEDS-M) in 17 countries on more than 8000 preservice teachers (Tatto et al., 2008).

Based on the literature mentioned above research questions of this study were posed as follows:
1.   Does the Turkish adaptation (Aydın and Çelik, 2017) of TEDS-M Motivations to Become a Teacher Scale (Tatto et al., 2008) have measurement invariance across different departments?
2.   Does the Turkish adaptation (Aydın and Çelik, 2017) of TEDS-M Motivations to Become a Teacher Scale (Tatto et al., 2008) have measurement invariance across different genders?

2. Method

In this part, the study sample, instruments and data analysis procedures are explained.

2.1. Study sample

The study sample consisted of 1878 preservice teachers from 16 different universities randomly selected in Turkey. It is illustrated in Table 1.

Table 1. Study sample

Variable	Variable Levels	Frequency	Percentage (%)
Gender	Female	1446	77,0
	Male	432	23,0
Year of study	1st Year	1364	72,6
	2nd Year	176	9,3
	3rd Year	187	9,9
	4th Year	151	8,0
Department	Preschool	216	11,5
	Primary	624	33,2
	Elementary Maths	917	48,8
	Secondary Maths	121	6,4
	Total	1878	100

Table 1 illustrates that the study sample consisted of 1446 (% 77) female and 432 (% 23) male preservice teachers. In terms of year of study, 1364 (% 72,6) are 1st years (Freshmen), 176 (% 9,3) are 2nd years (Sophomores), 187 (% 9,9) are 3rd years (Juniors) and 151 (% 8,0) are 4th years (Seniors). In terms of department, 216 (% 11,5) are in preschool education, 624 (% 33,2) are in primary education, 917 (% 48,8) are in elementary mathematics education and 121 (% 6,4) are in secondary mathematics education department.

2.2. Instruments

In this study, factor structure of the Turkish form of 9-items Motivations to Become a Teacher Scale developed for international Teacher Education and Development Study in Mathematics (TEDS-M) (Tatto, 2008) and measurement invariance of this factor structure in terms of department and gender was explored. The original scale was reported to have two factors such as "intrinsic motivation" (6 items) and "extrinsic motivation" (3 items). The Turkish adaptation of the scale was also reported to have the same two factors and alpha coefficients above ,74 for both factors and the whole scale (Aydın and Çelik, 2017).

2.3. Data analysis

First of it was checked whether the dataset met the assumptions of multi-group confirmatory factor analysis method (MGCFA). For this aim, the five stage method such as i) seperate CFAs for each level of variables, ii) configural invariance test, iii) weak (metric) invariance test, iv) strong (scaler) invariance test and v) complete (strict) invariance test was used (Vandenberg and Lance, 1998). The tests were conducted hierarchically and step by step. The scale was accepted to have measurement invariance for a variable if and only if it had passed all of these five tests.

3. Findings

In this part of the study, the findings of the study are presented. Firstly, 13 missing values and 25 outliers (z-score smaller than -3 or larger than 3) were removed from the study. Then, normality assumption was tested for all 9 items. Skewness and kurtosis values between -1 and 1 were taken as evidence that an item met the assumption of normality (Tabachnick and Fidell, 2007). Table 2 shows the skewness and kurtosis values for all items.

Table 2. Findings of skewness and kurtosis tests for all items across subgroups

| | Gender | | | | Department | | | | | | | |
| | Female | | Male | | Preschool | | Primary | | Elementary Maths | | Secondary Maths | |
Items	Skew.	Kurt.	Skew.	Kurt.	Skew.	Kurt.	Skew.	Kurt.	Skew.	Kurt.	Skew.	Kurt.
1	0,54	-0,81	0,59	-0,84	0,95	-0,21	0,42	-0,94	0,53	-0,86	0,67	-0,70
2	0,17	-1,08	0,37	-1,00	0,75	-0,68	0,29	-1,01	0,11	-0,97	-0,08	-1,01
3	-0,24	-1,05	-0,13	-1,01	1,06	0,02	0,47	-1,05	-0,93	0,11	-0,52	-0,87
4	-0,59	-0,19	-0,59	-0,14	-0,54	-0,14	-0,68	0,04	-0,56	-0,19	-0,72	-0,16
5	-0,53	-0,72	-0,43	-0,76	-1,05	0,88	-0,63	-0,58	-0,34	-0,86	-0,51	-0,58
6	0,74	-0,16	0,81	-0,20	0,81	0,05	0,76	-0,32	0,87	0,27	0,68	-0,38
7	-0,89	0,39	-0,78	0,27	-1,12	0,71	-0,99	0,93	-0,72	0,08	-0,74	-0,09
8	-0,02	-1,06	-0,03	-1,07	-0,20	-0,98	-0,11	-1,04	0,04	-1,03	-0,01	-0,93
9	-0,27	-0,84	-0,18	-1,04	-0,25	-1,07	-0,19	-0,90	-0,26	-0,87	-0,37	-0,95

The skewness and kurtosis values for the items shown Table 2 provides evidence that the normality assumption was met for the data at hand. Then a preliminary CFA was conducted to test find out how much the 9-item model provided a good fit. The results of the preliminary CFA on 9-item two-factor model is shown in Figure 1.
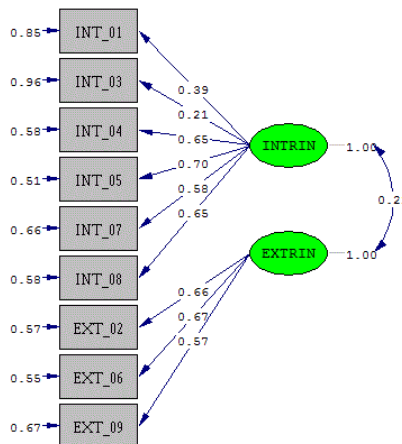

Figure 1. Preliminary CFA findings of 9-item bidimensional model tested on the entire sample

The preliminary CFA findings of 9-item bidimensional model tested on the entire sample did not provide a good fit ($\chi2(df) = 500(26)$, $\rho < ,000$, RMSEA [90% CI] =,142 [,13;,15], SRMR=,13, NNFI=,71). This lack of fit was thought to be stemming mainly from item INT_03. This item reads "I want to be a teacher because I like mathematics" which is rather relevant to preservice elementary and secondary mathematics teachers but not to preservice primary or preschool teachers. So this item was excluded from the analysis which led to 8-item bidimensional baseline model which reveled acceptable fit indices ($\chi2(df) = 72(26)$, $\rho < ,000$, RMSEA [90% CI] =,07 [,07;,07], SRMR=,06, NNFI=,93). The baseline model is illustrated in Figure 2.
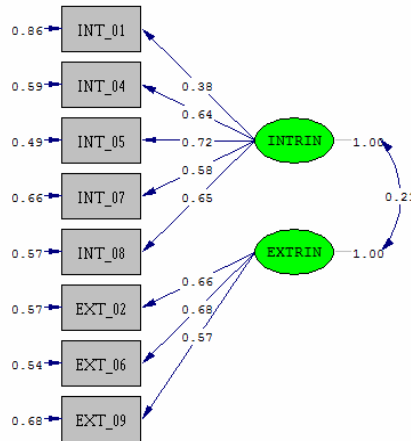
Figure 2. Adjusted baseline model of 8-item bidimensional model tested on the entire sample

Then the hypothesized baseline model shown in Figure 2 was tested across subgroups within gender and department variables. The first item in each factor (dimension) of the scale was fixed to 1 as reference. The findings of separate CFA tests on each subgroup is presented in Table 3.

Table 3. Fit indices for the baseline model in subgroups

Groups	Subgroups	χ^2 (df)	RMSEA [90% CI]	SRMR	NNFI	CFI	Decision
Gender	Female	51 (19)	.05 [.05;.06]	.05	.96	.95	Accept
	Male	42 (19)	.05 [.05;.05]	.05	.97	.95	Accept
Department	Preschool	27 (19)	.04 [.04;.04]	.04	.98	.97	Accept
	Primary	29 (19)	.04 [.04;.05]	.05	.98	.96	Accept
	Elementary Maths	31 (19)	.04 [.04;.05]	.05	.98	.96	Accept
	Secondary Maths	30 (19)	.04 [.04;.05]	.05	.98	.96	Accept

According to the fit indices shown in Table 3, the original baseline model fitted the data for each subgroup separately. After the fit of data to the model for each separate subgroups was shown, one-way ANOVAs for department and t-tests for independent samples for gender groups were conducted. The t-tests indicated no statistically significant variation in responses of males and females. On the other hand, one-way ANOVAs indicated statistically significant variation in responses of preservice teachers from different departments in three items. The findings of ANOVAs and t-tests are shown in Table 4.

Table 4. Findings of ANOVAs and t-tests for the items

Item	Gender			Department		
	t	df	p	F	p	df
1_INT	-,121	1870	,904	,813	,487	3
4_INT	1,453	1868	,146	2,680	,045*	3
5_INT	,978	1864	,328	2,151	,092	3
7_INT	,970	1866	,332	1,417	,236	3
8_INT	-,347	1866	,729	3,456	,016*	3
2_EXT	,402	1866	,688	,640	,589	3
6_EXT	-1,739	1868	,082	,679	,565	3
9_EXT	1,383	1868	,167	2,750	,041*	3

* p < .05

The statistically significant variations in some items across different departments shown in Table 4 can indicate a real variation of responses in these subgroups. On the other hand, this might also indicate a measurement invariance problem. In order to eliminate this probability, invariance tests should be conducted and comparability of results obtained from this scale should be proven. Findings of measurement invariance tests are shown in Table 5. At the first stage of measurement invariance analysis illustrate in Table 4 the fit of data separately to each subgroup of gender, department and year of study variables were shown. At this point four more stages of analysis were conducted. These tests were conducted from the least restricted model (Configural) to the most restricted one (Complete).

Table 5. Findings of Measurement Invariance Tests

Groups	Invariance Level	χ2 (df)	Δχ2 (Δdf)	p	RMSEA [90% CI]	CFI	NNFI	CAIC	Comparison	Decision
Gender	Configural	50 (38)	-	>.05	.04 (.04;.04)	.98	.97	1036	-	Accept
	Metric (weak)	61 (44)	11 (6)	>.05	.04 (.04;.05)	.97	.97	1127	Configural vs. Metric	Accept
	Scalar (strong)	84 (58)	23 (14)	>.05	.05 (.05;.05)	.97	.97	1249	Metric vs. Scalar	Accept
	Strict (complete)	103 (69)	19 (11)	>.05	.06 (.06;.06)	.96	.96	1399	Scalar vs. Strict	Accept
Department	Configural	98 (77)	-	>.05	.03 (.03;.04)	.99	.98	1314	-	Accept
	Metric (weak)	113 (85)	15 (8)	>.05	.05 (.05;.05)	.97	.97	1382	Configural vs. Metric	Accept
	Scalar (strong)	137 (102)	24 (17)	>.05	.05 (.05;.05)	.97	.96	1447	Metric vs. Scalar	Accept
	Strict (complete)	152 (114)	15 (12)	>.05	.05 (.05;.06)	.98	.97	1565	Scalar vs. Strict	Accept

The analyses above in Table 5 support the measurement invariance of the six-factor model across gender and department subgroups. Configural invariance held for both variables respectively (i.e. for gender group χ2=50, df=38, χ2/ df=1.31, p>.05, RMSEA=.04 [.04;.04], CFI=.98, NNFI=.97), indicating two-factor model was acceptable across all subgroups of gender and department. Secondly, metric (weak) invariance was checked by testing equality of factor loadings. When looked at the fit indices, it was found that metric invariance held (i.e. for gender group Δχ2=11, Δdf=6, p>.05, RMSEA=.04 [.04;.05], CFI=.97, NNFI=.97) and the scale had equal factor loadings across all subgroups of gender and department. Thirdly, according to the fit indices in Table 5, scalar (strong) invariance tests were able to produce non-significant findings (i.e. for gender group Δχ2=23, Δdf=14, p>.05, RMSEA=.04 [.04;.05], CFI=.97, NNFI=.97) for both gender and department variables. Finally, strict (complete) invariance held (i.e. for gender group Δχ2=19, Δdf=11, p>.05, RMSEA=.06 [.06;.06], CFI=.96, NNFI=.96) across all subgroups of gender and department.

Overall, the findings indicated that measurement invariance held for both variables and a bidimensional 8-item model was tenable. The five-stage model confirmed the separate, configural, weak, strong and complete invariance of the scale across all subgroups of the three variables.

4. Results and Discussion

In this study, five-stage model (Vandenberg and Lance, 1998) was used to confirm the separate, configural, weak, strong and complete measurement invariance of the Turkish adaptation (Aydın and Çelik, 2017) of TEDS-M Motivations to Become a Teacher Scale (Tatto et al., 2008) across all subgroups of gender and department variables. The results indicated measurement invariance and provided evidence that the scale might be used to compare males and female preservice teachers. According to the results, the scale might also be used to compare preservice teachers from different departments. Previous studies reported that motivations to become a teacher have two dimensions (latent variables or factors) such as intrinsic (Lloyd, Bond and Flaxman, 2017) and extrinsic motivation (Friedman, 2016). These intrinsic and extrinsic motivations were shown to vary significantly across different subgroups of the population both in the world (Friedman, 2016) and in Turkey (Çermik et al., 2010; Kaya and Yıldırım, 2015). However, the robustness and measurement invariance of these instruments have not been shown which is being strongly criticized by some researchers (Sinclair et al., 2006; Watt & Richardson, 2012). In response, this study was provided evidence for MI and robustness of the Turkish adaptation of the TEDS-M Motivations to Become a Teacher Scale (Tatto et al., 2008) across subgroups of gender and department. This study is in a sense extension of the work by Aydın and Çelik (2017) who provided evidence for the validity and reliability of the scale but only for the sample of preservice elementary mathematics teachers which is made up of both males and females. Future research might concentrate on proving MI of the same scale across subgroups of other demographic variables such as year of study or level of general achievement (GPA).

Acknowledgements

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The Influence of Education and Tax Knowledge on Taxpayer Compliance Behavior in Indonesia

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Abstract

Tax is the most powerful revenue resources for the Indonesian government. However dealing with tax compliance behavior still become a major problem for Indonesian Tax Institution (Directorate General of Taxes). Among other determinants of tax compliance, knowledge and education have significant impact on tax compliance behavior. This study conducted in Surabaya city which examined the impact of knowledge and education on tax compliance behavior. Based on the answer of 300 respondents, we attempted to reveal that poor knowledge and low level of education leads to low levels of tax compliance. Our results suggested that both of tax knowledge and high level of education give significant impact on tax compliance behavior. Thus, the higher the level of education the more they comply with tax regulation and the more they know about taxation the more they comply with taxation. Therefore, based on this result, we suggest to improve taxpayer knowledge by giving them more information about taxation using current media such as email, website, phone message or phone call. In addition, created tax curriculum for young generation is a necessity. Since the level of education is significant for tax compliance behavior, DGT should build tax awareness among young generation through education. Given those two solutions, we hope DGT could achieve the high level of tax compliance, and in the end, the revenue targetted in years ahead could be achieved as well.

Keywords: Tax knowledge, education, tax compliance behavior, Surabaya city, Indonesia

1. INTRODUCTION

Tax compliance has become a major problem in both developed and developing countries. Policy makers have been struggling in order to deal with evasion and avoidance of taxation. As behavioral economists mention, people tend to avoid taxes because they do not want to pay that money. That is the character of human beings that they tend to hope for benefits but do not want to pay the burdens. Even though they earn much money they will show an empty pocket to the tax officer and attempt to find out a way to pay less tax.

Analyzing tax compliance from the behavioral perspective has become an important subject. However, the issuance of publications in terms of taxation with regard to psychological aspects has been relatively few compared to the economic aspects. Based on Kirchler (2007), from the beginning of tax registration in 1945, publications on taxation psychology contributed only 1% of all tax publications and journals. However over the years this contribution increased but the proportion remains only 10% on average. In 1981-1990 it accounted for 12% and decreased by 9% in 1991-2000 and became 11% in 2001-2005.

Dealing with tax compliance problems has also become a big issue in Indonesia. As one of the developing countries in Asia, Indonesia is suffering from low levels of tax compliance. Riahi-Belkaoui (2004) made an assessment for a tax compliance index among 30 countries which consists of both developed and developing

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countries. Indonesia was ranked 21st from all those countries and still left behind other ASEAN countries such as Singapore (1st), Malaysia (9th) and Thailand (14th).

Furthermore, in terms of administrative tax compliance which is measured by the ratio of tax return submissions over the number of taxpayers registered, according to the Directorate General of Taxes (DGT), tax compliance in FY 2012 was 53.72% for individual taxpayers while for corporate taxpayers the number was 53.36%. During the last three years, the performance of individual taxpayer compliance was less than the corporate equivalent. The corporate tax compliance ratio has been increasing since FY 2010 while for individual taxpayers that ratio has been decreasing.

The reason for the low level individual taxpayer compliance ratio should be given greater consideration. Many researchers have argued that tax knowledge is one of the determinants of tax compliance. This is because individual taxpayers do not have proper taxation knowledge which leads them to become non-compliant. As revealed by Lewis (1982), Eriksen and Fallan (1996), Kirchler (2007), and Palil (2009), tax knowledge and education has a significant impact in determining tax compliance behavior. These researchers found that endowing taxpayers with better taxation knowledge will encourage them to comply more with taxation rules.

Given the fact that Indonesian tax compliance is still low, and the number of publications on psychological taxation is still few, this provides opportunities to elaborate on the determinants of tax compliance based on the psychological perspective. To determine the psychological perspective of tax compliance, which has a close relationship with behavioral economics, we conducted a survey on tax knowledge and tax compliance behavior in Surabaya City. It focused on individual taxpayer knowledge and education as a main determinant of tax compliance behavior..

2. Literature Review

Tax compliance is considered as a term which conveys the willingness of taxpayers to pay their taxes (Kirchler, 2007). Furthermore, based on McBarnet (2001) there are three types of compliance which are committed compliance, capitulative compliance and creative compliance. The first term refers to voluntarily tax compliance, and the second and the third terms refer to tax evasion and tax avoidance, respectively. Tax evasion happens when a taxpayer evades his or her tax obligations by transgressing the tax law. However tax avoidance is a legal way to avoid taxes by taking advantage of possibilities to reduce tax payable, based on tax law.

Measuring tax compliance is not an easy thing. Many studies have suggested that the measurement of tax compliance should be based on the obligation of the taxpayer to meet administration requirements. Brown and Mazur (2003) suggested that tax compliance can be measured based on the filing of a tax return, payment of tax due on the due date and declaring the tax liability accurately. Furthermore Ming Ling, Normala and Meera (2005) mentioned that tax compliance basically is administrative matter which includes registering as a taxpayer, submitting a tax return and pay taxes in time. Singh and Bhupalan (2001) gave a broader perspective of tax compliance, namely that in order to file a tax return, it is necessary to require the taxpayer to be honest, tax knowledgeable, capable of filing a tax return, keep accurate and proper records and obey the time frame.

There are two main approaches for tax compliance namely the economic deterrence approach and the behavioral approach. Devos (2014) mentioned that many researchers built tax compliance models from the perspective of the economic deterrence approach which includes information in regard to tax system complexity, level of revenue, withholding system, preparer, audit, tax rates, and penalties.

The second tax compliance approach is the behavioral approach which mainly is based on the psychological perspective. "A behavioral perspective introduces new evidence and logic regarding how individuals respond to taxes and so changes the terms and form of the term trade-offs" (Congdon, Kling, and Mullainathan, 2011,pp.178). People tend to not perceive the tax correctly. Thus either they pay attention to the tax system as a set, the circumstances around them influence their behavior toward taxation. In this approach, the individual is not only

the utility maximizer but also his/her action is basically influence by his/her attitudes, social norms and beliefs (Elster, 1989; Steenbergen, McGraw, and Scholz, 1992; and Devos, 2014). As mentioned by Congdon, Kling and Mullainathan (2011) behavioral aspects of tax response follow certain behavioral tendencies: 1) inattention and salience, 2) complexity and error, 3) preferences. People may become either fully or completely ignorant when they are salient. Furthermore the complexity of tax law leads to inaccurate perceptions of taxes. Finally people may evaluate taxes based on their own references which generate non-compliance behavior.

Kircher (2007) stated that research on the behavioral economics of taxation mainly focused on attitude, norms, fairness and taxpayer decisions. He divided the determinants of tax compliance into six categories namely political perspective, social psychological perspective, mental representation, decision-making perspective, self-employment and interaction between tax authorities and taxpayer.

In this study we will focus on the influence of education and tax knowledge on tax compliance behavior along with other determinants namely Referent Group, Probability of Being Audited and Financial Constraint.

The impact of education on tax compliance is ambiguous. This conclusion based on some research which found that education has a significant impact on tax compliance and some others which revealed a different result. Chan Troutman and O'Bryan (2000) suggested that higher education has a positive correlation with tax compliance. Far before Chan Troutman and O'Bryan (2000) study, Schmolders (1960) concluded that higher education positively correlated with tax compliance. He conducted a study in Germany and found that 75% of secondary school students agreed with state policy while only 58% of the primary school group agreed with the same statement. He then argued that the higher the education of people, the more understanding of state policy, which leads to more compliance.

Tax knowledge has a positive significant impact on determining tax compliance behavior as revealed by Lewis (1982); Eriksen and Fallan (1996); Fallan (1999); Loo and Ho (2005); Kirchler (2007); Witono (2008); Palil (2009); Nazir (2010); Rahmawati, Prasetyono, and Rimawati (2013); and Saad (2014). Therefore, there is no doubt regarding how tax knowledge affects tax compliance behavior.

Referent group is a role model for taxpayer behavior toward taxation. As mentioned by Allingham and Sandmo (1972), Schmolder (1959) and Clotfelter (1983), the referent group has a significant impact on tax compliance behavior. Taxpayers tend to follow attitudes of their referent group, namely whether or not they obey taxation rules.

Increasing the audit probability might lead to increasing tax compliance behavior. People will comply more with taxation law if they know that they have a high probability of being audited. This conclusion is supported by Slemrod, Blumenthal and Christian (2001), and Kirchler (2007).

The impact of financial constraints is still under doubt. Besley, Preston and Ridge (1997) and Mohani (2001) revealed that indeed financial constraints have a negative impact on compliance behavior. However Vogel (1974) stated that people who do not have financial constraints even commit higher tax evasion. Furthermore Rajagukguk and Sulistianti (2011) found that financial satisfaction lead to a positive impact on tax compliance behavior.

3. Methodology and Research Design

Respondents of this survey were individual taxpayers in Surabaya city. The reason why individual taxpayers were chosen was mainly because in a self-assessment regime, a better understanding of tax knowledge is important. In Indonesia, the individual taxpayer has less chance to hire a tax consultant due to their budget constraints. Furthermore, unlike in many countries such as in Japan in which individual income tax makes the highest contribution to total tax revenue, in Indonesia corporate income tax evidently makes the highest contribution. However if we compare the number of taxpayers, individual taxpayers are sixteen times the number of

corporate taxpayers . In addition, as stated by Palil (2009), individual taxpayers are the main subject of a self-assessment system. Therefore, this research was conducted to obtain information about tax knowledge and the tax compliance behavior of individual taxpayers.

As mentioned before, we did a survey which undertaken from 13th January until 27th February 2014 by employing both questionnaire and interview techniques in Surabaya city. Surabaya is the capital of East Java Province and the second largest city in Indonesia with a population of 3.2 million people. It has become a central of trade, business, industry and education in East Java. In term of government administration, it is divided into five areas with 31 districts.

Table 1. Result of Sampling Frame

District	Sub-district	Chosen Sub-District	Chosen Urban Village	Respondent/Urban Village
Central Surabaya	Bubutan	Bubutan	Gundih	15
	Simokerto	Simokerto	Simokerto	15
	Tegalsari	Tegalsari	Keputran	15
	Genteng			
North Surabaya	Semampir	Semampir	Sidotopo	15
	Pabean Cantian	Pabean Cantian	Nyamplungan	15
	Krembangan	Krembangan	Krembangan Selatan	15
	Kenjeran	Kenjeran	Tambak Wedi	15
	Bulak			
East Surabaya	Gubeng	Gubeng	Gubeng	15
	Tambaksari	Tambaksari	Pacarkeling	15
	Sukolilo	Sukolilo	Medokan Semampir	15
	Mulyorejo	Mulyorejo	Kalisari	15
	Rungkut	Rungkut	Medoan Ayu	15
	Tenggilis Mejoyo			
	Gunung Anyar			
South Surabaya	Wonokromo	Wonokromo	Ngagel	15
	Sawahan	Sawahan	Pakis	15
	Jambangan	Jambangan	Karah	15
	Karang Pilang	Karang Pilang	Kebraon	15
	Wiyung	Wiyung	Balas Klumprik	15
	Wonocolo			
	Gayungan			
	Dukuh Pakis			
West Surabaya	Tandes	Tandes	Karangpoh	15
	Sukomanunggal	Sukomanunggal	Simomulyo Baru	15
	Benowo	Benowo	Romokalisari	15
	Pakal			
	Sambikerep			
	Lakarsanti			
	Asemrowo			
	Total			300

In terms of taxation, Surabaya is under East Java I Tax Regional Bureau authority. There are 12 Small Tax Offices (Kantor Pelayanan Pajak Pratama) and 1 Middle Tax Office (Kantor Pelayanan Pajak Madya) under this Tax Regional Bureau. Middle Tax Office is only in charge of corporate taxpayers. In FY 2012, number of taxpayers covered by the East Java I Tax Regional Bureau was 36.928 corporations and 361.850 individuals. Based on this data, we decided to use 300 samples which were chosen by a sampling technique namely stratified sampling and simple random sampling. The sampling result as shown on Table 1.

In order to examine the relationship between tax knowledge and tax compliance behavior, we attempted to examine the effect of each tax knowledge variable on tax compliance behavior as well as the total tax knowledge. Moreover we include the dummy variable of tax education. Therefore we built a regression model as follows.

$$TC = \beta_0 + \beta_1 TAXKNOW + \beta_2 AUDIT + \beta_3 FINSCONS + \beta_4 REFGROUP$$

The dependent variable is TC (Tax Compliance Behavior) which derived from weighting score of Tax Compliance Hypothetical Questions and the independent variables are reference group, probability of being audited, financial constraint and tax knowledge. Furthermore, defining the influence of education background, we used one way ANOVA for examining the relationship between educational level and tax compliance behavior along with other variables namely 1)Ethnic, 2) Age, 3) Religion, 4) Occupation, and 5) Income.

Based on our literature review, there is a significant impact of tax knowledge on tax compliance behavior (Lewis, 1982; Eriksen and Fallan, 1996; Fallan 1999; Loo and Ho, 2005; Kirchler, 2007; Witono, 2008; Palil, 2009; Nazir, 2010; Rahmawati, Prasetyono, and Rimawati, 2013; and Saad, 2014). Therefore we expected that tax knowledge as well as all educational level would produce a positive impact on tax compliance behavior. We developed our hypotheses for tax knowledge as follows:

H_1 - There is a significant positive impact of total tax knowledge on tax compliance behavior

H_2 - The probability of being audited has a significant positive impact on tax compliance behavior

H_3 - A financial constraint has a significant negative impact on tax compliance behavior

H_4 - A referent group has a significant positive impact on tax compliance behavior

In order to build the regression model, we attempted to run a stepwise forward regression which was aimed at obtaining the best model. A stepwise regression is an automatic model selection for screening of independent variables to determine which ones have significant power in determining dependent variables.

4. Research Discussion and Findings

We attempted to conduct an independent samples t-test and one way ANOVA to examine the means differences between categories in order to determine the level of tax knowledge and the level of tax compliance behavior. We used total tax knowledge data derived from 35 (thirty five questions) with Likert scale scoring. The highest score of total tax knowledge was 175 while the lowest score was 35.

Independent samples t-test was used for testing the bivariate independent variable or in other word the independent variable has two categories to be tested. The variable is Gender, However for variables which consist of more than two categories we carried out a one-way ANOVA test. Those variables are 1) Ethnic, 2) Age, 3) Religion, 4) Education, 5) Occupation, and 6) Income.

There are significant differences between male and female respondents. The average tax knowledge of males is higher than females, the average values of tax knowledge are 128.02 and 122.09 respectively. With a significance level of 5% the test showed a p-value pf 0. Therefore we conclude that males are more knowledgeable in term of tax knowledge than females.

Table 2. t-Test and ANOVA test result of Tax Knowledge Level

Variable	Categories	Mean	t-statistics/F-statistics	P-value	Note
Gender	Male	128.02	3.576	0.000	Significant
	Female	122.09			
Ethnics	Javanese	125.8	5.165	0.002	Significant
	Maduranese	119			

	Chinese	109.75			
	Others	122.89			
Age	< 30 years old	128.26	6.946	0.000	Significant
	31-40 years old	129.19			
	41-50 years old	123.38			
	>50 years old	120.25			
Religion	Islam	125.35	3.624	0.028	Significant
	Catholic	115.27			
	Protestant	127.89			
Education	Up to High School	120.54	4.761	.009	Significant
	Diploma and Bachelor Degree	126.42			
	Master and Doctoral Degree	126.79			
Occupation	Civil Servant	122.17	2.937	0.034	Significant
	Private Employee	127.91			
	Self-Employed	124.98			
	Others	123.59			
Income	<Rp. 2.025.000	124.9	3.238	0.013	Significant
	Rp.2.025.001-Rp.4.166.667	121.86			
	Rp. 4.166.668 - Rp. 20.833.333	124.93			
	Rp. 20.833.334 - Rp. 41. 666.667	129.76			
	>Rp. 41.666.667	121.5			

Even though there was significant result on ethnicity, we could not derive conclusion since the differences in terms of number of sample among groups was huge. We had already mentioned previously that the majority of our respondents were Javanese. Therefore we did not analyze more about this ethnic nevertheless the result show that Javanese people tend to have higher tax knowledge.

People who belong to the age range of from 31 to 40 years old were the group of people who were the most knowledgeable about taxation. Moreover people who belong to more than 50 years old group were the least knowledgeable. The one-way ANOVA test result provided proof of that conclusion since from the test we obtained significant means difference among categories in the age range variable (p-value 0.000 less than 0.05 significant levels).

In terms of religion, people who belong to Protestant have the best tax knowledge among religions with the average value of total knowledge being 127.89. The second place was Muslim with 125.35 and Catholic become the lowest with 115.27. This conclusion was arrived at after a significance test on the one-way ANOVA which shows a p-value of 0.028 at a 5% significance level.

Moving to education, the highest tax knowledge belongs to people who have master and doctoral degree with an average of tax knowledge of 126.79. The second place was diploma and bachelor degree group with 126.42. The lowest tax knowledge went to people who have level of education up until high school with average total tax knowledge of 120.54. This result has already makes common sense in that the higher the level of education the higher the knowledge of those people.

Private employees are the most tax knowledgeable group of people in terms of occupation. Comparing the value of means among the occupation groups which gave significant results, the average value of total tax knowledge for private employees was 127.91. The second place is self-employed people and the third is civil servants.

People who have income between 20 million to 40 million rupiah were considered as the most knowledgeable income group. In terms of preparation of tax returns, surprisingly people who ask help from consultants tend to have the highest tax knowledge with an average value of tax knowledge of 128.6. Moreover

people who declare themselves who prepare their own tax return got second place with an average tax knowledge of 126.82. The one-way ANOVA test which had been conducted shows statistically significance at 5% with p-value of 0.

Table 3. t-Test and ANOVA test result of Tax Compliance Behavior Level

Variable	Categories	Mean	t-statistics/F-statistics	P-value	Note
Gender	Male	24.22	0.242	0.809	Unsignificant
	Female	24.08			
Ethnics	Javanese	24.44	5.629	0.001	Significant
	Maduranese	23.04			
	Chinese	18.72			
	Others	23.18			
Age	< 30 years old	23.44	1.544	0.203	Unsignificant
	31-40 years old	24.18			
	41-50 years old	25.19			
	>50 years old	24.02			
Religion	Islam	24.22	3.776	0.024	Significant
	Catholic	21.20			
	Protestant	26.47			
Education	Up to High School	20.92	29.547	0.000	Significant
	Diploma and Bachelor Degree	24.96			
	Master and Doctoral Degree	27.56			
Occupation	Civil Servant	25.94	8.385	0.000	Significant
	Private Employee	23.19			
	Self-Employed	22.64			
	Others	24.10			
Income	<Rp. 2.025.000	22.56	1.104	0.355	Unsignificant
	Rp.2.025.001-Rp.4.166.667	24.08			
	Rp. 4.166.668 - Rp. 20.833.333	24.78			
	Rp. 20.833.334 - Rp. 41. 666.667	23.93			
	>Rp. 41.666.667	22.90			

The level of tax compliance behavior was assessed by the total tax compliance hypothetical question as dependent variable. As with what we did in determining the level of tax knowledge, we employed an independent samples test and one way ANOVA to determine the level of tax compliance behavior in Surabaya city.

Since gender, age and income are unsignificant in those tests, we only elaborate variables which are significant in statistics test. People of protestant belief tend to have higher tax compliance than those in the other religious groupings. Meanwhile Islam is ranked to be the second highest in tax compliance among the group of religions. However Catholic people have the least average of tax compliance compared to other religions. This result matched another study conducted by Mutascu (2012) which discussed about the role of four major religions on tax

revenue collection. He found that Protestant and Muslim religions have a positive impact on tax revenue collection, which means those two religions tend to has a significant impact on tax compliance.

The higher the level of education the more compliant the people are. We arrived on this conclusion after receiving a one-way ANOVA result which shows that the master and doctoral degree group has the highest average on tax compliance behavior. The second place is the diploma and bachelor's degree group while the lowest average score went to the up until high school level group. This finding was equivalent to the Chan, Troutman, and O'Bryan. (2000). Chan revealed that higher education has a direct link to tax compliance. The nature of the significant effect of educational level on tax compliance is that educated people tend to have the capability to have a better understanding of information they are given. Therefore they will less likely to evade taxes since they know the consequences of being a tax evader.

Civil servants have the highest tax compliance behavior compared to other occupation groups while self-employed people have the lowest average score. This result is in line with the OECD (2013) which stated that self-employed people have lower tax morals compared to full-time employees. The reason behind this result is it is very difficult to measure tax due for self-employed people and therefore there is bigger room for not declaring their actual income to the tax authority. Meanwhile for civil servants their tax due has already been withheld by their employer so they are forced to be compliant.

As we mentioned before, we attempted examine the relationship between tax knowledge and tax compliance behavior in Surabaya city. Therefore we built a regression model in which the dependent variable was tax compliance behavior and the independent variables included tax compliance behavior determinants which are tax knowledge, reference group, probability of being audited and financial constraint.

Table 4. Regression Result

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.503	2.125		2.590	.010
REFGROUP	.564	.075	.415	7.512	.000
AUDIT	.281	.080	.165	3.500	.001
TAXKNOW	.055	.016	.164	3.485	.001
FINSCONS	.320	.094	.190	3.402	.001

R	.631		Sum of Squares	2887.285
R Square	.398		df	4
Adjusted R Square	.390		Mean Square	721.821
Std. Error of the Estimate	3.845		F	48.836
			Sig.	.000

The model is statistically significant at 5%. Therefore based on the coefficient of regression we then wrote down the model as follows:

$$TC = 5.503 + 0.055\,TAXKNOW + 0.281\,AUDIT + 0.320\,FINSCONS + 0.564\,REFGROUP$$

All the independent variables give significant impact on tax compliance behavior. The model provided evidence that tax knowledge is an important determinant of tax compliance. The positive relationship between tax

knowledge and tax compliance behavior appear in the model with a positive coefficient of tax knowledge. The higher the level of tax knowledge, the more compliant the people are. This result has been met our hypothesis that tax knowledge is necessarily important to improve tax compliance among taxpayers (H_1 - There is a significant positive impact of total tax knowledge on tax compliance behavior). This result was in line with what Niemirowski, Baldwin, and Wearing (2002) found in a survey in Australia. They revealed a significant correlation between tax knowledge and attitude toward taxation. Furthermore, what Palil (2009) did in Malaysia also found the same result that tax knowledge has a significant impact on tax compliance behavior. This study gives further support to previous studies which have been conducted by Lewis (1982); Eriksen and Fallan (1996); Fallan (1999); Loo and Ho (2005); Kirchler (2007); Witono (2008); Nazir (2010); Rahmawati, Prasetyono, and Rimawati (2013); and Saad (2014) which revealed similar results that indeed there is a strong relationship between tax knowledge and tax compliance behavior.

Moreover as we expected, the probability of being audited produced a significant impact on tax compliance behavior. H_2 - The probability of being audited has a significant positive impact on tax compliance behavior. The positive coefficient means that as the person's perception of the probability of being audited increases the tax compliance behavior will increase. Many studies have already given evidence on how the probability of being audited becomes one of the tax compliance determinants, examples being Kirchler (2007), and Muehbachera, Mittone, Kastlunger and Kircher (2012). In addition Slemrod, Blumenthal and Christian (2001) examined more than 1.700 taxpayers in the United States, concluding that tax compliance increases along with the increasing of audit probability.

The financial condition of people tends to result in a significant impact on tax compliance. It was unexpected that financial constraints have a strong relationship with determining tax compliance behavior. As mentioned in the previous chapter we expected the result that financial constraints will have a negative effect on tax compliance behavior as suggested by Besley, Preston and Ridge (1997) and Mohani (2001) which mentioned that in a time of crisis, tax evasion tends to be higher than usual. Therefore we set our hypothesis H_3 - A financial constraint has a significant negative impact on tax compliance behavior. However another study conducted by Vogel (1974) supported the result that people with no financial constraints have even higher tax evasion compared to others.

Finally, referent group action, whether it be friends or family, has a significant positive impact on increasing tax compliance behavior. This was shown by the positive coefficient of the referent group. In our study we asked respondents whether or not they become offenders of tax rule because their family and their friends become evaders as well. Therefore we conclude that respondent will do the same action as if their family or their friends do the same. This result was also revealed by Palil (2009) who found that in the Malaysia referent group, the probability of being audited, perception of government spending, penalties, and personal financial constraint determine the tax compliance behavior level. Similar evidence was also found by Allingham and Sandmo (1972), Schmolder (1959) and Clotfelter (1983), that taxpayers tend to have a role model that they follow. Thus, this result matched with our hypothesis H_4 - A referent group has a significant positive impact on tax compliance behavior

5. Conclusion and Limitation of The Study

Based on our findings, education and tax knowledge has a significant impact on tax compliance behavior in Indonesia. We derived this conclusion based on certain findings which we have already reported in the previous chapter. First, the regression analysis result provided evidence about how tax knowledge is necessarily important to increase tax compliance in Indonesia in the case of Surabaya city. This result met our hypothesis as expected. Many economists agree that higher tax knowledge is usually correlated with compliance. In addition, some researchers have used education as one of the parameters of tax knowledge. Several studies - Schmoders (1960); Vogel (1974);

Song and Yarbrough (1978); Kinsey and Grasmick (1993); and Chan, Troutman, and O'Bryan (2000) - revealed that tax knowledge grows with the length of education. Our findings also suggested that a high level of education correlated with both tax knowledge and tax compliance behavior. The higher the level education of people the higher the level of both tax knowledge and tax compliance behavior is.

The complexity of tax laws somehow has led taxpayers to become non-compliant. As mentioned by Krichler (2007) poor understanding has led to distrust and uncertainty. This uncertainty situation is followed by risk aversion - for example people might feel it is better to not file a tax return other than filing an inaccurate one since they do not know which types of income should be taxed. It is true that sometimes fear about paying high taxes has caused individuals to become evaders. A better understanding about tax rules has become a hook for people to pay taxes.

Therefore improving tax knowledge and giving people more education will lead to higher tax compliance behavior. Thus, something should become a big deal for Indonesian tax Authority (DGT). Other than that, improving law enforcement should be done along with tax knowledge improvement, since probability of being audited gives significant positive impact on tax compliance behavior.

We hope that this study will be able to have significant implications for taxation research in Indonesia. However, some limitations appear to occur and should be addressed for future improved study. Designing the questionnaire is the first issue. Picking up the appropriate variables referring to previous studies with a good literature review is necessarily important. Planning a survey cannot be undertaken within a few hours. The limitations of budget resulted in a geographic restriction to a specific area therefore we could not conduct a survey for all over Indonesia with reliable samples. Since we had a time limitation as well as budget limitation, for future research better survey planning as well as a good questionnaire design is needed for a good result. Broadening the scope of survey needed to obtain a better result and more meaningful conclusions.

Furthermore, since we conducted an interview survey based on face to face meeting with respondents, sometimes we experienced rejection from respondents. Even though such an in person interview is costly and difficult, but it was able to cover the sampling frame and could assure the rate of return. However the disadvantage of in person interviewing is that sometimes people become embarrassed with their answer and therefore they might not answer truthfully. In a future study we might attempt to combine an internet survey with an in-person interview to avoid this type of problem.

Since the survey just measured the answer at the time the study was conducted, a longitudinal study might be another choice for future research. Therefore we could examine the behavior of people not only in a narrow timeframe and could get better results. However, such a study would be costly and time consuming. Finally we collected obstacles and difficulties which met by enumerators who conducted in person interviews with respondents.

6. Policy Implications

The results of this study have demonstrated evidence on how tax knowledge plays a significant role in determining tax compliance behavior. The Indonesian government, with DGT as the tax authority, should keep an eye on tax knowledge. Based on our findings in Surabaya City which can become a pilot project for examining tax knowledge in Indonesia, DGT should start to think about how to increase tax knowledge in Indonesia. Tax education is necessarily important for increasing tax knowledge.

DGT might start with strengthening its public relationship department. Actually it has been conducting many programs to enhance tax knowledge, but often the policies were not successfully executed. Lessons learned from the Japanese government, including introducing the role of taxation as early as possible to reach mature taxpayers, might be able to be adapted by DGT. NTA has undertaken many programs for educating people in understanding tax administration and tax rules. For example, they built tax space which people could visit and learn the process of taxation in Japan. They created games, videos, cartoons and comic books which enable children to learn about taxation from an early age. By introducing the role of taxation at an early age as well as the consequences of being tax evaders, someday when they become an adult they will be more aware and comply more with tax rules.

Furthermore, from the results we have seen that the length of education has a significant impact both on tax knowledge and tax compliance. In order to increase tax knowledge which in the end may boost high level of tax compliance, including a taxation subject to become one of the curriculum items in formal education might become another solution. In Indonesia, taxation has become a difficult term within the society because people do not know how to deal with it. The effective way to educate people is to make taxation as a mandatory subject to be learned in school. Therefore after graduating and obtaining a specific job, they will not be confused and will voluntarily pay their taxes.

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The Impact Of Using The Lecture Method In Teaching English At University

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Abstract

This paper deals with the effectiveness of the lecture method of teaching at university in improving students' linguistic and academic skills. Research on English language teaching at universities and colleges in Oman reveal that a high rate of students who finish secondary schools and join higher education institutions could face difficulties in using the English language to meet their personal, social, academic, and career needs efficiently and appropriately. Lectures are popular among university academics for some reasons such as that they are economical in terms of planning, flexible as they can be applied to most content areas and also simple to implement in class. On the other hand, critics argue that lecturing is principally a one-way method of communication that does not involve significant students' participation. The objectives of this research study are to find out students' views and opinions of the use of the lecture method in teaching English as well as its strengths and weaknesses. The findings showed that although majority of respondents indicated that they had learned a lot from the lecture material, a number of respondents refer to the lack of motivation to participate during the lecture. Meanwhile, few indicated that there is an opportunity to interact during the lecture although the lecturer is the only authority as he dictates his points of view in class. The implications could be that some lecturers at university may find it the right time for them to accept the fact that actual participation of students in their learning is a significant practice to achieve the goals set by their educational institutions.

Keywords: impact**,** lecture method, teaching English, learning

1. Introduction

Essentially, the lecture has been used down through the years as a means of transmitting cognitive or factual data from a teacher to a group of students. It presupposes that the teacher is the only expert with all the access at the teacher's disposal, and that the students need or want a large amount of this data in a short time. This method, thus, is one way channel of communication of information. The emphasis is mainly on the presentation of the topic and the explanation of the content to the students (Bligh, 2000; Hart et al, 2002).

In a lecture, however, students' attention appears to fall off fairly steadily after an initial rise, until the last five minutes when it briefly rises again which means that the middle of a talk is less well remembered than the beginning and end (Bligh, 2000). Lecturers' performance also declines over an hour. Nevertheless, though lectures are much crticised as a teaching method, universities have not yet found practical alternative teaching methods for the large majority of their courses (Paul, 2015).

1.1 Objectives

As far as the context of this research study is concerned, i.e. a university college in Oman, the prime objectives to be achieved is the obvious need for improving its students' language and literacy competence and linguistic skills, enhancing their cognitive abilities and developing their personal growth. In searching for literature related to these issues, it would be verified that there is some lack of academic research that would look deeply and extensively into these pedagogical matters (Alami, 2016; Al-Mahrooqi & Denman, 2015).

1.2 Purpose of the study

The aim of the present research study is to find out whether the university college pedagogical goals and objectives of academic teaching and learning such as improving students' language and linguistic competence, enhancing their cognitive abilities and developing their personal growth are clearly achieved through the use of the lecture method. Furthermore, to find out the reasons that might lie behind the students' views and opinions.

1.3 Significance of the study

This research is considered significant because it deals with an important issue which could affect the students' learning of English at university. The quality of teaching provided to students is the prime concern of this institution. They need to reach a certain level of proficiency at the end of the academic term. The improvement includes achieving language mastery, heightening the level of thinking skills and strengthening their personal growth. These goals and objectives should be accomplished by the use of an effective method of teaching.

The ultimate findings, therefore, would contribute to the improvement of students' different language/linguistic skills, cognitive enhancement, and personal growth. Also, the findings would enable the institution to realise the specific needs of the students in order to adopt the teaching technique which is more appropriate and effective for imparting information and knowledge to different levels of learners.

2. Literature Review

2.1 The use of the lecture method in teaching

The lecture method gets a mixed view among different scholars. Although most of students have been inspired by brilliant lecturers, many learners have been bored, confused and even annoyed by inexperienced lecturers (Cannon & Newble, 2002). Meanwhile, Charlton (2006) contends that there seems to be ample evidence that lectures are probably the best practicable teaching method in many circumstances and for many students. However, it is not

generally understood why lectures are useful, and the lack of a convincing rationale for lectures has been a major factor in under-estimating their importance.

Lectures, though often criticised for their one-sided instruction style and which are associated with the lack of motivation on the side of the students leading to a very low learning success, they are still one of the most efficient educational methods known in higher education (Carpenter, 2006). Moreover, research, according to Ganyaupfu (2013), has consistently shown that in many places traditional lecture methods, in which lecturers talk and students listen, are the dominant feature of many college and university classrooms.

2.2 Pedagogical aspects of lecture

A good lecture, as Davis (2009) claims, always offers a point of view and an avenue of entry into a field of study, In addition, a lecturer may focus students' attention to help them identify and remember central points of the lecture. The lecture method, therefore, emphasizes the role of the lecturer in communicating knowledge to students.

In agreement with this claim, Ramsden (2003) states that a lecture is mostly easier to be carried out than other methods of teaching. Therefore, the lecture might be the most familiar and acceptable by many lecturers as it could typically be the method they have grown up with through the span of their life. In addition, the lecture method might be commonly used in teaching as many divergent subjects as human mind could imagine.

Nevertheless, Lectures are effective educational tools, as Wood et al (2007) argue, if they are skillfully delivered by competent lecturers, with clear and enthusiastic voice, good eye contact, and appropriate gestures. Lecturers may consider some ways to assist students to make the connections between different representations, especially students whose first language is not English.

In brief, Fry et al (2009) state that students say that lecturers need to take advantage of their attentive audience in as many ways as possible by soliciting responses and reactions from the students, by providing aids for note-taking and comprehension, and by daring to model learning in action, not learning as passive acquisition.

2.3. Criticism of lecturing

The lecture method involves the lecturer taking the lead in delivering knowledge with minimum or no participation of the students. This is problematic as the students take on a passive role, which can hinder their learning process (Fry et al, 2009). Students need to be alert learners, to keep their minds active and be able to integrate different information. The lecturer could make sure to attract the attention of students through asking questions and encouraging their participation.

The traditional teaching paradigm, thus, places the main responsibility for student learning upon the lecturer's shoulders. That is to say, the lecturer may present almost the same information, lectures to and tests all students regardless of the individual differences among them (Shopov & Pencheva, 2001). Limited or no concern is given to the personal or psychological needs of the individuals.

The lecture method, therefore, is claimed to be teacher-centred where the lecturer occupies most of the lecture time talking to students who may be listening passively (Bligh, 2000; Cook, 2001). There could be some reluctant participation on the part of the students in their learning as they heavily depend on the lecturer for listening to and understanding the relevant material. The consequences in the long run, thus, may not be in the best interests of the learners.

Richards et al (2014) claim that as the lecture begins, most students are paying close attention but for most students that attention lasts for about 10 minutes. Even with material that may seem interestingly agreeable to the lecturer, it is often a challenge to maintain the active interest of an often distracted audience for such a long period (McKeachie & Svinicki, 2006).

Meanwhile, research had shown that most of these lectures continue for nearly fifty minutes at a time, although the human attention span seems to be considerably less than that, i.e. almost fifteen to twenty minutes at the beginning of a lecture (Biggs & Tang, 2011).

3. Methods

The research design for this study employed quantitative data collecting techniques to collect data. The research starts with a survey that aims at looking in depth into the students' views on the lecture method in teaching English at university. The quantitative data collection technique involves conducting and administering a questionnaire. The questionnaire consists of forty items which are divided into five categories: a. General preferences, b. Improvement of language/linguistic skills, c. Cognitive enhancement, d. personal growth and e. Management of learning.

The research is, thus, designed in a way that would allow the researcher to gather, through the coordination with the English Department in the university college, as much data as possible which would assist in answering the research questions. The result would facilitate the development of a framework which could be applied in English classes when the lecture method is used.

4. Findings

Students were asked forty questions divided into five categories to gather information on their perceptions of the lecture method. The majority of respondents indicated that the method had been of value to them. Likewise, majority of respondents indicated that they had learned a lot from the lecture method material as interesting. However, majority of respondents indicated a preference for interaction during the lecture.

The analysis of students' views and opinions of the lecture method, the category 'General preferences' is highest in ranking while 'Improvement of language skills' is the lowest. It showed that the item with the highest mean among the five categories is from General preferences, 'I like lecturing as well as discussion during the same lecture.' with agree mean value. Meanwhile, the lowest is from Management of learning, 'The lecturer usually gives us opportunities to talk in the lecture' with disagree mean.

The details of each of the five categories revealed that for General preferences, the item with the highest mean is 'I like lecturing as well as discussion during the same lecture.' while for the lowest is 'I am attentive through the whole lecture.' For Language and Linguistic Skills, the highest is 'My vocabulary increases by lecturing' while the lowest is 'I am able to ask and answer questions during the lecture'. For Cognitive Enhancement, the highest is 'I broaden my general knowledge through lecturing.' while the lowest is 'I am able to extract detailed opinions while listening to a lecture. For Personal Growth, the highest is 'I want to present my opinion during the lecture but afraid to do

so.' while the lowest is 'I am motivated to participate actively in future lectures'. As for Management of Learning, the item with the highest mean is 'The lecturer dictates points of view during lecture' while the lowest is 'The lecturer usually gives us opportunities to talk in the lecture'.

5. Discussion

Students were asked to respond to a questionnaire to gather information on their perceptions of the lecture method. Majority of respondents indicated that the method had been of value to them (Charlton, 2006). Likewise, majority of respondents indicated that they had learned a lot from the lecture material as it is interesting. However, majority of them refer to the lack of motivation to participate during the lecture. Meanwhile, few indicated that there is no opportunity to interact during the lecture since the lecturer is the only authority as he dictates his points of view in the class (Fry et al, 2009).

The present research paper showed that students have neutral cumulative mean of 2.97 regarding the use of the lecture method in teaching English at university in terms of the five categories included in the questionnaire of this research. Students' perceptions on the lecture method revealed that students' views and opinions on the lecture method ranged from a mean of 1.98 Management of learning to a mean of 3.91 for General preferences.

Moreover, it is revealed that lecturers may believe that their main task in a lecture hall is to communicate information to students within the allocated time for a lecture. This could be true according to the traditional style of teaching. Yet, students have other views towards lecturing which is legitimate as far as their learning is concerned. Students' participation in the class to facilitate their own learning is a justified requirement for effective lectures.

6. Conclusions

In conclusion, it would not be unusual to state the simple fact that good teaching would lead to better learning. It has been reaffirmed that lecturing could be an essential means for communicating knowledge at university. Yet, learners may need more participation in a lecture class to consolidate their learning. Students could have a say in the method of teaching they preferred as it may have an impact on the outcomes they would achieve by the end of their courses. Lecturers, therefore, would bear a huge ethical responsibility towards themselves in delivering knowledge to their students.

7. Implications for teaching and learning

The implications for teaching and learning would be rather noticeable. Active participation on the part of students in the lecture could improve the learning of their courses content, develop their critical thinking and improve their ability for problem solving as well as strengthening their personal growth. Participation in the class would also develop students' oral communication and social interaction.

Furthermore, lecturers of English at university may find it the right time for them to accept the fact that actual participation of students in their learning is an urgent and significant issue to achieve the goals set by their educational institutions. It certainly does not affect the role of the lecturer as an educator and leader. On the contrary, it could create an active and enjoyable atmosphere for exchanging knowledge and improving skills.

Generally speaking, lectures would be used efficiently and effectively, according to Fry et al (2009), if proper means of teaching are found to make them more active, attractive and interesting tools for students in order to decrease their shortcomings such as students' passivity, short-term retention of information, hindering of higher order thinking, as well as lack of monitoring students' learning from lectures

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A Platform Utilizing Industrie 4.0 For Process Control Teaching And Training Future Engineers

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Abstract

In this paper, a remotely operated system used for process control learning is developed. The platform serves as an insight of Industrie 4.0 to students while it engages them with industry standard hardware and software. The platform consists of four subsystems which include two reconfigurable plant models, S7-1200 PLC, WinCC SCADA and a website. The development of the platform was motivated by three critical problems identified in most universities which are costs, safety and limited systems. The **costs** for equipment that is of industry standard are quite high. This is a big challenge in universities because it may be impossible to acquire enough equipment that accommodates all students. **Safety** is a very important aspect in any working environment, thus some equipment used in industry cannot be used by non-qualified individuals (i.e. students) and such regulations are stipulated by the law. **Limited systems** do not offer adequate knowledge to students. This is because some concepts are deemed impossible for students to implement. Hence, simulation and visualization of the plant models are used to demonstrate such complex concepts.

Keywords: Inputs and Outputs (I/Os), Industrie 4.0, Internet, Matlab Simulink, Proportional-Integral-Derivative (PID), Programmable Logic Controller (PLC), Process Control, Supervisory Control and Data Acquisition (SCADA), Simulation, Totally Integrated Automation (TIA)

1. INTRODUCTION

Industrie 4.0 is the new phase of industry enhancement which involves data acquisition, operation and monitoring of various systems via the internet [1, 2]. The systems that can be upgraded or designed to operate remotely often have hardware and software that have web-based capabilities. A typical system that would need remote access is built with intelligent controllers, sensors and end-effector peripherals (pumps, actuators, etc.), as shown in Figure 1 [3]. Utilization of Industrie 4.0 offers manufacturers increased productivity volumes, product quality and flexibility of the systems (hardware and software). Industrie 4.0 based systems make use of communication protocols that include PROFIBUS, TCP/IP, UDP, MODBUS, etc [4]. However, the various systems that exist are used for commercial purposes and are quite expensive to purchase, maintain and are usually meant for a specific field (robotics, fluid systems, etc.)[3, 5]. Hence, universities face a challenge in demonstrating industry standard systems based on Internet of Things (IoT) but make use of simulation to emulate real systems [6, 7]. Simulation is still considered useful for training students the designing of systems and understanding their operation. The use of simulation may not be enough, hence there is need to ensure that such teaching systems engage students with industry standard hardware and software that utilizes Industrie 4.0 [8, 9]. Knowledge on process control systems with internet based functionalities should be demonstrated to engineers during their undergraduate studies. This will enable the students to work with complex systems and solve problems on their own in the Industrie 4.0 environment.
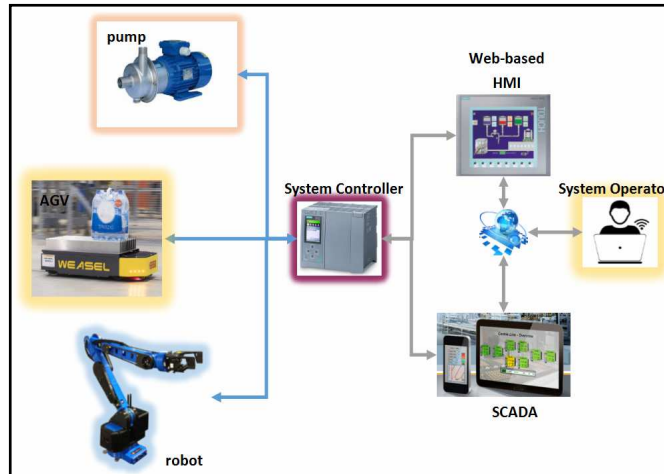
Figure 1 : System oriented around Industrie 4.0

The developed system (Figure 2) for the research thrives to give students and assist universities with five important aspects:

- Cost effective platform - The plant models for the platform are developed in software based on theoretical and real concepts. Replacement and maintenance costs of the system will be much lower compared to real hardware systems that have peripherals such as motors, sensors and actuators that can be damaged or malfunction [10, 11].
- Industrie 4.0 insight - Remote accessing the SCADA on a managed website is done in an attempt to teach and demonstrate Industrie 4.0 [12].
- Industry standard tools - The plant models on the platform are monitored and manipulated using a Siemens S7-1200 PLC and the user is able to input parameters and observe plant response on a SCADA interface [4, 13, 14].
- Multi-disciplinary platform - Two plant models were designed and these are described as follows:
  Dual tank model: A model of this nature is often used to teach mechatronics and mechanical engineering students concepts on process control systems.
  Ballast tank control for a submarine: The ballast tank control model is applicable in the Marine Engineering field. This model illustrates different parameters that are changed to control the depth of a submarine.
- Safety - some equipment used in industry cannot be used by non-qualified or untrained individuals (i.e. students) and such regulations are stipulated by the law. Since the platform is operated remotely and the plant models are designed in software, users are always safe [15].
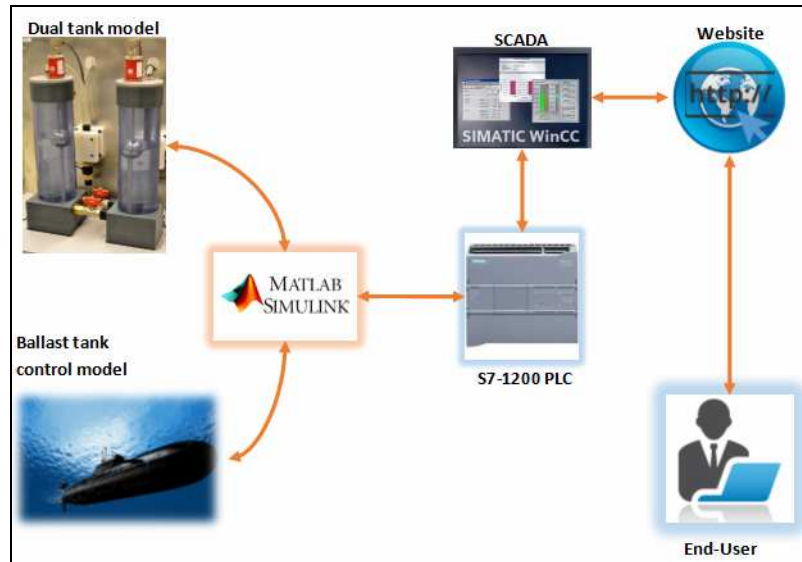
Figure 2 : Designed platform architecture

1.1. Background on web-based process control systems

A process control system consists of sensors and actuators that are assigned to the process and are interfaced to a controller (i.e. microcontroller, PLC, PC) [16]. In process control systems there are sensors which are used for monitoring the status and diagnosis of the process. Actuators serve the purpose of intervening into the process upon receiving signals from the system controller in order to achieve the desired task. The application and set up of process control systems is applied in various fields of product manufacturing and processing (agricultural sector, pharmaceutical industry, fuel industry, etc.) [16, 17]. Some of the benefits that come with process control systems include:

- Improved product quality in large quantities
- Improved safety in the plant environment
- Efficient utilization of resources
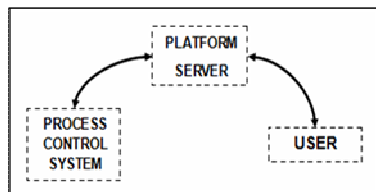
In engineering education process control is a participative subject whereby theory and application on responsive systems are given to students [10,18]. The knowledge given to students must be sufficient enough for them to tackle real world systems they will face in industry. However, with the advancements of IoT (Internet of Things) most platforms can now be operated and monitored via the internet [5,19]. Access of various industrial systems located over wide geographical areas requires various automation schemes that can be used for controlling and monitoring of various parameters of the systems [20,21]. Most remotely operated process control systems are designed with an architecture shown in Figure 3.

Figure 3 : Remotely accessed process
control system architecture

The architecture gives an overview of most internet based process control systems. The process control system (I/Os and controller) is interfaced to the platform server whereby a designed application (Website, HMI or SCADA) is made accessible to the user through the internet [4]. Accessibility to the process control platform will have limitations depending on what has been used. Hence most platforms that are fully monitored and controlled have a combination of a website interfaced with HMI/SCADA [20, 22]. This is done so that the platform can offer the following capabilities:

- Management of user access by administrators through the website - allocation of user access times is always needed.
- Security and privacy - having a SCADA or HMI system not managed or made accessible needs a website that provides adequate security.
- Allows each platform user to work actively without interruption from other users.

The research presented in this paper seeks to address practical process control teaching the Industrie 4.0 route.

2. METHODOLOGY AND DESIGN OF PLATFORM

This section discusses the integration of hardware and software implemented to develop a fully functional remotely accessed and virtual platform. The hardware and software components used are all outlined, including the programming and interfacing of the

platform subsystems. The platform was programmed and designed on a PC server that runs on Windows 7 Enterprise with the following specifications: Random Access Memory (RAM) - 8GB, System type - 64 bit, Hard disk speed - 7200RPM, Hard disk capacity - 1TB, Processor type - i7, Processor Speed - 3.4GHz

2.1. Plant model designing

Various software packages were looked at and the commonly used plant modeling software are Matlab Simulink and LABVIEW. These software packages are used in both learning institutions and industry. The software that was used in the development of the plant models is Matlab Simulink. The interfacing of Matlab Simulink to external systems is done in a lot of engineering disciplines that include aeronautics, chemical, electrical, mechanical, mechatronics and many more [23]. However LABVIEW seems to be limited to the chemical and process control disciplines. Matlab also known as Matrix Laboratory is a multi-variable and complex software that is optimized for solving engineering and scientific problems. Simulink is a graphical programming environment for modeling, simulating and analyzing multi-domain dynamic systems that works on the Matlab platform [23, 24]. Two plant models were designed for the platform. This was done to enable users of different departments (mechatronics and marine) to work on the platform and to give it a re-configurability aspect. Mathematical equations were derived and then programmed into the respective Matlab Simulink models [23].

2.1.1. Dual tank model:

Model consists of two tanks interconnected to each other, one pump and three valves as shown in Figure 4. The first tank receives water directly from the pump and an interconnecting pipe between the two tanks allows transfer of water from first tank to the second tank. Each of the tanks has a variable surface area that may be set in the program. The valves are located at the feed-input from pump to tank 1, between tank 1 and tank 2 and at the outlet of tank 2.
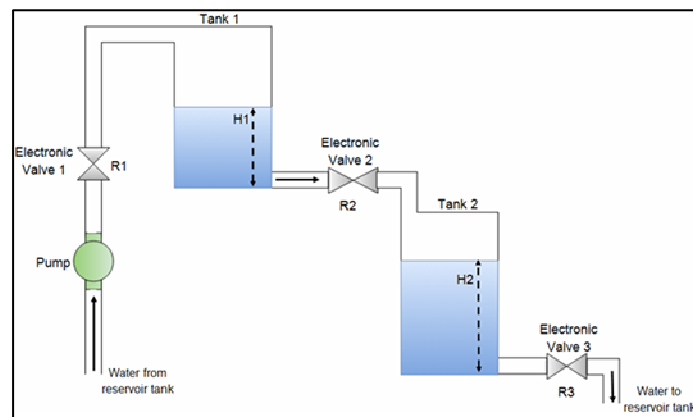
Figure 4 : Dual Tank Model

Model Parameters

A_1 − surface area of tank 1 (m^2) $\qquad$ A_2 − surface area of tank 2 (m^2)

h_1 − fluid level of tank 1 (m) $\qquad$ h_2 − fluid level of tank 2 (m)

ΔH − pump head (m) $\qquad$ R_1 − valve 1 resistance $\left(\frac{Pa}{m^3 \, s^{-1}}\right)$

R_2 − valve 2 resistance $\left(\frac{Pa}{m^3 \, s^{-1}}\right)$ $\qquad$ R_3 − valve 3 resistance $\left(\frac{Pa}{m^3 \, s^{-1}}\right)$

(1)

(2)

2.1.2. Ballast tank control for a submarine:

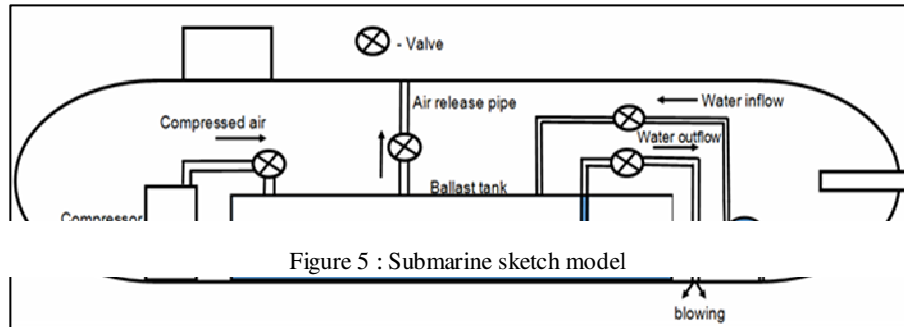A second model to control and monitor a submarine's depth underwater was developed, shown in Figure 5. A submarine makes use of a ballast tank to achieve its movement underwater to reach required depths. Hence, there are parameters that may be manipulated to have full control of the submarine's depth which may be volume of air in ballast tank, volume of water in ballast tank, vessel's shape, etc. The model has been developed using linear and non-linear parameters that affect the depth and buoyancy of a submarine in its normal environment. Figure 6 shows the main forces that act on a submarine. These forces determine the submarine's rising and submerging capabilities.

Figure 5 : Submarine sketch model

$$\Sigma F = F_b \quad F_{drag} \quad mg \tag{3}$$

$$F_{drag} - [0.5(C]_d)(\rho_{H_2O})(A)[(x]')^2 \tag{4}$$

$$F_b - (\rho_{H_2O} - \rho_{air})(V_{air})(g) \tag{5}$$

$$Tank\ area\ (A) - \Pi * b * c \tag{6}$$
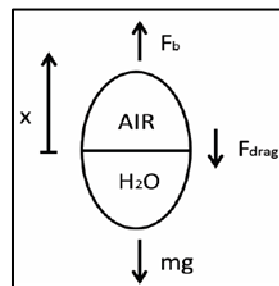
Figure 6 : Forces acting on a submarine

Model Parameters

m – dry mass of vessel (kg)

ρ_{air} density of air (kgm^{-3})

g – gravitational acceleration constant(ms^{-2})

a – length of tank (m)

d – long diameter of tank (m)

ρ_{H_2O} – density of water (kgm^{-3})

C (volume of ballast tank) – (m^3)

C_d – drag coefficient

b – short diameter of tank (m)

Time domain equation for submarine model:

$$\frac{d^2 x(t)}{dt^2} = \frac{(\rho_{H_2O} - \rho_{air})(V_{air})(g) - [0.5(C]_d)(\rho_{H_2O})(A)\left(\frac{dx(t)}{dt}\right)^2 - (mg)}{m + (\rho_{H_2O})(C - V_{air}(t)) + (\rho_{air})(V_{air}(t))} \tag{7}$$

Upon testing the models to be functional and giving feasible responses, the models were integrated to the PLC such that various parameters that may be changed by the user via SCADA and processed by the PLC. This is discussed in the section that follows.

2.2. Interlinking plant models to PLC

The TCP/IP protocol has been used to interface the Matlab Simulink models with the PLC. The communication protocol architecture is illustrated in Figure 7. The protocol makes use of two blocks that receive data and send data respectively in the Simulink environment and on the PLC. Data is exchanged in the form of arrays. The Matlab Simulink TCP/IP Receive block connects to an interface of a specified remote address (port and IP set on PLC) using the TCP/IP protocol [23]. The TCP/IP Send block sends data from the model to PLC. This data is sent at the end of the simulation or at fixed intervals during a simulation [23].
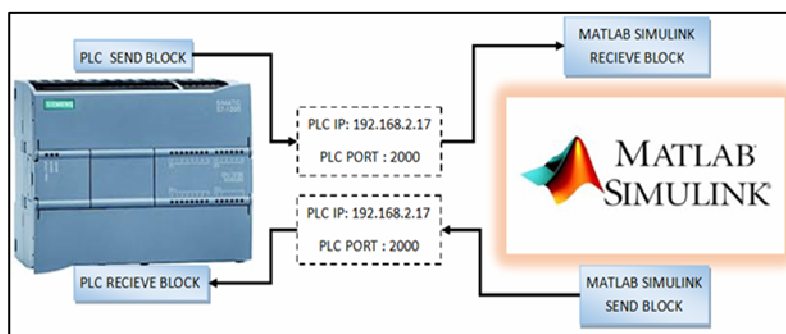

Figure 7 : TCP/IP connection between PLC and Plant Models

Similar to the Matlab Simulink communication blocks, the S7-1200 has two communication blocks that are used for the TCP/IP communication protocol. The TRCV C DATA BLOCK initiates the receiving protocol of the PLC. The TSEND C DATA BLOCK, initiates the sending protocol of the PLC. Data is sent in form of array(s) of selected data types that are set as inputs to the controlled system. The S7-1200 communication blocks exchange data over Ethernet (native TCP or UDP) [25, 26].

2.3. PLC software and SCADA design

The PLC software programmed in TIA portal is represented by the blocks shown in Figure 8 [26]. **Calculations on plant models** - there are different parameters that may be set by the user and that need to be scaled to meet plant requirements and for each model these calculations are done in the respective model function blocks. For the plant model function blocks, parameters are checked in the program such that they meet model requirements. Often used to give smooth and stable control for various actuators and devices in process control systems the PID block is capable for such a task. The Compact PID block used for the plant models is a block that comes within the TIA software package and on this platform it is used to control fluid level of tank 1 in the dual tank model and the depth of submarine in the ballast tank control model [26].
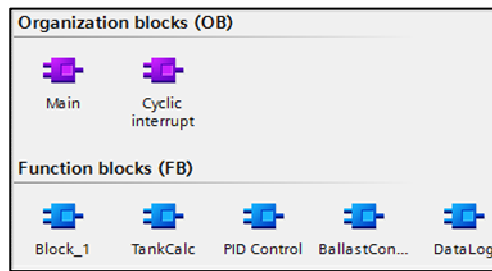
Figure 8 : PLC softwre function blocks

The SCADA interface was designed using WinCC that comes with TIA portal software [27]. The users are to change the PID parameters via SCADA and observe system response. Data saving of activity parameters and system response while user is on the platform is executed by the DataLog (FB).

Dual tank model SCADA shown in Figure 19: the user can browse can run the model on the following tabs: **Response in real-time tab** - Upon setting valid parameters user may start running the model. User can switch on the pump and (open/close) the valves and the tanks will fill up or discharge in real-time.

Graphical View - Fluid levels in the tanks and set-point are represented on the graph, the user can change set-point and PID values.

Ballast tank control model SCADA shown in Figure 20: the user can browse and run the model on the following tabs: **Submarine Hovering tab** - Upon entering valid parameters user may start running the platform and get a response of the submarine submerging or ascending. Parameters may be altered while the user gets real-time response. **Graphical View** - Depth of submarine, set-point and initial depth are represented on the graph. The user may also change PID parameters to get real-time response. Forces experienced by the vessel are also displayed to the user.

2.3.1. Data Logging on system

The I/O parameters from the plant models are written onto a CSV file and made accessible to the user. The importance of this functionality on the system helps the user to analyze and see how the system behaved when they entered or controlled different parameters on the system. The PLC was programmed so that the user can record and reset the data logging and this is only possible when the SCADA system is available on the student page. Figure 9 illustrates the algorithm for the data logging procedure implemented on the PLC.
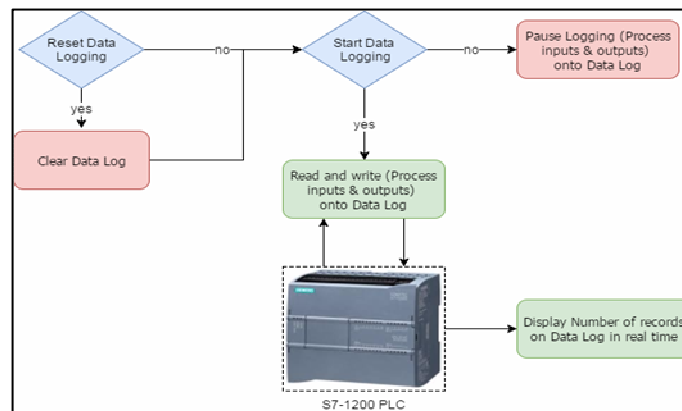
Figure 9 : Data logging algorithm flow diagram

2.4. Website Development and Interlinking Website with SCADA

Having programmed the PLC software and designing the SCADA interface, the platform website was then designed and setup as discussed in this section. The website designed for this platform was one of the key requirements to define and give full functionality to the developed process control system. The website was designed using Visual Studio for the user display and functionality. Microsoft SQL Server was used for database designing management [28, 29]. The architecture of the designed website shown in Figure 10 and the pages are fully described in this section.

On the developed website are the following pages: Membership - The membership tab incorporates three sub-tabs which are: **Register** - allows the user to input their credentials in the outlined fields and upon registration the user and two platform administrators receive an email notification to verify that they are now registered on the website.

Login for Administrator – The administrator inputs their username and password to gain access to the administrator page. The administrator can view the login times of all the students on the Student Activity page. The assignment of each student's practical is done on the Practical Scheduling page, whereby administrator selects a practical name, the day of the practical and the start time and end time.
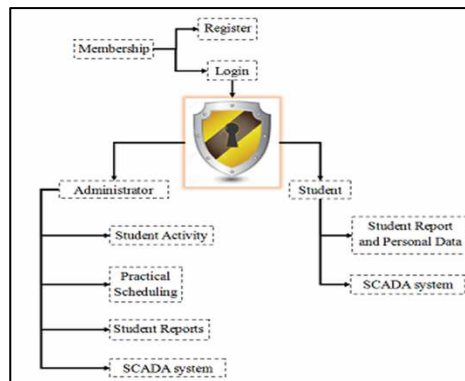
Figure 10 : Website Structure

Login for Student - upon clicking this tab the user is directed to a login page where they enter their student number and password to be granted access to the student page. A count down timer is displayed during the practical session.

The Student Report and Personal Data page shows the student's progress report with regard to the practicals implemented on the platform updated by the administrator.
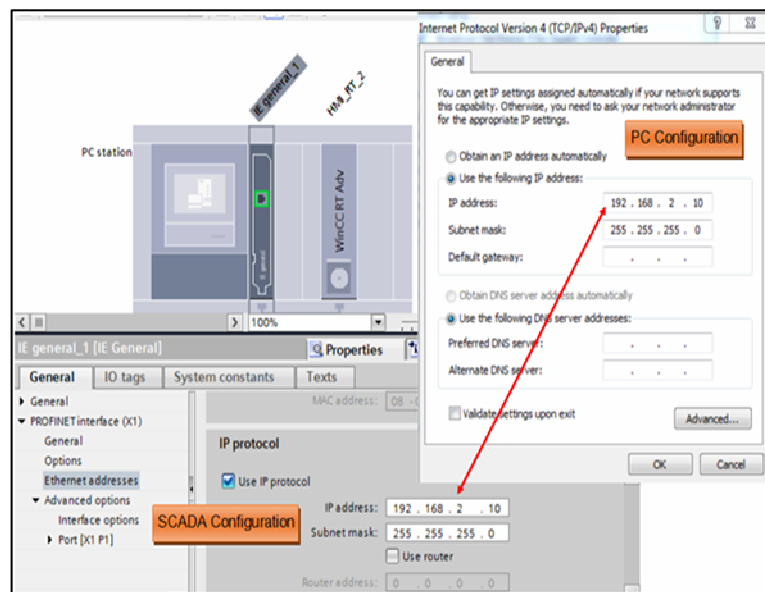
Figure 11 : IP Setup on PC running SCADA

The process control platform is made accessible to the user via SCADA on the website. The IP address of the PC running the SCADA application shown in Figure 11 is loaded in an I-frame on the website, given that the student is logged on and a practical has been assigned (Practical Name, Practical Date, Practical StartTime and End time) have all been set by the administrator. A timing session algorithm has been developed to ensure all users have access to the platform at allocated times, following what the administrators have set (Prac Name and Times).

The website code snippet shown in Figure 12 for the Iframe loads the SCADA when a user session is active [27]. The timing session algorithm has been implemented on the website and controls what is loaded on the Iframe.

```
<iframe id="contentPanel1" runat="server"
  src="http://192.168.2.10" width="1100" height="750"></
  iframe>
```

Figure 12 : I-frame code snippet

After programming and interfacing the subsystems of the platform an evaluation on critical aspects was done to justify the feasibility and quality of the platform. This is discussed in the section that follows. After the integration and testing the platform, a group of students were assigned some practical tasks to work on the platform. They were provided a practical guide and a questionnaire that was used to observe the quality and performance of the designed platform.

3. ANALYSIS AND RESULTS

This section discusses the final platform tests and evaluations implemented. These tests were done observe its real-time response and user experience after working on platform.

3.1. PLC and plant models communication test

The interlinked systems (PLC and Matlab Simulink models) are to transfer signals and data in real-time so as to have the entire system operate efficiently. This test was implemented to adjust the send/receive time value on the PLC so that PLC and plant models communicate in real-time The test was implemented by generating a wave signal in Simulink that is sent to the PLC and then sent back to the Simulink environments illustrated in Figure 13.
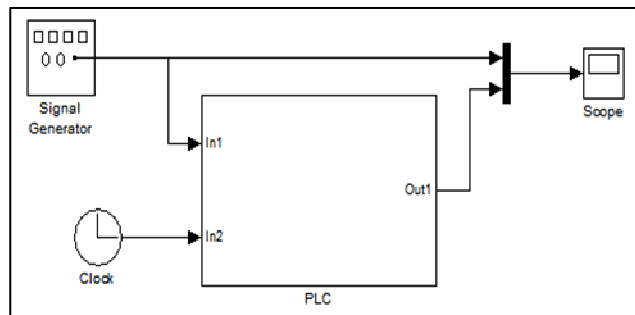
Figure 13 : PLC - Simulink communication test model

However, to have the PLC and the Simulink environment to operate in synchrony the values that gave this requirement were in the range of 90-100ms. Values below 90ms showed that the PLC was lagging behind the Simulink model and those above 100ms showed that the Simulink model was lagging behind the PLC time. The difference between the PLC and Simulink operation time with variation of send/receive time is shown in Figure 14. Hence, the setup communication for the PLC and Simulink models the PLC send/receive value was set to 95ms.
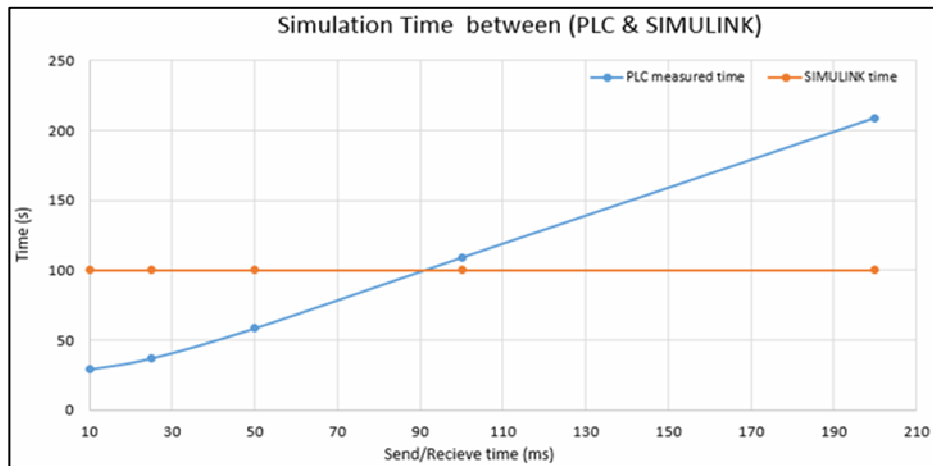
Figure 14 : PLC - Simulink communication response

3.2. SCADA and website response on internet network

This test was done at two of the most used and high traffic computer laboratories at the NMU North and South Campuses. The test was to verify how the (SCADA and website) receive data and send data on the network so as to observe the different speeds at which data is transferred. The test was done by running ping tests on the website and SCADA. Ping testing is often used to check the speed of an internet connection. It works using a similar principle of sensors that send a beam to an object and receive it back, thus the time taken for this procedure can be used to measure the speed of the network. The implementation of this test is carried out using the cmd.exe application that is in-built within windows operating system software [30, 31]. The tests were done over 5 days, during the week (Monday to Friday). This was to observe the response under a lot of traffic on the network.
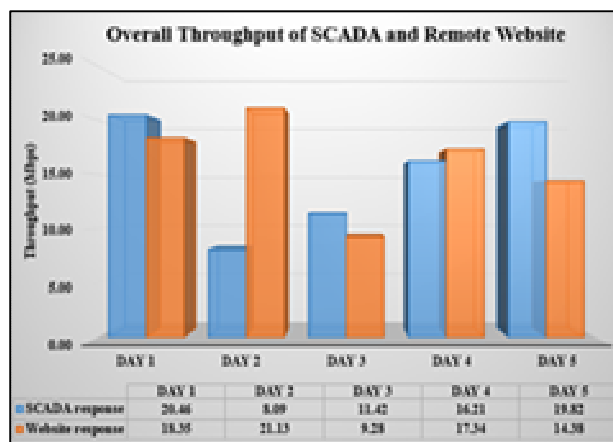
Figure 15 : Overall Throughput of SCADA and Website on NMU network

Throughput is defined as the measure of the amount of data transferred successfully between two machines on the same network in a given time period given as megabits per second (Mbps). The overall throughput values observed from the test implemented are tabulated in Figure 15. These values are ranging between 8 Mbps to 25 Mbps. The average throughput of the developed website was found to be 16.10 Mbps and that of the SCADA was 15.21 Mbps.

Thus from this particular test with the observed throughput values it is clear that the platform meets the following elements:

- Operation in real-time and the concept of remote accessing via the internet works for the developed platform.
- The merging of the website and SCADA is possible and works.
- Selection of NMU network is reliable for the platform to be remotely operated.

3.3. User response after working on platform

After working on the fully integrated platform the students' responses are discussed in this section. The selected group of students who gave feedback are 3rd year BEng: Mechatronics students. Working on the platform was part of their control systems course which incorporates various systems. The students had to make changes of plant model parameters (PID parameters, set-point, etc.) that were assigned in their practical tasks. Figure 16 shows an illustration of a typical test and operation of the dual tank system. From a plot of this nature the user can be able to calculate various parameters (rise time, settling time, time constant, etc.) and draw a conclusion from the system's response.
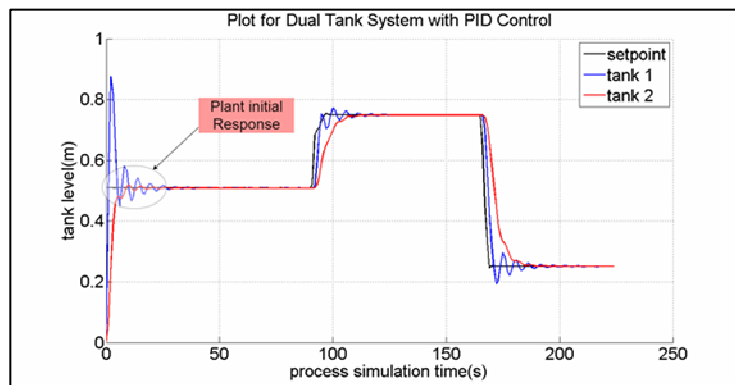
Figure 16 : Dual tank response plot

A questionnaire was provided for the evaluation of the platform by the students. Figure 17 represents feedback on the graphical, visualization of platform presentation and improvement. Most of the students (Figure 17(a) - 92%) found the SCADA and website quite interesting and motivating as it gave a feeling of operating a real system. Figure 17(b) shows that 48% of the students felt that system may be improved by adding more functions and activities, while 44% had a neutral feeling. The neutral feeling is due to the fact that the system could have been a first time experience for them hence they could not be able to give an actual judgment on the platform compared to a similar system.
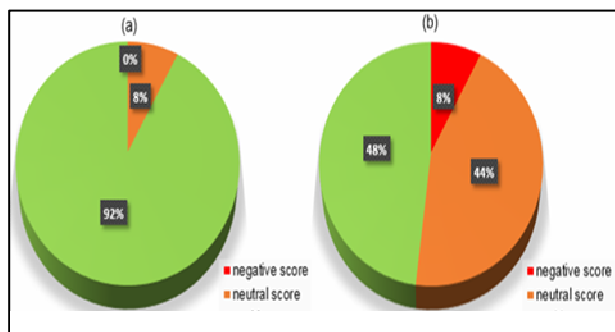
Figure 17 : Simulation, visualization and improvement of platform
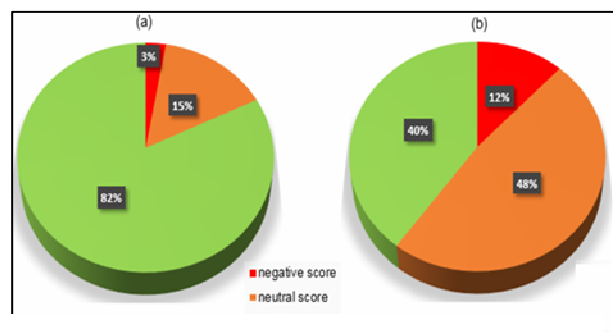
Figure 18 : Platform functionalities and operation

From Figure 18(a) most students (82%) found the developed platform's data logging procedure fully functional and the entire platform usable for practical courses. Figure 18(b) represents the feedback on accessing the platform website and specific functionalities were asked if they were a challenge to attempt which include (registration, login and SCADA access). 48% of the users found it not so challenging to navigate on the website and work on the SCADA system while 40% found it quite easy. Through the various tests and verifications discussed in this section, it may be noted that the developed platform is a useful system. The main aspects of real-time operation, user operation of platform via the internet and educational significance are satisfactory from the acquired results.

4. CONCLUSIONS

The platform's performance was based on the identified problems in process control teaching and the various evaluation tests implemented in the previous section. The real-time response of the platform was done by ensuring the TCP/IP refresh time on the PLC gives the same time as the run time of the plant models in Matlab Simulink. After ensuring the plant models and PLC communicate in real-time, the SCADA system and website were evaluated on the NMU network by implementing ping tests and observing the overall throughput.

However, looking at the entire platform's capabilities and limitations, its significance was observed and the various activities are outlined. Platform will offer various activities that are often used to teach engineering concepts on process control which include:

- Implementation of intelligent controllers (PID).
- Control and feedback on plant models.
- Determining plant parameters and plotting response values from plant models.
- Data acquisition via the internet.
- Drawing logical observations noted after working on the platform.

Having a lot of students working on one real hardware system comes with more costs being incurred to maintain it as it is more vulnerable to damage. Thus, the developed platform eliminates this challenge due the fact that the plant models are designed purely in software (Matlab Simulink) and can be altered without any costs incurred (re-programmed). Another challenge is the rapid growth in technology which results in learning institutions to be financially strained as they try to upgrade hardware and software components to keep up with current industry systems. However virtual instrumentation is offered by the SCADA on the developed platform. It allows the expansion or upgrade of the different plant models with minimal costs and in the shortest amount of time.

The developed website on the platform offers a feasible and well managed interaction for both lecturers and students. Students can remotely access and work on the platform SCADA at allocated time sessions. This means that every user gets an equal opportunity to work on the platform without having to wait for their peers to finish if they take too long. The platform users will always work in a safe environment but engaging with industry standard hardware and software.

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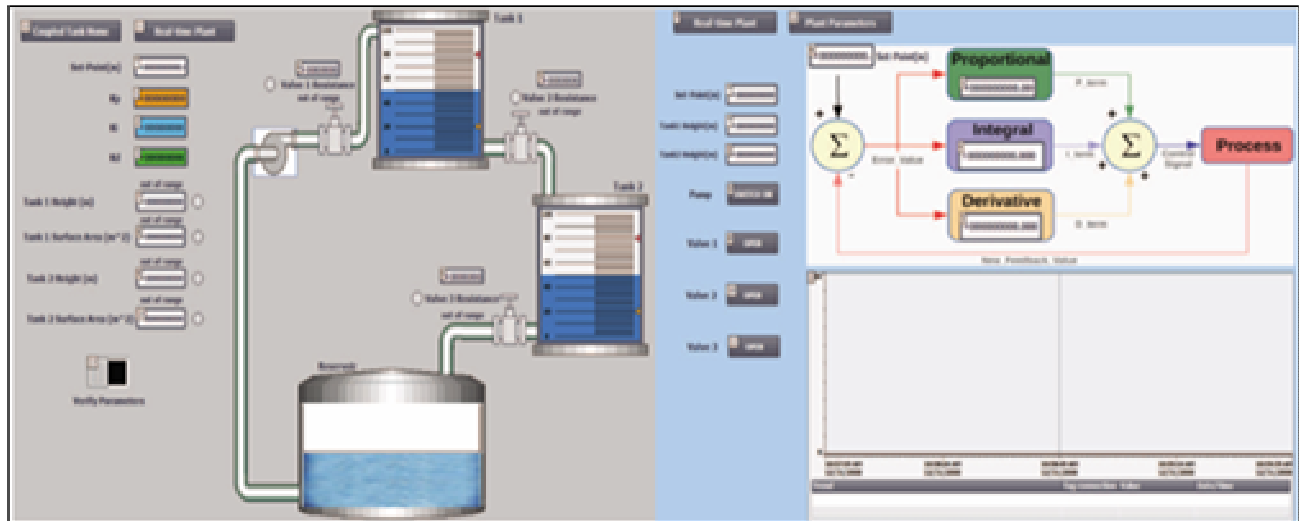
7. APPENDIX

Figure 19 : Dual tank SCADA

Figure 20 : Ballast tank control SCADA
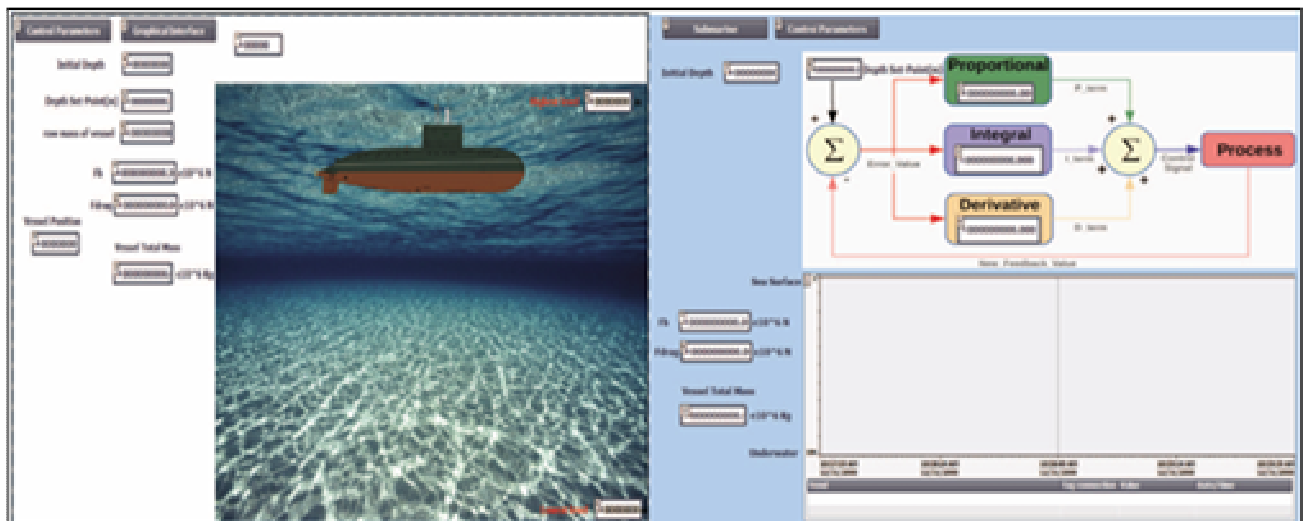
Learning Environment of Continuous Comprehensive Evaluation Model in Elementary Education: A case study in selected schools of Ajmer

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Abstract

The education system in India suffers from some serious lacunae and similarly is the situation in Ajmer. These include preference for good marks/grades over being knowledgeable, lack of encouragement for thinking out of the box, rigid and outdated syllabi/curriculum, and heavily underpaid teachers. For the analysis primary data through Survey has been used which was conducted by the author in selected 8 Schools in Ajmer, based on appropriately selected sample. Methodology is a blend of both Qualitative and Quantitative analysis Apart from proper infrastructure like "*Pucca Structure*", "*Proper Boundary Wall*", "*Drinking Facilities*", "*Functional Toilet*", "*No of Classrooms*", "*Student-classroom*", "*electricity*", "*playground*", "*Computer and TLM (Teaching learning tools)*" which are necessary pre-requisite for making education imparting conducive and efficient. Particularly TLM are required for demonstrations of modern tools and technique as new model CCE (Continuous Comprehensive Evaluation) would be requiring practical demonstration in series of curricular and extra-curricular along with academics. For successful implementation of CCE model a lot of emphasizes has been given to the role of teachers training in elementary education. A teacher should be responsive to the needs of the different sets of student. Teacher training methods should be equipped to cater to these specific requirements of the community. With respect to infrastructure, Ajmer has fared comparatively well. So far it seems right looking at the theoretical aspect of the approach of the model of CCE and needs to be seen in the longer run as showing result will take time.

Key words: Elementary education, CCE Model, Ajmer, Teachers training, Teachers perception

1. Introduction

Education is a social phenomenon which has wider implications on population in every aspect and feature. Thus, the role of the education in facilitating social and economic advancement is well recognised. "*Education system of any country is the backbone of future of the country and it defines how our country is going to shape up*".[1] The factors or causes that led to poor performance of education in India have been multiple. The poor accessibility of schools to children staying in different physical condition and habitations, social access, high opportunity cost, poor quality of teaching imparted in school, unfriendly school environment, poor health of children and several such socio-cultural and economic factors are there which affect the enrolment and educational attainment of children.

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[1] Mehrotra,S.(1998): Education for All: Policy Lessons from High-Achieving Countries, International Review of Education, Vol.44,No. 5-6.

Taking cognizance of the examination reforms by the Kothari Commission (1964-66) set up by the Government of India; the National Policy on Education (1986) deliberated and considered assessment of performance as an integral part of any process of learning and teaching.[2]It envisaged implementation of "Continuous and Comprehensive Evaluation" that incorporates both scholastic and non-scholastic aspects of education, spread over the total span of teaching learning time emphasizing the use of grades over marks. The Programme of Action (POA) 1992 brought out a roadmap for the implementation of NPE1986 at the school level. Considering attitudes, emotions and values as the integral part of cognitive development, NCF-2005 recommended an internal school-based system of assessment that could provide information on a child's overall development in a continuous and comprehensive manner. 'Continuously' is in terms of during the teaching-learning process that informs teaching and areas that need improvement in learning along with assessment at the end of the term. 'Comprehensiveness' is seen as considering the child's overall development including spheres apart from typical curricular areas.

Despite the recommendations of various policy documents implementation of continuous and comprehensive evaluation (CCE) was not up to the mark at the grass-root level in States/UTs until it became mandatory with the implementation of the Right of Children to Free and Compulsory Education Act(2009).While mandating free quality elementary education for all children in the age group of 6-14 years, we are aware that the RTE Act emphasizes on an all-round development of children, building up their knowledge, potentiality and talent with development of physical and mental abilities to the fullest extent through activities discovery and exploration in a fear, trauma and anxiety free environment using comprehensive and continuous evaluation.

Looking from the angle at all India level, Rajasthan has performed very poorly in terms of literacy and stands at third last position and as far as female literacy is concerned it stands at second last after Bihar. Since Ajmer is centre of Rajasthan Education Board, so, it becomes ideal district for study of CCE pattern. CCE has been implemented at a state level and its departure from the past pattern of education system makes it important to study, and to see how it performing at the ground level.

2.Review of Literature:

Many studies have been conducted to see the result & impact of CCE pattern. Most of the studies conducted have been confined to examination system, construction of achievement & diagnostic test, measurement of cognitive attributes & admission only. Similar are the findings of Agarwal (2005), Prakash & Bhalla (1995) in "Examination Reform: Impediments and Breakthrough", and talks about qualitative improvement in school education. Rao & Rao (2004) conducted a study on "Effectiveness of CCE over evaluation practices of teachers" in Mysore. It was found that it was essential to equip the teachers with the essential skills & competencies of evaluation so that they would be able to integrate evaluation well with their teachings-learning process, assist students in attainment of required standards through proper guidance, feedback & remediation. Another study conducted by Bhattacharjee & Sarma (2009) on "status of co-scholastic activities in school programme of elementary school" has revealed that co-scholastic activities have not earned a proper implementation. As the success of the CCE totally depends on the honesty, integrity of the teachers, they should be granted autonomy & at the same time is to evolve strategy for maintaining accountability of teachers.

3.Research Question

The attempt of the author will be to see the application of CCE model in elementary education at the ground level which includes infrastructure, human resources in the form of teachers (capacity building and training of teachers). And to see teachers perception regarding CCE and problems faced by them in implementation; taking a case study in Ajmer district of Rajasthan.

Objective

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[2]Education Commission, GOI, (1986), National Policy on Education, N. Delhi, 1986.

In the line of above discussion, the objectives are as follows:

- To assess the implementation of CCE model in Ajmer in terms of existing conducive conditions like School environment and Infrastructure.

- To examine the conducive teaching environment that has been created for implementation of CCE model in Ajmer.

4.Database and Methodology

For the analysis, primary data through Survey has been used which was conducted by the author in January 2017 in selected 8 Schools based on appropriately selected sample and questionnaire was put up to 30 respondent who were teachers. Methodology is a blend of both Qualitative and Quantitative analysis. The data was collected through School records, Discussions with teachers, head-teachers and as well as from students. Enumeration questionnaire was canvassed among these schools regarding Infrastructure, Access, and Teachers and an attempt is made to analyse and evaluate change in Pattern of Education, as how well it has gown down. As it is a complete shift in the direction of Model of imparting Education. There was a strong case for change in the previous syllabus and pattern of imparting education, which eventually took shape in the form of CCE (Continuous Comprehensive Evaluation). As the name suggest evaluation of student is based on its continuation performance round the year which includes all sort of evaluation from its interaction in the class and making it more student centric. For the present study the author have selected 8 schools in villages and town of Ajmer. The selected areas are: Kayad, Lohagal, Ghughara, Bhunabai, Bandiya, Nachan Bawali, Bhopo ka Bara and Gegal.

5.1 Infrastructure

The first step towards building the base for a well-rounded human resource pool is undoubtedly the creation of infrastructure for providing access to elementary education.[3] During the visit we observed that "Pucca building" was available in almost all Schools. But one school was found dilapidated due to lack of regular maintenance. Water leaks during rainy season have culminated in forcing teachers to shut the school whenever it rains hard. Although there has been significant improvement in the quality of building Structure available to school due to funds made available from "Sarva Siksha Abhiyan".

The field visit reflected that one of the School out of 8 schools was found without boundary. Parents were apprehensive to send their older girls to such School as they felt "this is not culturally safe for our Daughters". Teachers also have their set of dissatisfaction with such a situation as they reported "some children skip out of school" without informing them. They complained anytime they can move freely in and out of School. Usually children leave the premises immediately after mid-day meal and teachers cannot control such a situation in the absence of proper boundary wall. Astonishingly, one of the School was without Drinking water facility –a basic requirement for any educational institution to attract students according to the DISE report. Surprisingly Separate Girls toilet was available in all schools owing to the reason Rajasthan is sensitive to these particular issues. As pointed out by many survey[4] and government studies that especially for girls this is one of the important reason for "girl's dropout" in School but after "Swatch Bharat Abhiyan" this problem has been sorted out very closely.

Non –availability of electricity fan connection in one School was observed during field visit, in spite of all the government spending. This indicator institutes as one of the most important indicator in infrastructure building specially when we talk about Rajasthan in scorching hot summers. Due to SSA target and requirements, though

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[3]Tilak, J.B.G. (1995): Elementary education in India in 1990s: Problems and perspectives, Margin, july- September issue.
[4]Guha, Jaba. (1991): Socio-economic determinants of Female Literacy Rate, journal of Educational Planning and administration, Vol.5, No.2.

students have significantly increased in majority of Schools but the numbers of classrooms have not increased in that proportion. Considering sometimes 8 classes have to be taught in these elementary schools, the school/classroom ratio is still low and it encourages multi-grade teaching in classes. This was a common sight in majority of schools. This hampers teaching-learning environment Specially for class V-VIII. Visit to schools during the field survey depicted such a view where children can hardly sit freely and have to couch together to make room space for other students. These classrooms have hardly any space for showing teaching-learning materials. As it was observed on an average 40 students are made in a particular room which sometimes crosses 50 students in a classroom where barely it has capacity for 30-35. In addition to the infrastructure facility, all schools are provided mid-day meal to students. The midday scheme has been made compulsory in all government schools throughout the country but the implementation of the mid-day meals scheme has yielded unsatisfactory results in many cases. According to many teachers the mid-day meal scheme is a burden on them, as they had an added responsibility of managing the process of providing mid-day meal to students. As the table depicts there is one school out of 8 schools where it doesn't have a playground within the premises. Recreational activities which happen at the playground are very important for school because due to lack of it students tend to go out after interval break and don't turn up after recess.

Table 1

Infrastructure Facilities among surveyed Schools						
	Pucca Building	Boundary Wall	Drinking water within premise	Ladies Toilet	Electricity Fan	Average Schools/Classrooms Ratio	Average Classroom Capacity
Schools	8	7	7	8	7	4	44

Source: Primary Survey (No of School=8)

5.2 Human Resources in the Form of Teachers

Teachers are the principle instructional instruments in the education setup today.[5] A community also feels that teachers are insensitive due to their lack of creativity. Presence of trained teachers in schools is directly related to the methods of teaching-taught in schools which directly translate into student's learning outcomes. This is typically related to training given to teachers on CCE pattern which has been completely changed from old pattern of imparting education which is discussed in earlier part of paper. Presence of female teachers in the primary classes enhances gender parity enrolments especially in case of socially sensitive states like Rajasthan. As seen from the Table 2 almost all teachers are females. There were 3 male teachers who were present in 3 different schools. Separate classroom for administrative eases overall administrative machinery as it sorts the problem of space for all administrative work. In the survey, it was observed that all schools had a separate room for head-master irrespective of the fact how many rooms are left for teaching. In one of the school there were just 3 rooms out of which one room was dedicated to head-master. This is one of the most important indicator in Schools, as teaching is the most important work for which all this school establishment has been done. But as long as this issue of parallel classes won't be solved it remains a severe impediment in imparting of effective learning in the class.

The availability of teachers can be best judged by the Pupil Teachers Ratio (PTR) at different levels of schooling. The PTR is the proportion of the teaching manpower according to the class-size, and is therefore represented by number of students per teacher. The pupil/ teacher's ratio shows on average it is between 35-38 in the lower primary school. In some schools, it was high glaring around 40 and 60.

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[5] Lorena Alcazar, F. Hasley Rogers, Nazmul Chaudhary, Jeffery hammer, Micheal Kremer and KarthilMurlidharan: why are teachers absent ? Probing service delivery in Peruvian primary schools; 31, January 2007.

Table 2

Human Resource in the Form of Teachers among Surveyed Schools						
	Teachers received training for CCE	Female Teachers	Separate Classroom for administrative Work	No. of classes going paralley (out of 30)	Average PTR Ratio	School with Computers
Schools	27	27	8	10	38	2

Source: Primary Survey (No of School=8); No. of Respondent=30 Teachers

Educational institutes which require demonstration of modern tools and technique through computer- an essence in the present-day knowledge economy was not available in majority of the schools. Only those primary schools which are integrated with middle or higher classes have a provision of computer. This indicator is very important as without this teacher's time goes in vain as teachers have to run from pillars to post to upload documents on government website in near Net Kiosk. This was taken up to see whether there is any difference between the quality of teaching done at the schools as contractual teachers are hired for temporary bases and are employed at $1/10^{th}$ to $1/5^{th}$ cost as compared to a regular teacher. It is surprising that actually there is no difference between regular teachers or contractual teachers as they put in regular amount of labour as their contour part.

5.3 Does enrolment of student take into account of their disabilities?

This indicator is taken up so see the sensitivity of teachers displayed towards students who face any kind of disability. But sadly, there was no such written record maintained at the school level. Field survey showed the presence of one student with limbs disability but his record was nowhere present, to which teachers replied they don't have a medical certificate which approves the disability. Now this is a very sad account of the state of affair.

5.4 Evaluation CCE pattern:

Graph 1
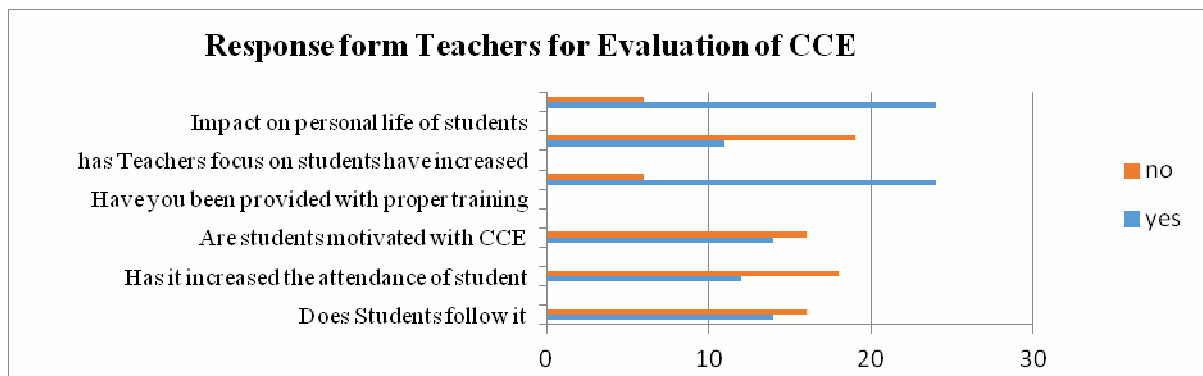
Source: Primary Survey (No of school=8 ; No of Respondent =30 Teachers)

This newly introduced pattern for the primary school entails a sharp turn from the previous existing pattern. Now the size of the syllabus has been reduced tremendously and students have become the focus of the education system. They are made to teach in a way by relating them to their immediate environment from things he/she could connect to and in a process, will learn in friendly way interaction with the environment. A lot have been emphasised on creative learning which increases their creativity and logical reasoning rather than doing rot learning. So far it seems right looking at the theoretical aspect of the approach of the model of CCE and needs to

be seen how far it proves effective on practical grounds. Whether it is fully implementable on grounds and how far it goes down well.

As can be seen from the survey there is lot of difference of opinion regarding CCE among teachers as it includes different approach of teaching. It has been just two years that has passed after the rolling of the plan which suggests some more time need to be given to it to see full impact of it. Retention of student was also one of the reason to introduce it so students will remain burden free till elementary and will not shy away from school due to fear of study burden and also their own lagging in following the topics of class. So far being said now approach was to see the reaction among teachers about the CCE pattern whether they were excited with the new approach or it's a burden on them as they have to maintain long bi-monthly records of the students.

As the data suggest as around 75 % of the teachers have responded negatively about the new approach as they feel now much of the time goes in formulating study material rather than teaching. Now they are not being able to teach which they were able to before the introduction of CCE. A lot of time goes in maintaining written work. Many teachers have responded that this has affected their personal life at home as they have to take materials to home for completion.

It is also interesting to see there were 3 teachers who were trained for CCE, they were also teaching it and they were kind of averse to it as it they felt this can be done at the government schools but in the long run it will have a reverse impact on the carrier of students as they no longer will left on par with the private school students, their main point of argument was that it is during the early phase of life that students are like a virgin ground and they have immense potential to grasp which will help them in the longer race of life.

On question of whether now they are able to focus on each and every student to which they replied now because now they have to form three different groups based on the performance of the students. First group who are doing well, and second group who need some direction from the teacher and, the third group who need more help from the students and students are also encouraged to interact with each other so that they can help each other out. Now this is according to theoretical approach but in reality, where a teacher has to deal to 60 person in a class with two classes happening simultaneously in a room with two teachers shouting at the top of their pith to try to control students and within there are 6 groups of students who needs to be graded according to their performance becomes kind of impossible task.

5.5 Teachers Perception of CCE with regarding to age of the Teachers

Graph 2
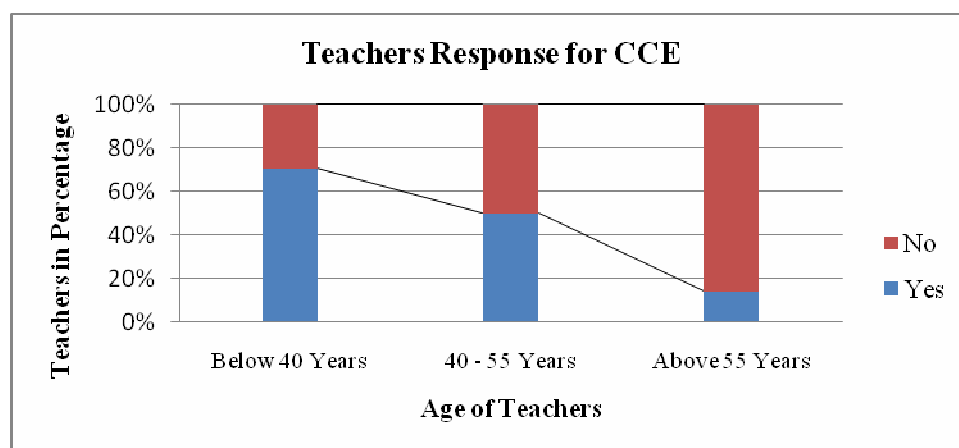
Source: Primary Survey (No of school=8 ; No of Respondent =30 Teachers)

This can be concluded from above Graph 2 that there is a significant difference in teacher's perception of CCE among teachers with different age group. As 70% of teachers with Positive response are below 40 age group. And as their age increases their response towards CCE has turned Negative. This may be because the teachers with less and moderate teaching experience due to their age are more flexible and are ready to accept changes unlike teachers with very high teaching experience who are aged and resist changes.

5.6 The Problems Encountered while Executing CCE

The present study along with the perception and awareness of teachers towards CCE further necessitated the finding of the problems encountered by teachers while executing CCE and suggesting remedial measures for the same. The problem areas and the remedial measures suggested by the government school teachers were obtained from the data collected through semi-structured interview schedule. The data received was then categorized into different areas. Details of the obtained data from semi-structured interview are given in the Table III below as follows.

Table 3

The Problems encountered with execution of CCE		
Problems	Number	Percentage
Large PTR Ratio	27	90%
Cost and Time Factor	28	93%
Lack of Adequate infrastructure & TLM	14	46%
Increase Volume of Work	23	76.60%
Lack of Seriousness among Students	7	23%
Lack of Proper Training	2	6.60%

Source: Primary Survey (No of School=8); No. of Respondent=30 Teachers

The results revealed that most of the teachers (90%) find it difficult to execute CCE in large classes due to large PTR ratio as they are not able to give individual attention in such classes. Likewise 93% of the respondents stated that CCE was time consuming and there were many financial constrains associated with it that does not suit the pocket of every student. Similarly 46% of the respondents felt that there was lack of adequate infrastructural facilities and teaching materials that made execution of CCE a difficult task in the classrooms. Glaring number with 76.60% of the respondent reported that they were over burdened with the increased volume of work that affected their teaching effectiveness in the classrooms. Further nearly 23% of the total respondent reported that there was lack of seriousness amongst the students regarding CCE as they were aware of the fact that they will pass without making enough efforts in academics. Other constrain for the smooth execution of CCE was stated as lack of appropriate training among the school teachers (6.6%).

6.Conclusion

Rajasthan including Ajmer has not shown remarkable progress in literacy rate but as far as infrastructure is considered it has fared well. Though students seem to be enjoying the new curriculum but in the long run it can prove to be kind of a futile move. As most of the teachers are not happy with the new approach which has not much to offer to the students but it has become more of nuisance in education system. On the contrary, there seems to be a flip side to this move, the optimistic side of this step it has won accolades form few of teachers who holds a complete different view about this approach which claims that this is more effective than rot learning and in the long run it will lead to developing of their creative skills.

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Examining the Relationship between Sensation Seeking, Positive and Negative Experience, Emotional Autonomy and Coping Strategies in Adolescents

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Abstract

The aim of this research is examining the relationships between sensation seeking and positive and negative experience, emotional autonomy, and coping strategies in adolescents. The study group consisted of 371 adolescents who attended middle and high schools, the ages ranged from 11 to 17. 55.7 % of participants were female (N=137), and 44.3% were male (N=109). Data were collected via Adolescent Coping Scale (KIDCOPE), Emotional Autonomy Scale, Adolescent Positive and Negative Experiences Scale, and Short Sensation Seeking Scale. The relationships between the study variables were analyzed via correlation analysis and regression analysis. The result of correlation analysis revealed that a statistically significant negative correlation among sensation seeking, emotional autonomy, active coping, and positive experience. On the other hand, a statistically significant positive correlation among sensation seeking, avoidant coping, negative coping and negative experience. The results of regression analysis showed that emotional autonomy, avoidant coping, negative coping, and negative experience predict sensation seeking, yet active coping and positive experience variables did not predict.

Keywords: Adolescence, sensation seeking, positive-negative experiences, emotional autonomy, coping.

Mediating Role of Dispositional Hope on Meaning in Life – Life Engagement Relationships in university students

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Abstract

In this research, it was aimed to find out the mediating role of dispositional hope between the meaning in life and life engagement. The study group composed of 449 university students attending Sakarya University, %61.2 (N=275) women, and 38.8% (N=174) men. Data was gathered by Meaning in Life Questionnaire, Life Engagement Scale, and Dispositional Hope Scale. The relationships among the variables were examined via correlation analysis, and regression analysis. The results of the correlation analysis showed that there were statistically significant and positive correlations among all three variables. The results of the regression analysis for the mediation analysis revealed that dispositional hope had a partial mediating effect in the relationship between meaning in life and life engagement.

Keywords: Hope, meaning in life, life engagement, mediation analysis.

Management of Work Engagement in Teachers of Bangalore: Role of Organizational Health

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Abstract

Work engagement of teachers and a healthy school environment are important factors that govern the quality of teachers' work life, academic achievement of students and the overall success of an educational institution. The present study examined the impact of perceived organizational health of schools on the work engagement of teachers in 516 secondary school teachers from Bangalore, India. The organizational health inventory tool was employed to measure the organizational health of teachers at the institutional, managerial and technical levels, while the Utrecht work engagement tool was used to measure the vigor, dedication and absorption of teachers. Differences in perception of organizational health and work engagement based on gender and type of institution as well as the interaction effects of variables chosen were also studied. From the analysis of data, it was revealed that the technical level and the managerial level of organizational health had significant effects on different dimensions of work engagement. Significant differences in perceptions of organizational health of teachers were observed, but not with respect to work engagement. The interaction effects of variables on work engagement were also not found to be significant.

Keywords: Organizational health, Work engagement, Secondary school teachers

1. INTRODUCTION

Adolescents in their formative years are molded by teachers into future citizens of a country. Teachers impart academic knowledge to the students, help them to develop fervor for values and principles, redefine their character and guide them towards a successful future. Teachers who are thoroughly engaged in their work and who are physically, emotionally and cognitively involved in their tasks can effectuate better quality of education than disengaged teachers (Kanti, 2013). Therefore, the level of engagement felt by teachers for their work is an important factor governing the path for teachers' growth, students' growth and institutional growth. For the teachers to feel engaged at work and for the educational institutions to prosper, it is crucial that the institutions project a healthy work environment. Organizational health of schools must be robust as it plays a crucial role in determining the amount of effort expended by teachers to achieve their personal as well as organizational vision (Altun, 2001).

1.1. Organizational Health

Organizational health is defined as "one which is not static in its existing setting, but is ever developing itself and its skills to handle and carry on" (Miles, 1969). Halpin and Croft (1963) first measured effectiveness of school environment in terms of school climate by using the openness of interpersonal relationships within the school environment as the primary measurement. In the later years, Hoy and Feldman (1987) devised the organizational health inventory (OHI), which came to be known as a better predictor of organizational health as it accurately

predicted the characteristics of an organization that led to student achievement. The OHI was formulated based on the definition that healthy schools are those which maintain integrity in education as they move forward by successfully coping with changing environments. Adaptation, goal achievement, social integration and normative integration of schools were identified as the four basic needs of a school for ensuring a healthy school environment. Further, based on the findings of Parsons (1967), the OHI assumed three levels of organizational health, namely, institutional, managerial and technical levels.

The institutional level of organizational health refers to the level of support received by the school from the society. For a harmonious school functioning, the teachers as well as the administrators need to be protected from unworthy demands and undue pressure from groups situated outside the school (Woolfolk and Hoy, 1990). The managerial level of organizational health indicates the quality of administration within schools, where principals are responsible for managing the school affairs, allocating resources and coordinating various other school operations. The capacity of principals to influence the decisions of superiors on matters related to school administration and their capacity to successfully promote motivation, loyalty, affiliation and trust among individuals of the school is also denoted by the managerial dimension of organizational health (Woolfolk and Hoy, 1990). Managerial level also encompasses the supportive and friendly behavior of principals, which indicates that the suggestions of the faculty members are heeded to and their welfare is taken care of by the administration (Savas and Karakus, 2012). The technical level of organizational health is about achieving the school's mission through the processes of teaching and learning. The ability of faculty members to find solutions to teacher related problems with the help of educational resources and to ensure high quality of the learning process is included under this dimension (Woolfolk and Hoy, 1990). The technical level further comprises of teacher morale, which talks about the positive and satisfied feeling of teachers as a result of their accomplishments in school and the nature of interpersonal relationships within members of the school. The academic emphasis of schools is also a construct of technical level, which indicates the quality of academic goals set by the school for its students, the belief of a school in the ability of its students and the efforts of a school to recognize worthy students capable of achieving higher levels of academic excellence (Savas and Karakus, 2012).

1.2. Work Engagement

Work engagement is a central index that determines the quality of working life of professionals (Aryee, 1994). Bakker, Schaufeli, Leiter and Taris (2008) defined work engagement as a "positive, fulfilling, effectively motivating state of work-related subjective well-being". It refers to the personal interest of teachers in their work as well as the resulting satisfaction and enjoyment from work (van Beek, Hu, Schaufeli, Taris, & Schreurs, 2012). Kahn (1990) posited that engaged employees invest more of their efforts in their jobs as they successfully identify themselves with their roles. The researcher also pointed out that work engaged teachers projected a unique work identity that was different from their personal identity and chose not to compromise their work identity at any cost, owing to their attachment towards the job.

Leiter (1997) first defined work engagement as the opposite of burnout and employed the same scale for measuring burnout as well as work engagement. Since burnout was characterized by exhaustion, cynicism and lack of professional efficiency, work engagement was characterized by energy, optimism and enhanced professional efficiency, felt by teachers in their work. However, the disadvantages of using the same scale for both constructs were realized in the later years by Schaufeli and Bakker (2004), who devised the Utrecht scale of work engagement by defining the three important dimensions of work engagement, namely, vigor, dedication and absorption. Vigor refers to the energy level of teachers, the efforts exerted by them and their willingness to achieve efficiency. Dedication stands for the pride, inspiration and enthusiasm of teachers who find their jobs challenging and meaningful. Absorption is the ability of teachers to be happily engrossed in their work, irrespective of their surroundings or other difficulties (Schaufeli & Bakker, 2004).

Several motivating factors, such as individual strengths and weakness of teachers, interpersonal relationships among faculty members, work environment, etc. (Bakker et al., 2014) play an important role in determining the level of dedication in teachers, which in turn affects the academic achievement of students as well as the overall success of an educational institution. It is crucial to understand these factors owing to their role in developing the human capital of a nation (Kahn, 1990) as well as due to the recent difficulties in retaining and attracting new

graduates in this profession (Bakker, Demerouti, de Boer, & Schaufeli, 2003). Therefore, the present study evaluated the organizational health of schools as a determinant of work engagement in secondary school teachers.

1.3. Research gap

In the recent years, the number of researches related to work engagement has increased significantly because of its impact on a range of individual and business outcomes (Stroud, 2009). While several studies have assessed the reasons for burnout and emotional exhaustion in teachers (Kudva, 1999; Brouwers & Tomic, 2000; Evers et al., 2000; Croom, 2003; Hastings & Bham, 2003; Lackrits, 2004; Evers, Tomic & Brouvers, 2004; Lau, Yuen & Chan, 2005; Shukla & Trivedi, 2008) and identified various predictors of work engagement (Chughtai & Buckley, 2009; Kong, 2009; Bakker, Bal & Matthijs, 2010; Simbula, Guglielmi & Schaufeli, 2011; Schweitzer, 2014), not many studies have explored the impact of organizational health on work engagement. Most of the studies evaluating the impact of organizational factors on work engagement were based on organizational culture, organizational climate, organizational identity, organizational commitment, organizational trust, etc. (Park, 2001; Natarajan & Dhandepani, 2002; Yilmaz, 2008; Khan & Yadav, 2016) and the few studies that were based on organizational health had tested job satisfaction, effectiveness and organizational commitment of school teachers, but not work engagement (Roul, 2007; Bahramian & Saeidian, 2013; Hayat, Kohoulat, Kojuri & Faraji, 2015). Therefore, the present study aims to expose the effects of different levels of organizational health on the work engagement of secondary school teachers in the city of Bangalore.

1.4. Research Objectives

The objectives of the present study are as follows:

- To examine the differences in teachers' perceptions of organizational health and work engagement based on their gender and type of institution

- To study the interaction effects of age, gender, type of institution and organizational health among each other and on work engagement of secondary school teachers

- To ascertain the relationship between work engagement and organizational health of secondary school teachers

1.5. Conceptual framework

According to Parsons (1976), any social system is expected to satisfy the following requirements for its effective functioning: compliance with the environment, achievement of goals, sustaining integrity within the system and maintaining values. In relation to these needs, three distinct levels of control, namely, institutional, managerial and technical levels were identified by the researcher. According to Hoy and Tarter (1997), congruence of organizational health can be achieved by ensuring the health aspects at the institutional, managerial and technical levels of the organization. Therefore, the present study evaluated the effects of organizational health on work engagement at these three levels. The three dimensions of work engagement, namely, vigor, dedication and absorption, were adopted on the basis of the definition of work engagement by Schaufeli et al. (2002). Further, any intervention made by schools to improve the work environment can be perceived by teachers as either favorable or adverse, depending on their individual characteristics. Therefore, the present study analyzed the differences in perceptions of teachers in relation to organizational health and work engagement on the basis of their age, gender and type of institution.
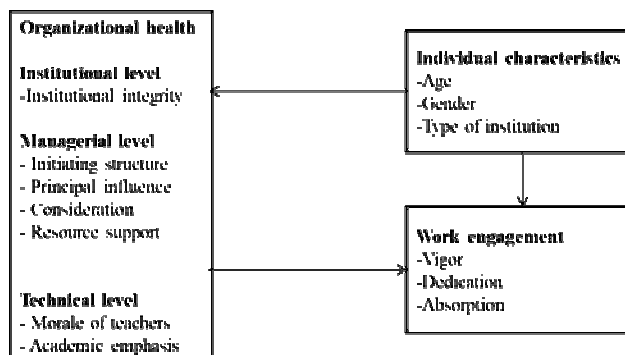
Fig. 1: Conceptual framework of the study

1.6. Research hypothesis

The present study tested the following hypotheses:

H_1: Significant differences exist in the perceptions of organizational health of teachers based on their gender and type of institution

H_2: Significant differences exist in the perceptions of work engagement of teachers based on their gender and type of institution

H_3: The interaction effects of age, gender, type of institution and organizational health of teachers have a significant effect on their work engagement

H_4: There is a significant relationship between organizational health and work engagement of teachers

2. METHODOLOGY

2.1. Study sample

The study employed a descriptive survey methodology using questionnaires for data collection. Selection of survey participants was carried out using the convenience sampling technique and the sample for the study comprised aided, unaided and government school teachers from different secondary schools in Bangalore. Data collection was carried out in the city of Bangalore. Of the total questionnaires distributed, 516 usable questionnaires were treated as the final sample for the study.

2.2. Research instruments

Measurement of work engagement was carried out by using the Utrecht work engagement tool (Schaufeli & Bakker, 2004), which provides a clear differentiation of the construct from job involvement and organizational commitment (Hallberg & Schaufeli, 2006). The scale defines work engagement under three aspects: vigor measured by using 6 items, dedication measured by using 5 items and absorption measured by using 6 items. The responses are assorted on a scale of 1 to 6: 1-A few times a year or less, 2-Once a month or less, 3-Sometimes, 4-Once a week, 5-Very often, 6-Always.

The organizational health was measured using the OHI tool (Hoy & Feldman, 1987; Hoy et al., 1991), which is an evaluation tool comprising of 44 items related to organizational health. The OHI tool assorts the responses along a four point scale: 1-Rarely occurs, 2-Sometimes occurs, 3-Often occurs and 4-Very often occurs. The organizational health items were grouped under three main levels and sub-levels, where the institutional level comprised of institutional integrity, the managerial level comprised of initiating structure, principal influence,

consideration and resource support, while the technical level encompassed teachers' morale and academic emphasis (Hoy & Woolfolk, 1993).

2.3. Data analysis

Statistical analysis of the data collected was performed with the help of Statistical Package for the Social Sciences (SPSS) v24. The Mann-Whitney U test was carried out to analyze the differences among respondents on the basis of their gender and type of institution. Linear regression analysis was performed to establish the relationship between work engagement and organizational health of respondents. The interaction effects between the chosen variables on work engagement were studied by using two-way ANOVA tests.

3. RESULTS

3.1. Characteristics of the sample

The study sample comprised of an equal number of male and female respondents, out of which 67.8% belonged to the age group of 31 to 50 years. An equal distribution of teachers working in aided, unaided and government schools was considered for the study. Teachers with 10 to 20 years of work experience formed the majority of the study population (41.90%) with more than half of them holding a post graduate degree (57.40%).

Table 1: Characteristics of the sample

Factor	Frequency	Percentage
Age group (years)		
21 to 30	86	16.67
31 to 40	170	32.95
41 to 50	180	34.88
>51	80	15.5
Gender		
Female	258	50.00
Male	258	50.00
Type of institution		
Aided	172	33.30
Unaided	172	33.30
Govt.	172	33.30
Work experience (years)		
< 5	75	14.50
< 10	120	23.30
< 20	216	41.90
>20	105	20.30
Educational qualification		
Post Graduate	296	57.40
Under Graduate	220	42.60

3.2. Organizational health of teachers

Table 1 presents the organizational health of teachers measured at the institutional, managerial and technical levels. The mean scores for organizational health at all three levels ranged from 2.6 to 2.8, implying that the teachers often perceived their organizational health to be good (Hoy et al., 1991), i.e., the support offered to the schools in

their communities, the administrative efficiency of the schools led by principals and the quality of teaching and learning processes of their schools were perceived as satisfactory by the teachers.

Table 2: Organizational health of teachers

Organizational health	Mean	Standard Deviation
Institutional level	2.64	0.49
Managerial level	2.79	0.50
Technical level	2.85	0.50
Organization Health Inventory	2.76	0.37

3.3. Work engagement of the teachers

The mean scores of work engagement ranged from 4.6 to 5.2, indicating that the teachers perceived frequent work engagement at least a few times every week (Schaufeli & Bakker, 2004). It is also noteworthy from Table 2 that dedication scored the highest mean value of 5.22 when compared to the other two aspects of work engagement, thereby implying that most of the teachers successfully identified with their jobs and perceived their jobs to be meaningful. The mean score of 4.90 for absorption indicates that the teachers got engrossed in work in spite of the job difficulties. The relatively low mean value of 4.68 for vigor indicates that the level of teachers' energy, zest and stamina was relatively less when compared to their levels of absorption or dedication.

Table 3: Work engagement of teachers

Work engagement	Mean	Standard Deviation
Vigor	4.68	0.90
Dedication	5.22	0.86
Absorption	4.90	0.89
Work engagement	4.93	0.76

3.4. Differences in perceptions of organizational health

The Mann-Whitney U test revealed significant differences in the perceptions of organizational health on the basis of the teachers' gender ($p < 0.05$), but not on the basis of the type of institution ($p > 0.05$). The female teachers (Mean=2.69) exhibited better levels of satisfaction with the institutional dimension of organizational health when compared to the male teachers (Mean=2.58). The managerial level of organizational health exhibited significant differences on the basis of teachers' gender and the type of institution ($p = 0.00$). Similar to the institutional dimension, the perceptions of the managerial dimension of organizational health were also found to be better among female teachers (Mean=2.84) than male teachers (Mean=2.73). Further, teachers from unaided schools exhibited better levels of satisfaction with the managerial dimension (Mean=2.71), indicating that the administrative abilities of unaided school principals were perceived to be more satisfactory than those of aided or government schools. Perceptions of the technical dimension of organizational health did not show any significant difference among teachers on the basis of their gender and the type of institution ($p > 0.05$). Therefore, H_1 is accepted.

Table 4: Perceptions of organizational health based on gender and type of institution

Organizational health	Factors	Mean	Std. Dev.	Mann-Whitney U	P value
	Gender				
Institutional level	Female	2.69	0.48	28629.5	0.01
	Male	2.58	0.50		
	Institution				

	Aided	2.65	0.54		
	Govt.	2.56	0.44	4.692	0.096
	Unaided	2.71	0.48		
	Gender				
	Female	2.84	0.52	28526.50	0.00
	Male	2.73	0.48		
Managerial level	**Institution**				
	Aided	2.77	0.47		
	Govt.	2.75	0.52	16.881	0.00
	Unaided	2.85	0.52		
	Gender				
	Female	2.90	0.49	29212.5	0.16
	Male	2.80	0.50		
Technical level	**Institution**				
	Aided	2.86	0.49		
	Govt.	2.77	0.48	3.172	0.205
	Unaided	2.91	0.51		
	Gender				
	Female	2.81	0.37	27765.0	0.00
	Male	2.71	0.37		
Organization health inventory	**Institution**				
	Aided	2.76	0.36		
	Govt.	2.70	0.35	10.586	0.005
	Unaided	2.82	0.39		

3.5. Differences in perceptions of work engagement

Table 5 reveals that unlike organizational health, perceptions of work engagement did not differ significantly among teachers on the basis of their gender and type of institution (p>0.05). Therefore, it can be inferred that vigor, dedication and absorption of teachers remained the same, irrespective of the stereotypes associated with teachers' gender and the differences between aided, government and unaided schools. Since significant differences were not found with respect to perceptions of work engagement, H_2 is rejected.

Table 5: Perceptions of work engagement based on gender and type of institution

Work engagement	Factors	Mean	Std. Dev.	Mann-Whitney U	P value
	Gender				
	Female	4.71	0.8	8.71	0.92
	Male	4.65	0.99		
Vigor	**Institution**				
	Aided	4.91	0.78		
	Govt.	4.53	0.88	1.310	0.519
	Unaided	4.59	0.98		
	Gender				
Dedication	Female	5.32	0.75	700.0	0.09
	Male	5.13	0.95		
	Institution				

90

		Mean	SD	F	p
	Aided	5.29	0.82		
	Govt.	5.12	0.88	1.834	0.400
	Unaided	5.26	0.88		
	Gender				
	Female	4.95	0.83	848.0	0.76
	Male	4.84	0.93		
	Institution				
Absorption	Aided	5.09	0.80		
	Govt.	4.76	0.86	4.132	0.127
	Unaided	4.84	0.96		
	Gender				
	Female	4.99	0.65	848.0	0.76
	Male	4.87	0.84		
	Institution				
Work engagement	Aided	5.09	0.70		
	Govt.	4.80	0.74	2.752	.253
	Unaided	4.90	0.80		

3.6. Main and interaction effects

The results of the two-way ANOVA (Table 6) indicated a significant relationship of work engagement with the type of management (F=6.13, p=0.00), but not with gender (F=2.45, p>0.05). Significant interaction effect of type of institution and gender on work engagement was also found to be absent (F=1.18, p>0.05). From Table 7, it is evident that male and female teachers from aided schools and female teachers of unaided schools experienced enhanced work engagement (daily or twice every week) when compared to others, even though the interaction effect was not found to be significant.

Table 6: Type of institution and gender on work engagement

Source	df	F	p
Corrected Model	5.00	3.42	0.01
Intercept	1.00	20,956.30	0.00
Type of institution	2.00	6.13	0.00
Gender	1.00	2.45	0.12
Type of institution * Gender	2.00	1.18	0.31
Error	510.00		
Total	516.00		
Corrected Total	515.00		

$R^2 = .032$

Table 7: Type of institution and gender on work engagement

Type of Institution	Gender	Mean
Aided	Female	5.09
	Male	5.08
Govt.	Female	4.83

		Male	4.77
		Female	5.00
Unaided		Male	4.75
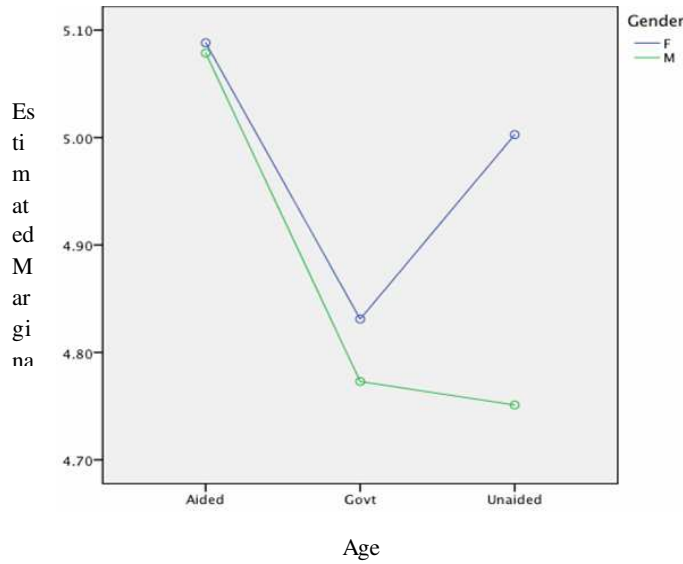
Fig.2. Type of institution and gender on work engagement

Table 8 reveals significant relationship of organizational health with both types of institutions (F=5.19, p=0.01) and teachers' gender (F=11.33, p=0.00). However, the interaction effect of type of institution and gender on organizational health was not found to be statistically significant (F=0.41, p>0.05). The female teachers of unaided schools scored higher (Mean=2.89) in organizational health than the teachers of other categories, even though the interaction effect was found to be statistically insignificant (Table 9).

Table 8: Type of institution and gender on organizational health

Source	df	F	p
Corrected Model	5.00	4.51	0.00
Intercept	1.00	29,727.51	0.00
Type of institution	2.00	5.19	0.01
Gender	1.00	11.33	0.00
Type of institution* Gender	2.00	0.41	0.67
Error	510.00		
Total	516.00		
Corrected Total	515.00		
R^2 = .042			

Table 9: Type of institution and gender on organizational health

Type of Institution	Gender	Mean
Aided	Female	2.81
	Male	2.71

Govt.	Female	2.73	
	Male	2.66	
Unaided	Female	2.89	
	Male	2.75	

Age
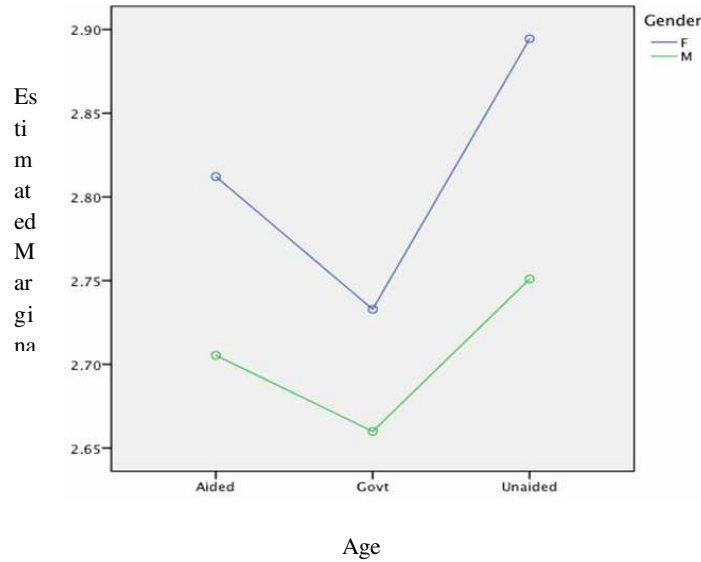
Fig.3. Type of institution and gender on organizational health

The interaction effects of age and gender on work engagement studied by using two-way ANOVA revealed that age (F=1.79, p>0.05), gender (F=2.21, p>0.05), and the interaction between age and gender (F=0.37, p>0.05) did not significantly influence work engagement. Even though the relationship was found to be insignificant, it can be observed that female teachers of >41 years (Mean >5) exhibited increased work engagement (daily or twice every week) when compared to others. The same trend was also observed with respect to male teachers even though the mean score of male teachers of age >41 years (Mean=4.93) was relatively lesser than the female teachers (Mean=4.96) of the same age group. Overall, teachers of age >41 years exhibited more work engagement than those belonging to other age groups.

Table 10: Age and gender on work engagement

Source	df	F	p
Corrected Model	7.00	1.27	0.26
Intercept	1.00	17,852.05	0.00
Age	3.00	1.79	0.15
Gender	1.00	2.21	0.14
Age * Gender	3.00	0.37	0.78
Error	508.00		
Total	516.00		
Corrected Total	515.00		
R^2 = 0.017			

Table 11: Age and gender on work engagement

Age (Years)	Gender	Mean

Age	Gender	Mean
21 to 30	Female	4.88
	Male	4.89
31 to 40	Female	4.92
	Male	4.74
41 to 50	Female	5.01
	Male	4.93
>51	Female	5.15
	Male	4.96
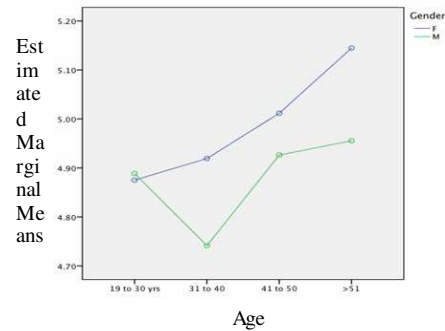
Fig.4. Age and gender on work engagement

While the gender of teachers exhibited statistically significant effects on their perceived organizational health (F=11.92, p=0.00), neither age (F=0.59, p>0.05) nor the interaction effects of age and gender (F=2.15, p>0.05) exhibited a significant influence on organizational health. The perceived organizational health was observed to be much enhanced among female teachers aged >51 years (Mean=2.93) when compared to others, even though the interaction effects were statistically insignificant (Table 12, 13).

From Table 6 to Table 12, it is evident that the interaction effects of age, gender, type of institution and organizational health on work engagement are not significant and therefore, H_3 is rejected.

Table 12: Age and gender on organizational health

Source	df	F	p
Corrected Model	7.00	2.74	0.01
Intercept	1.00	25,547.29	0.00
Age	3.00	0.59	0.63
Gender	1.00	11.92	0.00
Age * Gender	3.00	2.19	0.09
Error	508.00		
Total	516.00		
Corrected Total	515.00		
R^2 = .036			

Table 13: Age and gender on organizational health

Age (Years)	Gender	Mean
21 to 30	Female	2.79
	Male	2.75
31 to 40	Female	2.84

94

	Male	2.69
41 to 50	Female	2.75
	Male	2.72
	Female	2.93
>51	Male	2.67
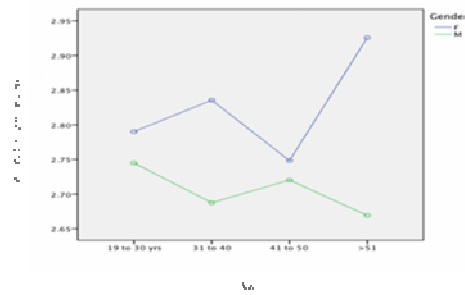
Fig.5. Age and gender on organizational health

3.7. Organizational health and work engagement

The linear regression analysis performed on work engagement with organizational health as the independent variable indicated the relationship to be statistically significant (F=38.166, p=0.00). Table 14 reveals that 6.9% of the variation in teachers' work engagement accounts for changes in their perceptions of organizational health, with every unit change in organizational health causing B=0.552 variations in their work engagement. Therefore, H_4 is accepted.

In order to understand the dimensional effects of organizational health on work engagement, the regression analysis was individually performed on the three dimensions of work engagement (Table 15, 16, 17). The results revealed that vigor (F=9.059, p=0.000), dedication (F=12.124, p=0.000) and absorption (F=9.273, p=0.000) of the teachers was significantly influenced by organizational health. Out of the three levels of organizational health, only the technical level, i.e., availability of educational resources, teacher morale, academic emphasis and overall quality of the learning process in schools, significantly affected vigor (B=0.257) and dedication (B=0.284) of teachers. The institutional and the managerial levels of organizational health did not exhibit significant effects on vigor and dedication of teachers (p>0.05). Further, absorption of teachers was found to be significantly affected only by the managerial level (B=0.320) of organizational health, i.e., the administrative capabilities of the school principal, consideration given to teachers and allocation of resources to teachers.

Table 14: Impact of organizational health on work engagement

Variable	B	Std. Error	ß	t
(Constant)	3.415**	.249		13.735
Organizational Health	.552**	.089	.263**	6.178**
$R^2 = 0.069$; F = 38.166; ** p=0.000				

Table 15: Impact of organizational health dimensions on vigor

Variable	B	Std. Error	ß	t
(Constant)	3.367**	0.297		11.330**
Institutional level	0.038	0.080	0.021	0.471
Managerial level	0.170	0.108	0.095	1.585

95

Technical level	0.257*	0.108	0.143*	2.371*

R^2 = 0.050; F = 9.059; ** p=0.000, *p<0.05

Table 16: Impact of organizational health dimensions on dedication

Variable	B	Std. Error	ß	t
(Constant)	3.641**	0.281		12.968**
Institutional level	0.140	0.076	0.080	1.850
Managerial level	0.144	0.102	0.084	1.416
Technical level	0.284*	0.102	0.166*	2.770*

R^2 = 0.066; F = 12.124; ** p=0.000, *p<0.05

Table 17: Impact of organizational health dimensions on absorption

Variable	B	Std. Error	ß	t
(Constant)	3.523**	0.332		10.612**
Institutional level	0.008	0.090	0.004	0.089
Managerial level	0.320*	0.120	0.160*	2.665*
Technical level	0.168	0.121	0.084	1.386

R^2 = 0.052; F = 9.273; ** p=0.000, *p<0.05

4. DISCUSSION

The present study aimed to answer the following questions: (1) What is the status of organizational health of secondary schools in Bangalore? (2) Is there a difference in the perceived organizational health and work engagement according to teachers' gender or type of institution they served? (3) What is the relationship between perceived organizational health and work engagement of teachers?

The study outcomes showed that the organizational health of secondary schools in Bangalore was perceived to be satisfactory by the teachers at all three levels of organizational health, namely, institutional, managerial and technical. This is an important finding since several researchers have pointed out that the organizational health and culture of a school are vital for its sustenance that is achieved through the promotion of vision and values among teachers (Aronson, 2001; Sergiovanni, 2007). Further, several studies have proven organizational health to be an important determinant of student achievement (Hoy & Woolfolk, 1993; Coleman & Roney, 2009), interpersonal relationships within the school environment (Hardage, 1978) as well as attainment of school's vision and mission (Willower & Jones, 1965; Logan, Ellett & Licata, 1993; Korkmaz, 2004).

In order to answer the second question, the study examined the differences in teachers' perceptions regarding their work engagement and organizational health. Gilligan (1982) argued that the nature of reasoning and the level of moral development were different for men and women. For instance, Rest (1986) claimed that the perceptions of organizational leadership differed on the basis of the employees' gender, while Brown and Trevino (2006) confirmed the absence of any significant relationship between gender and perceptions of leadership. However, it is important to analyze whether the gender of teachers in Bangalore caused differences in their perceptions on work engagement and organizational health, as the findings would have significant policy implications. The results of the present study revealed that gender is a determinant factor for perceptions of organizational health. The female teachers perceived better organizational health of their schools at the institutional and managerial levels than the male teachers. This finding is in accordance with the findings of Karakose (2007), Gosmire, Morrison and Van Osdel (2009) and Bird, Wang, Watson and Murray (2009), who reported significant differences in the perceptions of organizational factors, such as leadership of principals, trust on the management, etc. among male and female teachers. In the present study, no significant differences were found in the perceptions of male and female teachers regarding work engagement. Even though several studies in the past have undermined the competence of women and reported early onset of burnout symptoms in women (Matlin, 2004, Antoniou, Polychroni, & Vala- chakis, 2006; Innstrand, Langballe, Falkum, & Aasland, 2011), the present study confirmed that vigor, dedication and

absorption of female teachers were no different from male teachers. However, this result is contradictory to some studies in the past which have recorded enhanced work engagement in women, when compared to men (Rey, Extremera, & Pena, 2012).

Teachers from unaided schools expressed better satisfaction with the managerial dimension of organizational health when compared to other schools. This result is in accordance with a study by Kaur (2013), which reported differences in perceptions of school climate between teachers of aided and government schools. Khan (2015) reported better organizational commitment of private high school teachers when compared to public school teachers, in Uttar Pradesh, India. This finding indicates that private schools of Bangalore are more systematic in their structure, leading to better perceptions of health among the teachers. Several other studies based on Indian schools have established that private schools offered better advantages, such as good student to teacher ratio, better availability of resources, better training for teachers and superior quality of education, when compared to the government schools (Goyal & Pandey, 2009; French & Kingdon, 2010). However, the present study also reveals that perceptions of work engagement did not differ among teachers on the basis of the type of institution, in spite of the differences in perceived organizational health.

The interaction effects between the demographic variables and organizational health on work engagement were not found to be significant. However, an interesting finding in relation to age of the respondents was that older teachers exhibited enhanced work engagement and organizational health when compared to those aged below 41 years. This finding suggests that the perceptions of young teachers are different from teachers aged above 41 years and that a relative dissatisfaction ensued among the young teachers probably due to their high expectations from the school in their early stages of career. As a result, teachers found the organizational structure and the functioning of school to be more satisfactory as they grew older. This result is in accordance with the study outcomes of Cemaloğlu (2006), who found that perceived organizational health was better among older teachers when compared to younger teachers of primary schools in Turkey.

The regression analysis revealed that the relationship between the organizational health and work engagement was highly significant, which is in accordance with other studies that found a significant relationship between the two variables (Bakker et al., 2007, Klusmann et al., 2008; Hultell and Gustasson, 2011). When the individual effects of different dimensions of organizational health were assessed, it was found that institutional level of organizational health played no significant role in governing teachers' work engagement. Therefore, it can be inferred that the ability of an institution to sustain, unhindered by external groups, did not directly affect the vigor, dedication or absorption of teachers. This is in accordance with the study by Coleman and Roney (2009) which found that resource support to teachers was a stronger predictor of student achievement than institutional integrity. Therefore, the results of the present study indicate that the expectations of teachers lie most importantly in the technical level of organizational health and managerial level. The vigor (energy, willingness and level of efforts) and dedication (pride and inspiration) of teachers was mainly based on the their morale, academic emphasis of school and the overall quality of school education. Further, their level of absorption was affected by principal's influence, consideration and resources given to the teachers. Other studies have also proved that principal's influence and consideration were significant factors for teachers' satisfaction (Baughman, 1996; Kukla-Acevedo, 2009; Rodriquez, 2010), teachers' morale (Kelly, 2004), interpersonal relations among school members (Belenardo, 2001; Anderson, 2008) and overall effectiveness of school (McDonnell, 1985).

5. SCOPE, LIMITATIONS AND FUTURE DIRECTIONS

The scope of the present study was limited to only secondary schools from the city of Bangalore. Collection of data in relation to student achievement was not within the scope of the study, therefore, the direct relationship between organizational health, teacher engagement and student achievement could not be established. Parameters, such as principal consideration, principal influence, etc., could not be measured directly; therefore, the study relied on the teachers' perceptions of the construct as measured by the research instrument. In the present study, organizational health of teachers was measured at an individual level; however, organizational health needs to be examined at the school level to gain clear insights on the differences between the organizational structure of schools and their consequences. In the future, evaluation of organizational health across different districts or across nations

should be performed to understand the effects of district or national policies on school health and teacher performance.

6. CONCLUSION

The results of the present study provides valuable insights on differences in perceptions of work engagement and organizational health among secondary school teachers of Bangalore. The present study concluded that perceived organizational health is an important predictor of work engagement. Therefore, a harmonious relationship between teachers and the organization will improve the dedication of teachers towards their profession as well as ensure the success of the educational institution. If teachers are provided with a healthy work environment, their work engagement will improve, thereby resulting in an overall improvement of the education sector.

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The Roles of the School Principals on Promoting Resilience in Novice Teachers

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Abstract

School principals have a great responsibility to the novice teachers in order to regulate their professional development processes and to be effective in classroom management. For this reason, school principals are an important factor in the continuous self-improvement of new teachers and the effective progress of their professional development processes. Teacher is believed to be a resilient person who develops human values, leads society, thinks scientifically, is socially and politically effective, successful in human relations, prone to problem solving, understands the social and cultural situations of the students, questions the existing inequalities and is an expert in the field. The aim of this study is to evaluate the views of the school principals over promoting resilience in novice teachers working in various High Schools and determine their roles on this issue. We asked three open ended questions to the participant principals to obtain the data: "Why is the resilience important for teachers to be effective in teaching?", "What do you recommend novice teachers to be resilient in classroom environment?", and what are your suggestions for novice teachers to be effective and efficient in classroom management?" We used a qualitative research method to evaluate and compare the views of the principals, and to determine their roles on promoting resilience in novice teachers in classroom environment. The research was carried out with the participation of five high school principals working in various High schools in some cities in Turkey. According to the data obtained from principals, we can argue that the principals have the most important roles for novice teachers to be resilient in teaching process through bringing new teachers together for formal coaching opportunities, talking about strategies to manage strong emotions, and increasing awareness of interpretation.

Key words: School Principal, Novice Teacher, Resilience, Classroom Management, Management Strategy

Language Teachers' Suggestions over Coping with Difficulties in Turkish Language Teaching to Foreigners

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Abstract

As the teaching of Turkish as a foreign language becomes widespread, teaching materials and teaching environments are diversifying and developing. While these developments continue in teaching Turkish as a foreign language, various problems are encountered in adapting and using contemporary teaching methods. From a student perspective, learning a foreign language is not an easy process. Foreign language learners are most likely to face with a new form of sound, different structure, syntax, and a different meaning from their mother tongue. The aim of this study is to determine the problems of the foreign students with learning Turkish language and evaluate the views and suggestions of the teachers of Turkish Language serving in High Schools in some cities in Turkey upon over helping students get over the problems encountered by the foreign students in Turkish Language Teaching in classroom environment. We asked two open ended questions to the participant teachers to obtain the data: "What are the problems of foreign students in learning Turkish Language?", and "What do you recommend language students to come over their problems in learning Turkish Language?" We used a qualitative research method to evaluate and compare the suggestions of the teachers of Turkish Language in terms of the feasibilities and implementation process in classroom environment. The research was carried out with the participation of six teachers of Turkish Language working in various High schools in some cities in Turkey. According to the suggestions of language teachers, it is argued that educational technologies and materials should be used, motivation strategies should be applied, some cultural events should be organised in school environments, and teachers should plan course materials together with students.

Key words: Problems with Language Learning, Turkish Language Teaching, Educational Technologies, Classroom Management, Turkish as a Foreign Language

Active learning behaviors of undergraduate students and the models of impacts

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Abstract

Active learning behaviors and factors that affect active learning behaviors are interesting topics that have attracted many educational researchers. This research focused on active learning behaviors in general and the impacts on them in particular. A self-report questionnaire was employed with the sample of 300 undergraduate students. 14 behavioral expressions were introduced into the questionnaire. Five multiple linear regression models were constructed to explain the active learning behaviors of students. Nine independent variables were introduced in turn to the models. The impacts of independent variable were presented in the following equation: The practice index of active learning = a + ß1 (X1) + ß2 (X2) + ...+ ßn (Xn). The results of the modeling and analysis show that the sitting position, the major of study, the exited mood, the bold personality trait, the active teaching method, and the student self-choice for the major of study are correlated positively with the practice index of active learning behaviors while other factors such as tiredness in learning, the old teaching method and the average monthly expenditure are negatively correlated with the practice index of active learning behaviors.

Key words: Active learning, mathematic modelling, practice index of active learning behavior.

INTRODUCTION

Active learning is a form of learning in which teaching activities try to involve students in the learning process. Bonwell & Eison (1991) stated that in active learning, students participate in the process and participate when they are doing something besides passively listening [1]. Bonwell & EiSon (1991) also claimed that active learning is a method of learning in which students are actively or experientially involved in the learning process and the different levels of active learning, depending on student involvement [1].

The approach to behavior in the relation to cognition has been raised since LaPierre (1934) found that human beings' perceptions and behaviors seem to be inconsistent [2]. Campbell (1995) argued that in order to transform the cognition into the corresponding behavior, human beings must always overcome the thresholds created by the context [3]. Later studies focused on the development of this theory such as Defleur and Westie (1963) [4], McGuire (1985) [5], Fishbein and Ajen (1975) [6], and Oskamp and Schultz (2005) [7], etc.

In Vietnam, studies by Nguyen Cong Khanh (2005), Nguyen Quy Thanh, et al. (2005) and other studies focused on this field [8], [9]. However, one of the limitations of active learning behavior studies is that they do not define situation thresholds or conditions that determine the active learning behaviors of students.

We find that students' perceptions of active learning are usuaaly correct. However, it is not always true that these correct perceptions are transformed into active learning behaviors. Thus, the practice of active learning behaviors of the majority of students is still weak. The purpose of this article is to establish models to identify the factors that influence the practice of active learning behaviors of students. Based on the findings of this study, we will provide some policy implications related to the promotion of active learning behaviors of students.

Literature review

The concept of "learning behavior" is closely related to the concept of "learning attitude". There are three theoretical tendencies when considering the structure of attitude. The first one views the attitude as a single entity consisting of cognitive, affective and behavioral components (Allport, 1935) [10]. The second tendency views attitude as an entity made up of three separate components which are related together including belief, emotion and behavior (Fishbein & Ajen, 1975) [6]. The third tendency considers attitude as a latent process including the impacts of objective factors in the form of stimulus events to cognition, emotion and behavior that contribute to the attitude, and ultimately leading to perceptions, emotions and behavioral responses (Defleur & Westie, 1963) [4].

In Vietnam, the studies of active learning behaviors focused on specific pedagogical approaches, methods and technologies to create learning activities, stimulating the activeness of the subject, especially on the active perception. For example, Le Minh Luan (2005) discussed on methods of using software to promote cognitive activities among students; Doan Thi Quynh Anh (2005) studied the application of computers to teaching; and Tran Ba Hoanh, et al. (2003) conducted a series of studies on the application of active teaching and learning in primary and secondary education. In addition to cognitive studies, there were some studies on learning behaviors of students. Nguyen Cong Khanh (2005) studied on student learning styles in relation to academic achievement [8]. Nguyen Quy Thanh, et al. (2005) researched on the connection of internet usage to patterns of student learning behaviors [9], etc.

Other international studies also geared toward finding forms of the active learning practice in the opposition to old schooling styles as students receive passively the knowledge from teachers. Meyers and Jones (1993) focused on active learning behaviors such as speaking, listening, reading, writing and thinking, those allow the students to choose, question, synthesize and to grasp new knowledge [11]. Michael (2006) asserted that the nuclear elements of active learning are the activeness and engagement [12]. Akey (2006) also emphasized attitudes as the relationship between the engagement and the ability of perceiving knowledge [13].

In summary, the above mentioned studies provide theoretical and empirical evidences for the relationship between elements within the structure of attitudes such as cognition and affection toward the practice of behaviors. However, these studies have limitations because of lacking an effective model to fully explain about the active learning behaviors. Therefore, our research is an attempt to address this limitation by modeling the impacts on the practice of active learning behaviors.

Research questions and hypotheses

Previous studies focused more on the understanding about the impact of one or a number of individual factors on the practice of active learning behaviors. Therefore, in this study we want to find out what combinations of factors that can explain well the active learning behaviors of students? And how do those factors in the interaction with each other affect the practice of the active learning behaviors? That are our main research questions mentioned in this article.

From these research questions, we make the general hypothesis that the active learning behaviors of students are dependent on factors such as major characteristics, teaching methods of lecturers, the sitting position in class, major choosing style, personality type, student living standard, and the mood of the students, etc.

Methodology and research data

We used the main collecting information method of using self-written questionnaires. The representativeness of the sample we ensured by selecting a multi-stage cluster sampling. Sample size was 300 students. The study was conducted at 6 universities in Hanoi. Besides, four in-depth interviews and one case observation were conducted to supplement the qualitative information to the study.

We identified 14 behavioral expressions of active learning such as taking the initiative to give comments or opinions notes, taking proactive notes, actively asking teachers about lectures, etc. Each active expression was calculated to be equivalent to 1 point, with no active expression equal to 0 point. Active learning behaviors gathered into the practice of active learning. To measure the practice index of active learning, we built the practice index of active learning by taking the total of each student's score divided by the total number of behavioral expressions of 14, then multiplying by 100. This is an integrated index of active learning behaviors of students.

To explain the active learning behaviors of students, we experimentally constructed the multiple linear

regression models by the Forward method with a total of nine independent variables introduced in turn to the models. The models have the general form as follows.

The practice index of active learning = a + ß1 (X1) + ß2 (X2) + ...+ ßn (Xn)
(1)

Where: 'a' is a constant; 'ßi' is the regression coefficient; 'Xi' are the independent variables introduced into the model; and 'n' is the number of the independent variables of the model. The unit of the practice index of active learning is the percentage point with the minimum value of 0 and the maximum value of 100.

Research results

The results of the research show that, in general, the practice index of active learning was only an average of 62 percentage points. There were nine models built by using the Forward method. However, we only present models with five or more independent variables.

Table 1. Models explaining the Index of the practice of active learning behaviors of students

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
Sitting position in class (1/3 in front = 1, other = 0)	6,698***	6,242***	6,421***	6,640***	6,479**
Major (Major in social science & humanities = 1, other = 0)	13,342***	12,860***	12,994***	12,758***	12,421***
Excited mood (yes = 1, no = 0)	3,669**	3,076**	3,024**	2,885**	2,584*
Tired mood (yes = 1, no = 0)	-3,117**	-3,019**	-2,912**	-2,736**	-2,544**
Average monthly expenditure (thousand VND)	-0,004**	-0,004**	-0,004**	-0,004**	-0,004**
Choosing the major to study (self-choose = 1, parents choose = 0)		6,690*	7,142**	6,456**	6,050*
Teachers read to students to copy (yes = 1, no = 0)			-5,756*	-5,993**	-6,173**
Teachers provide students self-study materials (yes = 1, no = 0)				5,016**	5,191**
Self-evaluation of personality (bold = 1, timid = 0)					4,319**
Constant	59,377***	56,130***	56,884***	54,930***	53,488***
R^2	0,241	0,260	0,279	0,295	0,307
Statistic F	18,647***	17,145***	16,106***	15,237***	14,247***
Sample	300	300	300	300	300

Notes: * $p < 0,05$; ** $p < 0,01$; *** $p < 0,001$

Thus, all five linear regression models established are capable of explaining quite well the practice of active learning behaviors of students. With R^2 ranging from 0.241 to 0.307, the level of interpretation of the independent variables included in the models for the variation of the practice index of active learning behaviors of students varied from 24.1% to 30.7. %.

In Model 1, there are 5 independent variables: the sitting position in class, the academic major, the excited mood, the tired mood, and the average monthly expenditure. In which, the tired mood and the average monthly expenditure are variables that are inversely correlated with the dependent variable of the practice index of active learning behaviors of students, while the sitting position in class, the major in social science & humanities and the excited mood are positively correlated variables. Model 1 shows that students who sit in the front area of the class, near the instructors, will have the practice index of active learning behaviors higher than students sitting in other areas nearly 7 percentage points, while other variables are controlled. In other words, the lower the sitting position in class, the less active learning behavior. Obviously, there is a difference in the control of the instructor with the front positions and the positions at the back of the class.

> *"... Sitting in front and in the back of a class will affect students' active learning. If sitting in the back, the control and focus of the lecturer will decrease. Sitting away from the lecturer, the students will be easier to work privately, less listen to the lecturer, less debate. Lecturers will not be able to*

control the students sitting in the back. Meanwhile, sitting in front area of a
class, the students will be under the control of the lecturers…" (A female
student, year 3, Tourism Studies).

Those who have the tired mood in class have a lower the practice index of active learning behaviors than those who do not have this mood by nearly 4 percentage points, while other variables are under control. That shows the impact of emotions on the practice of behaviors. If the emotion is negative, students will find it difficult to engage in active learning behaviors. The relationship between mood, emotion and the practice of active learning behaviors is further clarified through the positive correlation between the excited mood when learning and the practice of active learning behaviors. Accordingly, if a student is excited about learning, his or her ability to perform active learning behaviors increases by about 3.6 percentage points when other variables remain unchanged. In Model 1, the most significant variable for the practice index of active learning behaviors is the major of study. Students in the major of social sciences and humanities have significantly higher the practice index of active learning behaviors than students in other majors over 13 percentage points when other variables in the model are controlled. The average monthly expenditure is a variable that is inversely correlated with active learning behaviors. Accordingly, if the student's average monthly expenditure increases by 1000 VND, the practice index of active learning behaviors will decrease by 0.004 percentage points. In other words, the more wealthy the student, the lower the level of active learning.

In Model 2, a new variable of "*choosing the major to study*" was added. The variable of "*choosing the major to study*" compares between the students who choose the major to study by themselves and the students who depend on their parents in choosing the major of study. According to the analysis results, the group of students who choose the major by themselves has the practice index of active learning behaviors of 7 percentage points higher than the group of students that selected the major of study by their parents. Obviously, the students choose their own major of study that they love, they will have a stronger motivation to learn actively. Because of the interaction between the new variable added to the model with other variables, the impact of some other variables has changed.

Model 3 added the teaching method variable of "*Teachers read to students to copy*" to assess how active learning behavior is affected by passive teaching methods. The results of the analysis show that this variable is inversely related to the practice index of active learning behaviors. Accordingly, if the lecturer reads to the students to copy, it will reduce nearly 6 percentage points of the practice index of active learning behaviors when other variables are controlled. That means this method of teaching reduces the activeness of students in learning. When adding the teaching method variable of "*Teachers read to students to copy*" to the Model 3, the effect of the preceding variables is almost unchanged, except for the effect on the variable of "*choosing the major to study*".

In order to compare with the teaching method of "*Teachers read to students to copy*", a positive teaching method of "*Teachers provide students self-study materials*" was included in the Model 4. We know that learning in Vietnamese Higher Education is very different from it in high school at the initiative self-study level of students. That is why creating students' habits and independent research methods is an advanced and a positive teaching method. The results of the analysis show that the teaching method of "*Teachers provide students self-study materials*" has the opposite effect compared to the old teaching method of "*Teachers read to students to copy*". Accordingly, if the lecturer adopts this positive teaching method, the practice index of active learning behaviors of students will increase by about 5 percentage points. Thus, the lecturer's provision of materials, and guidance to the students to self-study will motivate the students to actively learn more about the problems. The impact of the variables in Model 4 has changed when new variable is introduced. For example, the impact of teaching method of "*Teachers read to students to copy*" dropped from -5.7 to -5.9 percentage points; the practice index of active learning behaviors of students sitting in the front of the class also increased by 0.2 percentage points in comparison with Model 3.

In Model 5, the personality variable was added to determine the impact of the two extremes of personality: "*bold*" and "*timid*". We found that the personality variable correlated with active learning behaviors. Accordingly, students who identify themselves as being "*bold*" have a higher the practice index of active learning behaviors than students who identify themselves as being "*timid*" more than 4 percentage points, while other variables in the model are controlled. In other words, if a student is bold, he or she will dare to follow his or her own thoughts, dare to argue with the lecturers, dare to give his or her own opinions. The boldness is very important in building research capacity, working independently, an indispensable element for any students who want to be academically successful. When adding personality variable to Model 5, the other variables have different variations in the level of impact. Significant changes happened to the variable of the major of study (decreased by 0.5 percentage points) and the variable of choosing the major of

study (decreased by 0.4 percentage points).

Model 5 is the best explanatory model as it explains for 30.7% of the variation in the practice index of active learning behaviors. At the same time, this model also provides us with a sufficient amount of variables such as personality traits, moods, teaching methods, sitting position in the classroom, average monthly expenditure, major of study and the ways to choose major of study. Basing on Model 5, a mathematical equation for the practice index of active learning behaviors may be presented as follows.

The practice index of active learning behaviors = 53,488 + 6,479 * (sitting position in classroom) + 12,241 * (major of study) + 2,584 * (excited mood in learning) - 2,544 * (tired mood in learning) - 0.004 * (average monthly expenditure in thousand VND) + 6,05 * (choosing major of study) - 6,713 * (passive teaching method - "*Teachers read to students to copy*") + 5,191 * (active teaching method - "*Teachers provide students self-study materials*") + 4,319 * (character).

For example, in this equation, if a student is sitting in the front of a classroom, studying Mathematics, feeling excited and not feeling tired in school, spending 5 million VND per month, the lecturer does not lecture in a read-to-copy format, but provides material for students to study, the student self-perception of character is timid, the practice index of active learning behaviors will be: 53,488 + 6,479 * 1 + 12,241 * 1 + 2,584 * 1 - 2,544 * 0 - 0.004 * 5000 + 6.05 * 0 * 6,713 * 0 + 5,191 * 1 + 4,319 * 0 = 56.7 percentage points. This is a student with a moderate level of active learning.

Discussion

There have been studies on the important role of emotion on human behaviors in general as well as on the active learning behaviors in particular. The impact of the excited or tired mood that we put into the predictive models was confirmed by Gardner and Lambert (1972) when he thought that likes or dislikes had a special importance to second language learning [14]. Sheryl (2006) basing on neurological and brain studies stated that emotion is very important to memory and learning, and that it does exist in all learning processes [15]. Similar to these studies, our study shows the impact of excitement or tiredness on the active learning behaviors of students. At the same time, the regression models show that the effects of these two types of emotions are inversely related. The excitement can increase the possibility of practice in active learning behaviors as students' perceptions, while the tiredness is reversed, reducing that possibility.

In addition to the impact of emotional factors, the impact of teaching methods on the learning methods of students is quite interesting with a lot of authors. Most studies seek to find the forms of the practice of active learning that are opposed to the old ways of learning where students passively receive the knowledge from the lecturers. Of those authors, Meyers and Jones (1993) focused on behaviorally active learning factors such as speaking and listening, reading, writing and thinking, through the relationships with cognitive activities that allow students to choose, question, synthesize and to grasp new knowledge [11]. Prince (2004) asserted that the nuclear factors of active learning are the activeness and engagement of students in learning [16]. Akey (2006) also emphasized attitudes as the relationship between engagement and the ability of perceiving knowledge, and so on. Our models also indirectly reaffirm this relationship [13]. Accordingly, the teaching method of "*Teachers read to students to copy*" is a typical example of old teaching methods is proven to be a variable that reduces the ability of students to practice active learning behaviors. By contrast, providing students with self-study materials is an active form of instruction, enhancing students' participation in lecturers' lectures, thus potentially increasing the practice of active learning behaviors.

Some of the variables such as the sitting position in the classroom, the choice of major to study provide new and unique interpretations in Vietnamese Higher Education about the practice of active learning behaviors. These two variables may be the typical situation thresholds proposed by Campbell and Stanley (1963) [17]. The arrangement of tables in classrooms as in Vietnamese universities is still arranged in a horizontal order from the top to down. Therefore, from the front to the back of the classroom is a far distance. The sitting positions at the back of the classroom become a "safe haven" for students who want to avoid the lecturer's control. Students at the back of the classroom often privately work and do not pay attention to the lecture or can hardly focus on the lecture. This is a difficult "situation threshold" for students overcoming to enhance their practice of active learning behaviors.

Conclusions and policy suggestions

By establishing the multiply linear regression models, we had examined nine variables including personality traits, emotional status (tiredness and excitement), average monthly expenditure, major of study, the choice of major to study, sitting position in the classroom and teaching methods. The results of the

modeling and analysis above show that the sitting position in the front area of the classroom, the major of social studies and humanities, the excitement in learning, the form of bold personality, the teaching method of "*Lecturers provide students self-study materials*", and the students choose the major of study by themselves are correlated positively with the practice index of active learning behaviors. It means that students with these characteristics have a higher level of active learning than those without that traits. At the same time, factors such as tiredness in learning, the teaching method of "*Lecturers read to students to copy*" and the average monthly expenditure are negatively correlated with the practice index of active learning behaviors. That means the more tired students are when learning, the lecturers only use the old teaching method of "*Lecturers read to students to copy*" and students spend more (higher living standards), the lower the level of active learning.

With the above conclusions, we make some suggestions for policies in Higher Education in Vietnam today to enhance students' behavioral ability of active learning:

- Strengthening policies to promote the practice of teaching methods that can motivate students to think independently, creatively; and resolutely eliminating the teaching method of "*Lecturers read to students to copy*".
- The classroom and tables needs to be renovated and arranged to make better interaction between students and students and between students and lecturers. While there is no physical condition to do this, it is possible to implement compulsorily the student sitting position rotation.
- It is necessary to stimulate excited mood, to train the bravery and boldness of the students through the modern and lively teaching methods. The training of the bold characteristic of the students should be implemented earlier from the initial educational environments such as kindergarten, elementary school or junior high school. Parents should empower children to make choices about their academic majors, as this helps to create an active learning motivation for students in their undergraduate studies.

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An Investigation into the Main Difficulties with Writing Skills Faced by Female Students in the Department of English Language at Qassim University in the Kingdom of Saudi Arabia

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Abstract

Learning English writing skills requires a sufficient knowledge of the basics of the English language. Although some female students at Qassim University in Saudi Arabia show considerable competence in grammar, fewer can write an academic essay. Most of the students have a limited awareness of the various writing skills required, and therefore do not pay attention to their writing, even in performing simple tasks. The purpose of this study is to investigate Qassim University teachers' and students' perceptions concerning the difficulties in EFL academic writing and the teaching methods. It employs a mix of qualitative and quantitative methods, ascertaining both students' and teachers' perceptions through conducting a questionnaire and interviews. It was found that students encounter difficulties in using the correct vocabulary in their academic essays. A majority of students acknowledged that they were not sufficiently motivated to master the writing skills. However, many students confirmed that the lack of feedback had a negative impact on the development of their writing competence. The study findings should help in facilitating the learning process of EFL writing in Saudi Arabia.

Keywords: English Language, students' perceptions, teachers' perceptions, undergraduate students, writing skills

1. INTRODUCTION

Recently, learning English as a Foreign Language (EFL) has been expanding throughout the world. Despite the difficulties and challenges for learners it serves the needs of many fields. For the majority of people, learning EFL is an essential life task which occupies variety of career opportunities. English has been chosen to be the medium of instruction in Higher Education all over the world, especially in Gulf regions (Crystal, 2003). Thus, in the last decades, a tremendous effort has been devoted to improving EFL teaching, with numerous researches being conducted in the Arab world (Al-Seghayer, 2011).

In this study, the difficulties that Saudi female undergraduates experience with their English writing skills will be explored through seeking the views of both teachers and students. The learning of writing skills seems to be the most challenging of all the skills to be acquired by EFL learners, as it requires a full understanding of other areas in the language. Nunan (1999) suggests that producing a coherent, fluent written piece is difficult, particularly for second language learners. Writing skill entails the ability to compose, rephrase and form ideas in narratives, or applying information into argumentative written texts (Myles, 2002).

As a teacher and learner of EFL, the author observed that undergraduate students in the Kingdom of Saudi Arabia (KSA), specifically at Qassim University, fail to improve their academic writing skills. In spite of the fact that, teachers set out to focus more on mastering the writing skills, students remained unaware of how to improve their written work. Even though, some studies note that Saudi students learn English subjects for six years before entering University (Grami, 2010), they still suffer weak writing performance. Examples include producing errors in grammar, essay organization, writing mechanics, spelling, vocabulary and punctuation. However, the aim of this study is to explore the teachers and students' views towards the writing difficulties that students face.

Based on my few years of teaching experience in the English department at Qassim University and the related studies in Teaching English as a Foreign Language (TEFL), I found that English writing should be thoroughly practised to prepare students for future careers. To the best of my knowledge, this is the first study to explore female teachers' and students' perceptions towards the difficulties that students face in EFL academic writing and to examine the EFL methods of teaching and learning that are being used at Qassim University. This investigation may enhance our understanding of the main challenges and difficulties that students face, and then indicate appropriate methods of teaching and learning to overcome these and thereby improve the students' EFL academic writing. The present study aims to fill a gap in the literature by investigating teachers' and students' views towards the challenges that face undergraduate students at Saudi universities.

2. LITERATURE REVIEW

2.1 The Concept of Writing

Different attempts have been proposed to describe academic writing. The meaning of writing and its implication has been broadened in the last decades of the twentieth century (Krashen, 1984). These definitions include the explanation of the writing process, functions and the actual implementation from both teachers and learners. To begin with, Nunan (2003) notes that writing is a mental act that requires converting ideas into sentences and paragraphs. This definition is close to Byrne (1996), who defines writing as the involvement of conscious mental acts, which requires transferring information through a sequence order to form a paragraph. Similarly, writing skill has been considered to be a difficult cognitive task because it is not a simple production, and perhaps requires a particular concentration (Smith, 1989; White, 1987; Widdowson, 1983).

2.2 Teachers' and Students' Perceptions Regarding English Writing Skills

There is a large volume of published studies investigating and describing teachers' and students' views towards teaching and learning in general, and English writing skill in particular. When teachers' and students' perceptions are taken into account, the difficulties of academic writing might be lessened. Therefore, a critical overview of the related literature about teachers' and students' perceptions towards EFL academic writing is presented in the following sections.

2.2.1 Teachers' Perceptions

Teaching EFL academic writing skill is a challenging task, perhaps the most difficult one for teachers. The process of teaching involves improving both students' knowledge as well as their communicative competence. Burke (2010, pp. 40-41) claims that "writing can be understood only from the perspective of a society rather than a single individual". In this regard, it seems necessary to understand teachers' perceptions regarding English writing skills. Although several studies have offered an adequate explanation of the writing skills from teachers' perceptions, it is difficult to generalize them for the majority of the teaching context. Accordingly, it is worth mentioning some of these studies to examine their perceptions in order to link it to this study. First of all, as EFL academic writing lags behind in terms of interaction, this may hinder the writing process as it requires the need of oral competence (Shafie, Maesin, Osman, Nayan, & Mansor, 2010). In this regard, it has been found that lack of oral interaction may cause a lack of confidence in communication skills, specifically in expressing ideas (Ferris & Hedgcook, 1998; Wang & Bakken, 2005). It was difficult for students who lack confidence to explain to their teachers their aims and decisions regarding their writing feedback (Can, 2009). Secondly, other studies investigated teachers' views regarding their students' knowledge; they insist that students lack knowledge in some writing skills, such as paraphrasing, summarizing and outlining (e.g. Al-Shabanah, 2005).

In a similar study conducted in Pakistan, Imran (2011) reported that students encounter problems while learning lexical items, punctuation, spelling and grammar rules. In addition, teachers found it quite challenging to provide critical feedback on students' written work because the teachers were not sure what advice to write (Arkoudis & Tran, 2010).

2.2.2 Students' Perceptions

Numerous studies have revealed that the majority of EFL students encounter problems in achieving a proper degree of proficiency in writing (e.g., Cai, 2013; Ergür & Saraçbaşı, 2009; Tahaineh, 2010). Blanton (1987) pointed out that EFL students' perceptions after attending an academic writing class conflicts with their actual goals. In this regard, there is a need to explore EFL academic writing from students' perceptions (Wu, 2006; Sğlamel & Kayaoğlu, 2015). Cai (2013) explored students' perceptions in China and established that students who have weak competence in writing tend to memorise phrases in their textbook to produce a written piece. Accordingly, a study

by Jahin & Idrees (2010) reported that students in Saudi Arabia lack the desire and willingness to master all aspects of academic writing. In accordance, students view their weak performance in writing and other EFL skills as being due to their negative attitudes, while students' output is associated with the social context, and values which are defined as negative attitudes (Kobayashi & Rinnert, 1992). Thus, not surprisingly, students' who possess negative attitudes would be restricted to acquire EFL skills and achieve learning goals (Shehdah, 2010). On the other hand, achieving proficiency in academic writing only occurred in cases where students were fully motivated and possessed a high level of self-confidence (Cameron, Nairn, & Higgins, 2009).

Many studies confirmed that students agreed that teachers' assistance and feedback on their written work is a helpful guide (Ismail, 2011; Zhan, 2016). Other studies (e.g., Hyland, 2003) suggested that intensive feedback should be provided on all aspects of their writing, such as content, grammar, quality, style and organisation. However, there seems to be a clash between the teachers' perceptions of feedback and the students' perceptions of the comments provided. In a recent study, Zhan (2016) investigated both teachers' and students' perceptions of their feedback; his findings revealed that the ignoring of the content and quality caused an issue to students as the comments did not trigger their attention.

2.3 Gaps in the Research Literature and the Justification of the Study

The literature presents some studies concerning teaching and learning EFL writing skill and to what extent it should be employed and improved, including the benefits of delivering a variety of teaching and learning methods. In general, there is a significant body of research that delineates writing skill challenges and the benefits of delivering varying teaching and learning strategies. The empirical studies on teaching the writing skill (as conducted by Dana (2013); Hinkel (2004); Paltridge (2004); Raimes (1983); Tribble (1997); Watkins (2004)) have, for the most part, suggested that improvement of EFL writing proficiency can be gained through   teaching approaches and effective practice. In contrast, studies (such as Al-Khasawneh & Huwari, (2012); Khalil (2010); Khan (2012); Mohammed (2006); Shoebottom (2016); Tahaineh (2010)) have identified the importance of understanding students' common errors in the writing skills to improve writing proficiency and to explore reasons behind these weaknesses. Nevertheless, this study is positioned towards understanding both teachers' and students' perceptions in order to explore the reasons that lie behind this persisting failure to achieve proficiency in writing among Saudi female students.

Although a few studies on teachers' and students' perceptions in Saudi Arabia have been conducted, none as yet have recruited participants at Qassim University in Saudi Arabia. It is my experience of working with female students at Qassim University that has driven me to conduct this research. Consequently, the aim of this study is to start filling this gap through understanding their perceptions and thereby put forward useful recommendations to enhance EFL academic writing.

3. METHODOLOGY

3.1 Research Questions

The primary research questions raised in this study are: (1) What are the teachers' perceptions towards their EFL students' writing difficulties in the English department at Qassim University? (2) What are the students' perceptions towards the academic writing difficulties that they face? Answering these primary questions can, subsequently, feed back into the broader debates on the common academic writing difficulties that face Saudi EFL students.

3.2 Research Design: Case Study

A single case study is used for this study to answer the research questions. The main reason for using one case study is to examine and investigate an event or case thoroughly and deeply, and to obtain robust and solid results. The case study approach aims to offer the flexibility to explore the 10 English teachers' views towards their students' academic writing difficulties, as well as to explore 20 students' views concerning their writing challenges. It also examines the methods of teaching and learning EFL writing in the English department at Qassim University. The study is carried out using one single case (one department at one university) to gain rich and deep information. Semi-structured interviews will be carried out with both teachers and students.

3.3 Participants and Setting

There are 17 teachers who teach in the English department. The reason why ten English teachers are chosen is that previous familiarity with them indicated they are all particularly effective teachers. Another reason is to obtain more understanding of the common academic difficulties that their students faced. It is also to find out if the teachers delivered varying and different teaching methods concerning writing skills. The main reason for selecting this department at this single university is because the researcher has obtained teaching experience in the same university and have observed the weaknesses in EFL academic writing. Another reason is that teachers and students are also expected to use English as the medium of instruction during EFL lessons. The female teachers of English come from different backgrounds, nationalities and ethnicity (e.g. Sudanese, Pakistani, Indian, Jordanian and Saudi teachers). All the teachers and the students are women and segregated from men due to the restricted religion and culture.

In terms of the students, there are 20 female students who took part in the interviews. The students are studying at the same department and university. Their ages are ranged between 18 and 24 years old from different levels. Two students will be randomly selected from each level; from level 1 to level 5 because the researcher want to explore students' writing difficulties from a greater population. Four students are chosen from level 6 to level 8 because the researcher seeks to examine those advanced students' opinions about improving their writing skills.

3.4 Data Collection

Data collection aims to gather and measures information from a wide range of sources that provide the researcher with the ability of having a full understanding of answering the questions in the study (Burns, 1997; Creswell, 2009). The data in this study were collected through a mixed methods approach (quantitative followed by qualitative). However, the first phase was collected and then analysed to formulate and refine research questions.

Meanwhile, in the second phase, the questions were developed from the initial findings in order to interpret and explain specific information in more depth.

3.4.1 Questionnaire (Survey)

The questionnaire included nine closed-ended questions, using multiple-choice to answer the questions of the students' perceptions towards the EFL academic writing difficulties that they face. The questionnaire was written in Arabic (L1) and English (EFL/L2) to allow students to have more understanding of the questions and the aims of the questionnaire along with removing any confusion. The number of the closed questions might offer more understanding of the phenomenon of the study. In reference to piloting the questionnaire, it was designed and then piloted. The questionnaire was initially shared with a number of English teachers at Qassim University and Northumbria Newcastle University.

3.4.2 Semi-structured Interviews

Semi-structured interviews were conducted with 10 teachers and 20 students. The advantage of selecting these kinds of interviews was that they provide the flexibility and freedom to change, delete or add any questions along with the sequence and wordings concerning the appropriateness (Robson, 2002). The researcher had the opportunity to discover teachers and students' views and beliefs in-depth thanks to the flexibility of using open-ended questions. The interviews were, as explained earlier, undertaken in the English department at Qassim University in a quiet place. Note-taking was used in the interview instead of using audio recording to collect the data. The interviews lasted between 10 and 25 minutes where the interviewer's role was as a listener and the interviewees were given the time to speak freely.

3.5 Data Analysis

The aim of the data analysis is to answer the research questions of the study through evaluating, modelling and filtering questions and themes (Creswell & Clark, 2011).

Descriptive statistics were used to summarize and describe data as well as to obtain an overall useful picture of the data. In terms of the analysis process, the researcher will (1) edit the data (by checking their internal consistency, etc.); (2) create initial codes and then search for themes; and (3) connect the themes with each other and re-examine and clear the coding from any repetition or errors (Kumar, 2005).

In the second phase (qualitative), a semi-structured interview, including a matrix table, and a thematic analysis was used. A thematic analysis is a qualitative analysis method which helps to identify, analyse and report patterns (themes) of meaning across a dataset (Boyatzis, 1998; Tuckett, 2005). This method is flexible in nature to be used within different frameworks in order to answer different kinds of research questions which might relate to people's experiences, views and perceptions (Boyatzis, 1998; Tuckett, 2005).

After that, the researcher transcribed each interview verbatim and then removed unnecessary words or pauses (Creswell & Plano, 2007; Savin-Baden & Major, 2013). The interviews were conducted by using the first language (Arabic: L1) with the students from levels 1 to 5 whereas English was used with those students who study from

levels 6 to 8. The interview data was analysed through these steps: (1) transform the verbal data to written and go through the transcripts and notes; (2) create initial codes to segment the text to code the data; (3) develop themes by separating the similarities and connect each theme with each other; and (4) interpret the meaning of the themes (Creswell, 2011).

3.6 Ethical Issues

Ethics is defined as "conformity to a code or set of principles" (Robson, 2002, p. 65). The participants' responses and identity are kept confidential and secure along with their privacy being respected. The participants are given the choice to select the date, day and a convenient place. In terms of confidentiality and anonymity, the researcher has reassured the participants again that their identities remained confidential and the interviews' transcripts would be deleted once the researcher had completed her research. All the participants are informed that their real names are kept anonymous and they will be replaced with pseudonyms. Consent letters were received from the participants (the ten English teachers and 20 students) in order to participate in the project. The participants are informed to have the right to withdraw from the research at any time. The researcher received permission and consent from the English department at Qassim University and from the ten English teachers as well as from the 20 students to undertake the interviews and distribute the questionnaire.

5.1 Interview Findings

It is so clear that students were able to determine their errors, however, it is worth mentioning that from students' comments, the majority were facing difficulties in grammar, especially the misuse of tenses. These results are in accord with those of Younes and Al-Balawi (2016), who examined forty female University students at Tabuk University in Saudi Arabia. Through collecting a sample of their writing, questionnaire and interviews, they found 358 errors and 29% of them were errors related to the wrong use of tenses.

Overall, teacher's data suggest that academic writing proficiency can be achieved through providing an academic atmosphere to assist students. More attention from the faculty should be provided to ensure that students receive sufficient academic facilities. This could include restructuring the library services, reducing the number of students in classrooms and exposing students to a variety of inspirational activities in the university to foster their EFL skills. From the students' findings, it can be seen that when the level of study rises, the level of awareness in the writing skill increases. It is clear that the understanding of the advanced level students to their requirements in the writing tasks appears clear without any uncertainties.

5.2 Questionnaire findings:

The results show that there is an understanding of the needs of participants at the intermediate and advanced levels. It is possible to suggest from the results that the beginner levels' responses were not specific enough to show a clear vision of their common needs in academic writing. However, these results are in agreement with those obtained by the interview findings in this study, as they both show that the advanced level students had more awareness through showing intensified responses toward expressing their writing issues.

Additionally, the results reveal that 61% of the 80 respondents who completed the questionnaire showed a significant satisfaction with the writing coursebooks. This outcome is contrary to that of Al-Nasser (2015) who found that EFL textbooks in Saudi Universities are problematic. Yet, he adds that in order to contribute positively towards learning EFL skills, specifically the writing skills, EFL textbooks must be reconsidered to fit what learners are missing in their education. In contrast to earlier findings, Ababneh (2017), after conducting an investigation of the writing errors produced by female university students in Saudi Arabia, recommends that there is a need for improvement to the coursebooks and syllabus to overcome students' weak proficiency.

In terms of writing an exam paper, the results indicated that more attention was given to the knowledge of the writing content rather than focusing on the structure of writing. One unanticipated finding was that the majority of students did not focus on the structure. These results seem to be consistent with Ahamed's (2016) findings, who found that the main factor that contributed in the weak performance of writing in Saudi EFL university students was the ignorance of the English writing structure.

6.1 CONCLUSION

Summary of the Study

In this study, the aim was to explore teachers' and students' perceptions toward the difficulties of the writing skills at Qassim University in Saudi Arabia. Two instruments were used in this study; questionnaire and interviews. Teachers from different nationalities and students from all university levels were involved in this study. The most obvious finding to emerge from the questionnaire is that students from beginner and intermediate levels faced issues with linking sentences in a paragraph. Between the range of always/often, 56 students from a total of 80 confirmed that they face problems in linking sentences. Regardless of the significant satisfaction they provided in lecture duration and writing coursebooks; their responses revealed that there is still an actual failure. The second significant finding was that few of them were focusing on the language structure while the majority in the count of 54 provided opposite results. Taken   teachers interview into account, their findings considered that the chief problem in students writing is associated with the Arabic interference in English structure. Teachers add that student's first language caused consistent errors in spelling, grammar, and phoneme clusters. Besides, the majority of teachers suggest that students must have a prior knowledge before entering the English course. Considering education facilities, a significant result emerged from one teacher insisting that restructuring the library services should be addressed to obtain students' academic need.

Another issue that merit our attention is that teachers heavily reported that the overcrowded classrooms hindered teachers from understanding students individual writing weaknesses. The study has confirmed the findings of Khan (2011) which found that the overcrowded classrooms caused an issue to teachers' and students; and also, has led to traditional teaching methods.

Students interview findings were similar to the questionnaire regarding the language structure. As both of them confirmed a lack of performance in the English structure. Accordingly, lack of feedback, confidence in L2 and limited attention given to beginner level students caused a delay in mastering the writing skills. It is one of the

teachers' role to direct students into solving their issues in academic writing through providing an intensive and effective feedback.

By looking at the above-mentioned findings, it can be assumed that some of the problems were beyond teachers' control, while others can be lessened through teachers' pedagogy efforts. However, we can conclude that the EFL academic writing issues involved were criticised from teachers and students in this study.

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Appendix A
Participant Consent Form

Title of Project:

An Investigation into the Main Difficulties with Writing Skills Faced by Female Students in the Department of English Language at Qassim University in the Kingdom of Saudi Arabia

   The purpose of this form is to provide you with information so you can decide whether to participate in this study. Any questions you may have will be answered by the researcher. Once you are familiar with the information on the form and have asked any questions you may have, you can decide whether or not to participate. If you agree, please either sign this form or else provide verbal consent if you do not wish your name to be registered on the form. Please note your participation is voluntary and you may decide to leave the study at any time. You may also refuse to answer specific questions you are uncomfortable with. You may withdraw at any time during the study without any consequence. If you wish to receive a copy of the final dissertation once completed I'm happy to provide you with an electronic copy.

Purpose of the Study:

You have been asked to participate in a research study about exploring teachers' and students' perceptions of the main difficulties with the writing skills faced by female students in the Department of English language at Qassim University in Saudi Arabia. The study also seeks to motivate students through understanding their attitudes toward EFL writing and the teaching methods.

Researcher information:

Fatima Alhossaini
Master Dissertation
Northumbria Newcastle University

My email address is:
Fatima.alhossaini@northumbria.ac.uk

Confirmation and consent

I have read the consent form and recognise that my participation in this study is entirely voluntary. I understand that any information resulting from this study will be strictly confidential. I realise that I may ask for further information about this study if I wish to do so at any time. I have received a copy of this consent form for my records. I agree to participate in this study.

Participant Signature

…………………….…………

Date

…………………….…………

Name

………………………………..

Appendix B

Questionnaire

Greetings of peace, Dear students

I'm conducting research into: *An investigation into the main difficulties with writing skills faced by female students in the Department of English Language at Qassim University in the Kingdom of Saudi Arabia.*

This questionnaire aims to identify the most common writing difficulties faced by students at Qassim University. I would be obliged if you could fill in the questionnaire, your views will guide me to assess the common reasons behind the low proficiency in academic writing.

Kindly answer the all provided statements according to your opinion by marking (√).

Note that the answer key is as shown below:

Always	**1**
Often	**2**
Sometimes	**3**
Rarely	**4**
Never	**5**

Dear Student, I would like to point out that:

1. Your answer will be treated in strict confidence.

2. Your answer will be used for research purposes.

3. There is no wrong or correct answer.

4. You need to mention your opinion without mentioning the name.

STATEMENTS	ALWAYS (1)	OFTEN (2)	SOMETIMES (3)	RARELY (4)	NEVER (5)
1. The teacher explains the writing lessons clearly.					
2. The teacher uses different materials (projector, Blackboard etc.) to explain the writing skills.					
3. The content of the university course book is helpful and reliable to increase my writing skills.					
4. I experience difficulties when linking sentences in the writing paragraph.					
5. I experience difficulties in determining the correct use of grammar in my writing.					
6. The length of the lecture is sufficient to facilitate my writing skills.					
7. I concentrate on the knowledge while writing an exam paper.					
8. I concentrate on my spelling and grammar while writing an exam paper.					
9. The intensive course provided by Qassim University helped in improving my writing skills.					

Thank you for your cooperation

The researcher

Fatima Alhossaini

Northumbria Newcastle University

Appendix C

Teacher's Interview Questions

Dear Teachers,

The aim of this interview is to verify your perceptions toward students' writing skills. Also, to determine students' weak proficiency in EFL academic writing.

1. What are the main writing problems faced by students?

2. What teaching methods do you use for teaching EFL academic writing?

3. What type of activities do you use to enhance student's writing skills?

4. Do you think that the Intensive Course provided by Qassim University to train students before entering the English course helped in developing their writing?

5. Do you consider that students must have previous knowledge about academic writing in high school before entering University?

6. From your point of view, what are the main reasons for students' weak level of writing?

7. What can be done to decrease the level of weakness in student's academic writing?

Thank you for your cooperation

The Researcher: Fatima Alhossaini

Northumbria Newcastle University

Appendix D

Students' Interview Questions

Dear Students

This interview aims to investigate your perceptions towards the difficulties in the writing skills. Thus, your responses will help me to explore the main reasons behind not mastering the writing skills. Further, your answers will confidentially be used for research purposes only.

1. Do you encounter any issues while attempting to write an essay? If yes, what are the common difficulties you face in academic writing?

2. Can you easily determine any errors and mistakes after revising your essay?

3. In your opinion, what are the advantages and disadvantages of the teaching methods applied by the university and teachers when teaching writing?

4. What can be done to decrease the level of weaknesses in your academic writing?

Pedagogical approaches to global education

-A follow-up study of Tohoku School 2.0 since 2014-

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Abstract

"Tohoku School 2.0 in a vision" was proposed in February 2014 in Sendai. This included a pedagogical approach to global education and to constructing experiences in learning. After reviewing the movement related to policy such as global education in Japanese high schools, the matter of assessment is focused on, and systems thinking for complicated world is tried out to introduce and implement as an urgent necessity. Under the prerequisites of importance of student agency and *kyodo* (homeland/Heimart rich-biodiversity and disaster-prone region) is an epitome of the present-day world, evidences are collected from the works and interviews with senior high school students, as well as teachers. Especially, analysis of the culmination of students is tried from the viewpoint such as whether there is an awareness of issues, whether they are demonstrating, whether they have acquired systems thinking in individuals → group → learning processes focused on systems thinking up to now. As a matter of cultural aspects, systems thinking was applied into Japanese *tsunagari*, which means the nexus between local or global, which roots originally come from metaphor of Indra's Jewel Net: A Metaphor for Interbeing as an Indian ancient symbolic one representing and sharing the Eastern world views in common.

Keywords: 21st centruy competencies, Systems thinking , *Tsunagari* (interconnetedness), *Kyodo* (homeland/Heimart)

1. INTRODUCTION

The Great East Japan Earthquake that occurred on March 11, 2011 created an opportunity to reveal the culture of Japan and Eastern countries to the world. The relationship between spiritual tradition and education are reconsidered on the basis of the mutual interaction between society, culture, and religion. The Straits Times, which is the most-read newspaper in Singapore, published an article titled *Awed by a nation's quiet dignity-World watches amazed at survivors' civility and patience amid the ruins-* five days after the devastating earthquake happened. It represented some aspects of Japanese spiritual tradition such as selflessness, patience and stoicism. The following is the full text [1].

Like this tsunami-hit house adrift in the Pacific, the survivors of the disaster in Japan are showing remarkable resilience in the face of adversity, displaying a stoic kind of heroism instead of the hysteria one might expect. - PHOTO: REUTERS.

DISASTER does not discriminate, Earth plays no favourites, and we are familiar with the furies of nature. Still, Japan's ravaged landscape, where satellite photos unemotionally suggest no proof of human existence where once it thrived, seems particularly staggering.

The threefold assault of shaking land, swollen water and now possibly poisoned air, where radiation lurks unseen, is appalling.

Yet, it is also the response of the Japanese to catastrophe, told to us in shards of stories of shared blankets, patient calm and decorous lines of waiting people, that has stirred us.

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* Corresponding author.

The response to chaos is often chaos itself, but it has not come in this land. Even at traffic lights, observers have written almost in consternation, the Japanese have been waiting patiently for the signal to walk.

It is a quiet dignity whose appeal is being felt across the globe.

As Canadian student Jouvon Evans, who studies in Tokyo and was on a train to Sendai, told Agence France-Presse:'I have never been in a disaster before so I didn't know what to expect. In the movies, you always see people running around screaming, but here at the centre, it's really calm.'

The Japanese are used to a trembling earth – the quake was followed by over 300 aftershocks, an absurd number really – and they have prepared for it with emergency drills and sensible building.   But this ganging up of nature is beyond preparation and imagination.

Yet every day, reports trickle in of civility – almost a conditioning in Japan – amid the ruins.

An old lady in pain, pulled from beneath fallen furniture, apologised to her rescuers for inconveniencing them and asked whether others should be helped first. It is as if courtesy, so ingrained in a culture of bowing and formality, never leaves.

A petrol pump attendant apologises profusely for not having fuel to long waiting lines of motorists where no one cuts in or bellows in frustrated anger. Those in food queues take just enough so as to leave some for others. In everyday life this is nice, in distress it is astonishing.

The world has been searching for a word for all this, and has settled on 'stoic'. As stereotypes go, it is not a bad one. And it points to a type of heroism we rarely encounter.

Normally, the hero is the one pulling someone from the rubble, identified by an act of bravery, and this was found here, too. Shigeko Terakawa tried to run from the water, but the 72-year-old was caught by it, washed along for 30 minutes, till people in a classroom threw down a hose and pulled her to safety.

It suggests the unexceptional man's ability to stay grounded in an exceptional time and it is impressive and effective. In just doing that, the Japanese have aided rescue efforts, they have not distracted police or civil defence with riots or demonstration. Order has been their weapon.

Widespread looting occurred during Hurricane Katrina in Florida, and its absence - mostly – in Japan led a Telegraph blog to be titled, 'Why is there no looting in Japan?', as if it is an expected reaction.

In such a 'landscape of loss', as The New York Times artfully put it, hysteria often takes centre-stage, like a release of panic, but little has been reported here.

Mostly, too, from what we see, there has been little bravado or grand Churchillian speeches, self-pitying cries of 'why us', and no scenes of scuffles near food trucks.

There is no handbook on behaviour in such circumstances, and all cultures express themselves in differing ways. Yet we are awed.

Japan, a place of fascination for many Singaporeans, remains a semi-insular society, but here, with TV cameras in its face, some curtains have parted. A complex culture cannot be glibly explained, but certainly in a terrible time what we have seen is among the best of them.

Perhaps it simply refers to an ability to endure, to wear hardship with character. They will need it, for in a collapsed world it is the only thing keeping their land upright.

Shields early analyzed the relationship between society, education and religion by using the framework of sacred architecture sites. He pointed out the significance of historical and cultural approach which has its religious foundations mixed with Confucianism, Buddhism and Shinto, for grasping Japan's educational reform from the inside [2]. It also means if the essence of 21st educational system is a learning environment based on social constructivism, a unilateral educational reform only from the outside might destroy the learning environment embedded in the culture of school [3]. Based on this, theoretical research on pedagogies necessary for the implementation of formative assessment and on cultural aspects of classroom in Japan has been conducted [4].

However, not only an approach from the inside but also an approach from the outside is indispensable for making educational reform successful. Educational initiatives are currently ongoing with the cooperation of OECD. These aim to overcome the triple disaster of earthquake, tsunami, and nuclear accident toward the creative construction, and to create and deliver the world-class educational model for the 21st century. As noted later, the clarification of the social network by the OECD Tohoku School project (the OTS project) and the Innovative Schools Network 2030 project (the ISN2030 project) unearthed Japan's cultural foundation －*tsunagari* (interconnectedness). These initiatives contributed to making a connection between spiritual cultures and global education in Japan.

In addition, the educational reform in Japan coincides with international trends of the 21st century competencies. Domestic educational policy revised the Course of Study guidelines in response to the trend of OECD and the impact of these disasters. The attention to cross curriculum competencies, which are in contrast to Japan's traditional learning system that focuses on problem-solving based on memory, has illuminated the limit of Asian-styled academic skills [5]. In recent years, the gap between the development of global mindset in other countries' high school students and Japanese high school students has also arose [6]. For instance, Japanese high school students

have realized the experience of critical incidents occurring between different cultures, yet it's difficult to acquire new behavioral patterns for the adaptation to other cultures. Therefore, the Course of Study guidelines for 2030 treats active learning as the key concept and seeks educational reform focusing on the outcome-based assessment of "What kinds of competency can students acquire and what can they do with it?" more than content-based assessment that "What do teachers teach, and what do students learn and know?" [7].

Pedagogical approaches to global education in Japan are remarkable from both inside and outside because specific school practices and programs have been implemented for the development of global human resources and deeper learning. In this paper, we suppose that all initiatives implementing competency-based assessment are incorporated into a comprehensive concept of Education for Sustainable Development (ESD). Global competence under the Education 2030 project has been formed to redefine key competencies derived from the DeSeCo project by OECD [8]. Given that the OTS project, the subsequent ISN2030 project, and other educational practices relevant to the development of global human resources with the collaboration between OECD, the Ministry of Education, Culture, Sports, Science and Technology (MEXT), schools and community, we cannot ignore the impact Japan has on Education 2030 project.

First, this research attempts to clarify the essence of learning environment that has been cultivated in cooperative relationships between OECD and education in Japan. Second, Systems thinking will be represented as a significant pedagogy to connect global education with Japanese cultural perspective, *tsunagari*. This study is examined with the dialogues with outcomes of students in the systems thinking practice in Goshono Gakuin High School in Akita City, and the curriculum design and dialogue of teachers. Finally, we will show how a sacred practice of *collective consciousness* that has been the cultural foundation in Japan and other East Asian countries, enhances the quality of global educational practices.

2. COORDINATING OECD AND EDUCATION IN JAPAN

The OECD Tohoku School project (the OTS project) practice, the plan for Tohoku School 2.0 and the ISN2030 project practice are in accord with Education 2030 focusing on 21st century competencies. Stimulus arising from Europe visualized invisible Japanese' social and cultural network, and the expectation of learning approach passing through local and global toward sustainability and resilience attracted systems thinking to effective pedagogy. In this chapter, the Tohoku School 2.0 project which Andreas Schreicher proposed will be situated as a fuse of pedagogical approach for the development of global education and the trend of domestic educational reform getting in touch with OECD and global education will be reviewed.

2.1. Outcomes of the OTS project

In Tohoku region where many schools had a closed attitude (conventional education views had been sustained as school culture), the Great East Japan Earthquake exposed the incompleteness of traditional narrow-minded network. Therefore, the OTS project was planning to engage in regional revitalization and the creation of community concentrating on learning amid the request of social network formed by multiple standpoints.

As a response to the earthquake, Ángel Gurría, Secretary-General of the OECD expressed to support creative reconstruction of Japan, which triggered the start of the OTS project. Its mission was to 'plan and implement an international event for showing the remarkable aspects of Tohoku and Japan and their creative reconstruction in Paris in 2014.' About 100 students mainly of three disaster affected prefectures －Iwate, Miyagi, and Fukushima had participated in it. Its main purpose is as follows [9].

- Nurturing "21st-century competencies" necessary for those who bear the responsibility of rebuilding the disaster areas.

- Conducting a project study for exercising students' autonomy and making an educational reform model.

- Proceeding cooperation between communities, schools, the industrial-governmental-academic groups, and foreign countries for educational reforms.

This project learning which attempts to enhance motivation among learners initiates to cooperate with the aim of developing the human resources of innovators supporting the restoration of the Tohoku region. OECD provides the opportunity to learn from processes and think about the future. More specifically, it spells out the following tasks: (1) think by themselves, (2) have a dialogue and discuss, (3) invent, (4) play, and (5) interact with the real world and

experience it. They arranged three learning activities － 'Intensive Workshops,' 'Local Schools,' and 'Thematic Activities,' which attempt to induce interactions between the activities. They were carefully planned in detail.

The report, written by Halász clearly analyzed the performance of the OTS project [10]. Halász recounted the 16 features embedded in the OTS project: an extraordinary post-catastrophic context, the dominance of external (non-school related) goals, focus on out-of-school activities, a model based on regional cooperation, strong involvement of external stakeholders, limited involvement of and impact on participating schools, student control, the presence of a number of well identifiable key actors, strong international component, a bottom-up innovation model, moderately supportive education policy context, cross-sectoral dimension, conceptual eclecticism, internal diversity, dispersed leadership and networked institutional structure. He organized the learning environment formed by the interaction and co-learning which multi stakeholders are creating under traditional education systems in Japan and regional cultures. The Tohoku Change Model as an innovative model was represented by his notice that the OTS project was not a sporadic and special program, but an innovative educational model for the world. The innovation framework based on the Tohoku Change Model has a common with the innovation platform mentioned by the OECD in 'the creation of an open space where those facing common challenges and interested in finding solutions can bring in their ideas about possible solutions, they can confront their views, they can combine the partial solutions they have already found and they can try to apply them together.' The expected results are: transformation from the situation of abnormal devastating disaster to learning fields, maintenance of conceptual eclecticism constituted by strategic ambiguity necessary for making a deep commitment by multi-stakeholders and diversified leadership, and activities in the mid-field between public school system and places outside of schools in organizational structures with networks.

In this way the OTS project created innovation in learning by making use of the crisis of the Great East Japan earthquake and constructed multi-layered networks by multi-stakeholders in order to demolish closed educational philosophy which was described as 'spiritual state of closure' before the earthquake [11]. It was taken over by the core of the development of 21st century competencies in the Tohoku School 2.0 project and the ISN2030 project.

2.2. The Tohoku School 2.0 project

The Tohoku School 2.0 project initiated by Andreas Schreicher in 2014 failed to be realized, but it offered the strategy of global education reform by pedagogical approach and integral understandings of 21st century learning envisaged by OECD and ESD in Japan. The results of the OTS project including the report of Halász, the analysis report of PISA and ESD practice conducted in Japan were reported widely at the 16th OECD/Japan Seminar in February 2014. In this seminar Schreicher, Assistant Director for the Directorate of Education and Skills, proposed Tohoku School 2.0 in a vision that transmits new educational models from Tohoku to the world as a vision of global education by pedagogical approach based on sustainability and resilience. The core of resilience lies in learning. Organizations have very flexible intellect and responsibility of rapid economic development and social changes in its level. Many factors such as resilience including the spread of social network and mindsets including disposition are deeply interrelated at the individual level. In addition, due to students' active and multilateral involvement on dilemma and contradiction arose from globalization, to find out common foundations necessary for problem solving, to prepare for the physical contact beyond the cultural differences and the involvement with others in a working place with the development of student autonomy and identity of students for making them notice diversity, and to understand economic, social, and political constraint of environment and the linkage between their own life and other people's life around the world from the aspects of the development of people's skills, attitudes, and values were pointed out.

The vision of Tohoku School 2.0 which tried to achieve educational reform not from the secondary education system but from pedagogical approach failed to be realized because the ISN2030 project that covers the whole Japan took over the subsequent project of the OTS project. Yet, the embodiment of social, cultural networks arisen by the innovative idea and the expectations of learning based on local and global links triggered the necessity of systems thinking. The Tohoku School 2.0 project exposed the cultural foundation of *tsunagari* underneath Japan's spiritual pillar, and was in accord with the practice of systems thinking. This is the point in which the possibility of assessment from pedagogy underpinned by culture created and by the harmonization between Europe and Japan would arise.

2.3. Japan's contribution to OECD Education 2030

Not only is the OECD-led project Education 2030 a successor of the DeSeCo project, but its relationship with Japanese models for 21st century education can be observed in that the main competencies for its principle concepts

of sustainability, innovation and resilience have already been proposed in the Tohoku School 2.0 initiative. Further, according to Schreicher, the Director for Education and Skills at OECD, the implementation of the OECD Future of Education and Skills 2030 project (the Education 2030 project) came about following a request by Japanese Prime Minister and Cabinet leader Shinzo Abe to the OECD. The Prime Minister has high expectations for further work in education following the success of the OTS project. It has been decided at the policy-making level that the various achievements in the development of globally minded human resources in Japan, such as in the OTS project and in the ISN2030 project, will be reflected in the Education 2030 project [7].

While the Education 2030 project is a new project aiming to recreate the achievements of the OTS project throughout the entire country, it has also taken on the role of redefining competencies for the 21st century. Time has passed since key competencies were defined by the OECD in the DeSeCo project from 1997 and 2003, and debates have become increasingly focused on the extent to which these abstract and ideological key competencies can be applied at a practical level. There is also a necessity to redefine the competencies to respond to the volatility, uncertainty, complexity and ambiguity (VUCA) faced by a globalized society, and it is for these reasons that Education 2030 will be undertaking this role.

The Education 2030 project that began in 2015 can, therefore, be seen as a successor which combines both the OTS project and the DeSeCo project. A working group has been formed from a diverse range of stakeholders including OECD member countries. The aim of this working group can be to identify competencies for the 21st century, conduct research and discussions on topics relating to these competencies, and carry out comparative analyses of international curricula. At its stage in August 2016, the Education 2030 framework placed its focus on the revision of the secondary education curriculum as its primary target, with calls for an assessment of all learning processes involved in the obtainment of knowledge, skills and attitudes, ranging from the interwoven competencies, which cannot be broken down and viewed individually, to their actions, or outcomes [8].

A more detailed ideological framework has now been formed by the Education 2030 group in September 2017, as shown in the figure below. The suggested competencies of "creating new values," "taking responsibilities" and "coping with tensions and dilemmas" in order to develop sustainability, innovation and resilience are responses to findings already indicated in the Tohoku School 2.0 framework.
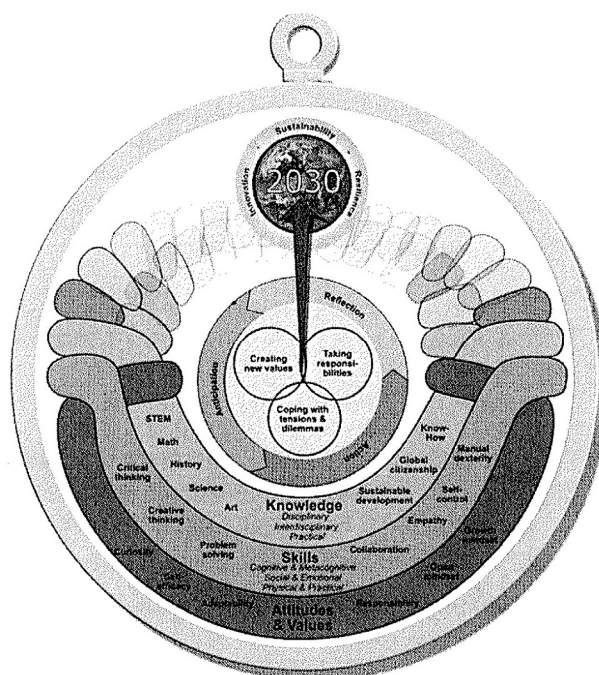

Fig. 1. Emerging education2030 framework [12]

2.4. The features of the ISN

One of the Education 2030 stakeholders is the network of Japanese schools known as the Japan Innovative Schools Network supported by OECD (the ISN). Their practical operations focus around the expansion of the

Innovative Schools Network 2030 project (the ISN2030 project), a successor of the OTS project. This educational revision project, which includes three dimensions of curriculum design for competency development, pedagogical implementation of these curricula and assessments based upon these competencies, aims to continue the work of the OTS project and the DeSeCo project by acting as a bridge between theory and practical implementation. Further, work in competency education based around the key concept of active learning goes beyond the ISN, and activities implemented in the Super Science High School (SSH) project, the Super Global High School (SGH) project and the UNESCO Associated Schools Project Network in Japan have had an impact on a series of educational revisions by the OECD [13]. In addition, the Joint Initiative Project that arose from policy discussions between Japan and the OECD aims to advocate Japanese educational models internationally through the three pillars of policy discussions with the OECD, joint research with the OECD based mainly at Tokyo Gakugei University, and the ISN. These achievements are reflected in the Education 2030 framework [7].

The ISN2030 project is composed of six core clusters and fifteen voluntary clusters. The core clusters are mainly based around international exchange between Japanese high schools and other schools around the world. There are also clusters with multiple stakeholders involving proactive contributions from municipal governments and universities. All the core clusters include project-based learning focusing on local regional issues, and take on the challenge of overcoming gaps and conflicts with the global community.

Komura, the director of ISN's administrative office, summarizes his impressions of participating in the Education 2030 working group into three points [12]. First, he observed that there is a demand for action that goes beyond theoretical and ideological understanding to resolve practical issues, and for deeper education based upon this action. Secondly, there is a need for lateral and synergistic curriculum design in order to prevent curriculum overload. Thirdly, the position of "schools within regions" must be established with contributions from regional and external resources. For each of these three points, the keyword is multi-leveled cooperation. To respond to these issues, it is necessary to develop a stable network to create links between and within the multiple dimensions of learning content, different subjects, knowledge and its practical application, schools and local regions. At a minimum, this challenge is also being faced by other OECD member countries. Following its culmination in August 2017, the ISN2030 project is now undergoing discussions in view of progressing to a new phase of the project.

2.5. Educational projects involved in the Education 2030 project and other surrounding projects

The implementation of ESD within Japan, which has the highest number of participating high schools of any country around the world at over 1,000 UNESCO schools, focuses mainly on three *tsunagari* concepts [14]. In more detail, ESD implementations aim to realize the development of human resources for a sustainable 21st century society through the synergy of subjects, people and skills. They unite learning contents spatially, temporally and communally and link students with people, regions and communities outside of the school environment, and connect knowledge to practices. It shows affinity for the OTS and the Education 2030 projects discussed previously. Currently, assuming that Japanese educational initiatives geared towards 21st century competencies and the development of global human resources are integrated by the influential ESD concept, this number of schools is increasing favorably, with the following five main programs available as detailed examples.

The Super English Language High School (SELHi) initiative conducted progressive research in English education from 2002 to 2010. A total of 169 public and private high schools received SELHi designation (the designation is valid for a period of 3 years). These achievements were reflected in the improved teaching abilities of teaching staff and pedagogical range, and reopened discussions on forming connective links between junior high schools and senior high schools, as well as between senior high schools and universities.

The Super Science High School (SSH) project is an initiative which implements and develops advanced mathematical and scientific education at the high school level. It began in 2002 and continues to the present day, forming networks between designated schools with universities and regions, as well as inter-school partnerships. International partnerships arising from research activities have also contributed towards increased interest in the development of global-mindedness and the sciences, and as of 2017 there are over 200 designated schools in total (as a general rule, designation is valid for a period of 5 years).

The number of UNESCO schools (schools that are members of the UNESCO Associated Schools Project Network (ASPnet)) in Japan has been rapidly increasing since 2008, and currently the number of member schools is the highest in the world at 1037 (as of July 2017). The reason behind this rapid increase is the fact that Japan brought about a turning point in UN promotional strategy during the DESD initiative from 2005 to 2014. As base locations for the promotion of ESD, UNESCO schools carry out a diverse range of activities based upon the principles of the UNESCO Constitution. At present, there are issues concerning the assurance of quality as the

number of UNESCO schools increases, as well as debates over how to maintain balance in the positioning of schools internationally and the establishment of clear milestones to aim towards [15].

As part of its strategic growth policies, Japan has set a target of 200 International Baccalaureate (IB) authorized schools by 2018, including both schools regulated by Article 1 of the School Education Act and international schools. As of September 2017, 47 schools have been authorized. The number of schools offering diploma programs in Japanese is steadily rising, and one major challenge facing the initiative is the reduction of operational obstacles facing schools, such as budget issues and pedagogical capability limitations [16].

The Super Global High School (SGH) Program, along with the Super Science High School (SSH) Program and Super English Language High School (SELHi) Program, has its foundations in the school-based research and development program, which was established to take advantage of new education curricula and teaching methods to solve various issues in the area of education, as well as meet school educational demands. The SGH practice of Miyagi Prefectural Sendai Nika Junior and Senior High School will be reviewed in the Appendix A.

Schools designated as SGHs are allowed to prepare and implement original education curricula that does not follow national standards, such as the Course of Study. They can pursue their own research and development activities. Though the word "Global" makes us imagine enhanced English education, the objective of the SGH Program is not simply to cultivate and reinforce English ability, as in the case of the SELHi Program.

An SGH receives up to 16 million yen as a consignment grant for the first fiscal year, which should be used for personnel and travel expenses, such as for inviting lecturers from domestic and overseas universities and corporations, and for sending students to study overseas.

If an SGH is affiliated with a national university, an administration and guidance committee is established in the relevant university to provide assessment and guidance. Similarly, if an SGH is a public high school, a committee is set up in the board of education of the respective prefecture or city. Some committees provide other forms of support, too, including additional subsidies, more teachers, and preparation of curricula, etc.

Another feature of the SGH Program is the strong connections between SGHs. SGHs and associates have formed a community for the sharing of information through biannual liaison meetings hosted by Senior High School at Otsuka, University of Tsukuba.

"The objective of the SGH Program is to cultivate human resources that can take the initiative in an international setting. Therefore, the SGH Program is also positioned as a part of economic policy," says school inspector Hiromi Kawamura on the reason for the addition of the SGH Program to a series of existing globalization promotion measures in the area of education, amid national efforts to promote English education reforms and boost international study by high school students.

As for the difference between the International Baccalaureate and the SGH Program, she explains as follows, - "In contrast with the International Baccalaureate born in Europe, the SGH Program produces people with a global mindset who also possess the beneficial qualities gained through the Japanese school education system. If a corporation or international organization needs a person who can simply speak English and is good at debating, that person does not have to be Japanese. If Japanese people want to participate actively in an international setting, we need to make use of certain advantages specific to being Japanese. For example, in an international situation where you have to assert yourself and convince another party, an agreement will never be reached if all players try to push their opinions through. In such a situation, Japanese people are good at finding an appropriate point of compromise to build a consensus. Also, international society requires countries to each to take a reasonable share of any burdens. We Japanese acquire the ability to find a point of compromise and build a consensus through experiences such as homeroom activities while in elementary school and junior high school. As for the spirit of burden sharing, Japanese people learn this through the rotation of lunchtime and cleaning duties. For these reasons, we ask SGHs to cultivate human resources that are good at discussing and finding ways to reinforce their advantages as Japanese people."

The SGH Program was thus designed to reflect this original concept and applicants for the program are required to present an image of the global human resources they aim to cultivate, such as "the nurturing of global leaders to lead the international city of Nagano through sightseeing" and from Tokushima, Shikoku, "global leaders who can contribute to human health and the environment."

About theme-based research, the core of the SGH Program, Kawamura explains, "These research themes do not have to be big international themes such as North-South issues or issues on global warming. In fact, we rather recommend students to focus on local issues and introduce global perspectives so that they can more effectively relate to and address the issues. For the research theme of creatures inhabiting a local river, for example, I ask students not to maintain a local viewpoint, but to introduce global viewpoints and find global themes to solve problems, such as thinking what the differences might be from other rivers in the world. Also, real world problems are difficult for high school students to solve by themselves. We expect them to consider how they can ask for support, to visit city offices and corporations, and to research about rivers in other countries with similar problems. Ideally, we expect students to seek solutions in collaboration with people and organizations in the relevant countries."

Many SGHs organize overseas study trips as a part of their theme-based research and MEXT strongly recommends that activities should not be limited to onsite visits and exchanges with local high school students. MEXT expects students to visit other countries to discover national or global issues that can be solved through exchanges with people from various backgrounds, and to acquire a diversified sense of values along the way.

MEXT requires SGHs to include the cooperation of university researchers or corporate personnel. To avoid the tendency for narrow thinking with respect to identifying and solving problems, MEXT expects students to learn from university researchers about how to grasp certain themes and develop original ideas that are independent from existing ideas. From corporate personnel, they can learn from the perspectives and real-life situations of corporations and learn about leadership through interviews with corporate executives.

"We expect students to learn a spirit of contribution to society through executives' sense of values. When we look into the founding principles of corporations that have lasted for centuries, we find that many of them started business with a spirit of contribution to society, hoping to 'make people happier, make things easier for them, and make their lives safer,' and such a sprit has been passed down for generations. As a result, these corporations have attracted support from society, generated profits, overcome difficult periods, and survived to date. We expect students to develop their own sense of values through experiencing the spirit of such corporate executives," says the school inspector.

At the same time, high school teachers are also expected to improve their classes and build on their career education by learning from the sense of values of global leaders and corporate executives, and learning from employee training methods such as coaching.

Regarding the goals and practices of the SGH Program, some high school teachers, students, and parents may be concerned about the possibility of a delay in acquiring the academic abilities necessary for university entrance exams.

On this matter, Kawamura points out, "The abilities cultivated through SGH curricula are mostly the same as the abilities sought by universities."

"While it is often said that universities want high schools to place more emphasis on nurturing abilities for discovering and solving problems, high schools counter that entrance examinations should be changed first. However, this kind of chicken-and-egg debate brings no change in the selection of university entrants. For this reason, we do expect high schools to take the challenge to cultivate the ability of students to discover and solve problems. I believe that the standard of short essays written by SGH graduates and their responses in interviews will be higher than ever before. Accordingly, if students with such abilities increase in number, university selection criteria might also change, for example, to the style where short essays and interviews are assessed with greater weight. The SGH Program aims to cultivate excellent students who may be able to influence university entrance selection."

The SGH Program was implemented with a view to the start of a recommendation-based entrance exam at the University of Tokyo and a characteristics-based entrance examination at Kyoto University in 2016. Likewise, following designation as a Super Global University, Osaka University now plans to start a new admissions office (AO) entrance exam system in all its departments from 2017, when high school graduates who will have experienced the SGH Program from their first year of high school will enter the university.

MEXT is planning to allocate 2.4 billion yen for the SGH Program in its budget request for FY 2015 and designate an additional 100 schools as SGHs. "Although it is a tough time for students because they also have to prepare for regular entrance exams, other forms of entrance exam in which they can demonstrate what they have learned through the SGH Program will increase in the future. We hope students and their parents feel at ease in choosing an SGH designated school with the goal of becoming a future global leader," said school inspector Kawamura about the future of the program.

Finally, Kawamura added that it is possible for other high schools that are not designated as SGHs to introduce SGH practices in their curricula and provide students with what is needed to become global human resources. "For example, if they visit an amusement park during a school trip, they can include in the trip a preliminary interview with a relevant executive or corporate member of staff. I this way, students can enjoy the park while also learning on the spot whether the philosophy of the executive is reflected in the park's operations. Or, if they visit a market overseas, they can experience it from a wider and deeper point of view by interviewing personnel at the local chamber of commerce or so on beforehand and learning about any related problems such as illegal acts or unfavorable behavior by tourists."

The relationship between the various programs described above and the OECD is summarized chronologically in Fig. 2. Each program is also connected to the wide-reaching ESD initiative, and the SGH, SSH, UNESCO school, the OTS project and subsequent the ISN2030 project all have an impact on the Education 2030 framework. For 2018 onward, although these are only in terms of trends shown at the current stage, the SGH has gradually shifted their focus of interest from the development of global human resources in the humanities, which was their original focus, to mathematics and science in the current framework. Mathematical and scientific implementation in the SGH

initiative could see actions, or even detailed solutions, towards the resolution of individual real-life issues as performance tasks. On the other hand, schools have reported difficulty in observing clear results in the humanities, such as in languages and history.
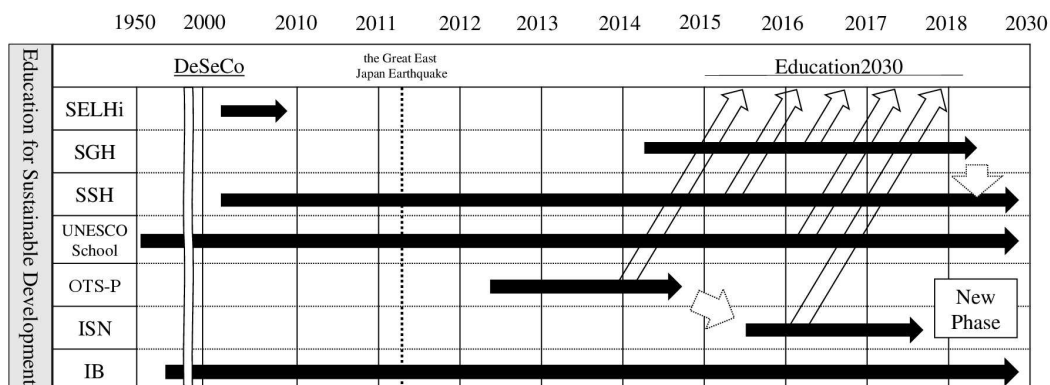

Fig. 2. Transition of coordinating OECD and education in Japan based on ESD

Table 1 shows the cumulative change in the number of authorized SELHi, SGH, UNESCO and IB schools, using data obtained from the MEXT website and from the websites of each individual program. It should be noted that for SSH, the data is displayed as a total number of schools for each fiscal year. It should also be noted that there were 15 authorized UNESCO schools up until 2005, and eight authorized IB schools up until 2002. There are numerous schools which have achieved multiple designations from different programs, developing individual curricula that utilize the synergistic effect of using the networks available for each program to produce the best results for their school.

Table 1. Total number of schools related to ESD

Year	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
SELHi	18	53	88	119	153	169	169	169	-	-	-	-	-	-	-	-
SGH	-	-	-	-	-	-	-	-	-	-	-	-	56	112	123	123
SSH	26	52	72	82	99	101	102	106	125	145	178	201	204	203	200	203
UNESCO School		15			20	24	78	152	277	367	550	705	913	939	1008	1037
IB	8	8	8	10	12	13	14	18	19	22	24	27	28	35	39	47

3. THE PRACTICE OF SYSTEMS THINKING: THE CASE STUDY OF GOSHONO GAKUIN

Goshono Gakuin High School (established 2001), has confronted many problems leading up to its 15th anniversary. One of these was the predicted effect on its school, a municipal middle/high school, caused by the opening of a new prefectural middle/high school in the same area in April 2016. There was also the problem of insufficient high school entrant numbers. Not every middle school student advanced to its high school; over half of them moved to preparatory schools in other areas. The school has had to deal with many problems like the ones above, and the teachers needed to create a more appealing school; that is, rather than relying on outside forces, they needed to improve their school from the inside.

The principal who joined this school in April 2014 faced this problem and worked to improve the school. The teachers decided to improve the school through researching an inquiry based curriculum/teaching method, with a focus on the local community. The third author joined at the same time as the teacher, and became the project director for their research promotion. Principal: "Timing is essential when trying something new. I believe that compared to the staff who were already here, the new people who joined this year, and so have no fixed ideas about the school, bring valuable new viewpoints and perspectives. I heard that the school I previously worked at was developing an inquiry based curriculum, and I think you would be suited to work promoting research as the project director. In order to improve, the most important thing is to listen to the staff members' opinions. I firstly want to understand what kind of awareness they have when teaching Heimart-Kunde, and what problems they're facing. I'd

like them to freely write down all of their thoughts and opinions." At yesterday's staff conference, she said this to every staff member: "Embarrassing as this is to say, I didn't really know anything about this school before coming here. I'd heard rumors that it was to close down eventually. Since beginning work here, I've been able to get to know the school's unique curriculum, and I think it's a great shame that there aren't many new students. We have to attract more people from outside. According to Cathy Davidson's (professor at the Graduate Center of the City University of New York) prediction: Even in our country, facing harsh times due to the sharp decline of the working age population, stagnant labor productivity, and the effects of globalization/multipolarization, the world is changing far more quickly than adults can predict, and there is a high chance that the nature of work will be completely different in the future. Surrounded by all these changes, if we continue with the same system of education we've been using, we will be unable to provide children with the abilities they'll need in the future." You can't really understand the good qualities of Goshono Gakuin unless you go inside it (work there). The OB also said it was a good school. However, there are a lot of people, locals and outsiders alike, who don't see its good points, and internal/external opinions are divided. By using innovation to improve subjects like Expressive Studies and Heimart-Kunde through active learning, the teaching method of the new era, we should be able to develop a curriculum that can raise students' abilities to compete on the world stage.

The principal's talk of wanting to improve the school was not something that came out of nowhere; with student numbers declining year after year, the topic of where the school would go from here was one often brought up in the staff room. Things like our Expressive Studies and Heimart-Kunde are unique subjects that won't be found in other schools, but on the other hand, because they are unique, there were a significant number of staff members who struggled with finding the right way to teach them. Many of our staff members felt that if we didn't do something, the school might continue to decline. This shared understanding between staff became a large driving force behind the school's improvement.

Goshono Gakuin High School is implementing kyodo-studies, the integrated studies about homeland in Tohoku, including a cuisine rich in regional flavour and geographic region for breadbasket for Tokyo, therefore rich-biodiversity and disaster-prone region. The aim is to foster human resource capabilities of thinking and acting globally on the basis of local (Akita) issues. In the first year of high school, students acquire a wide range of knowledge about Akita throughout outside teachers' lectures of Akita's history, nature, culture and so forth. In the second year, they choose one course, acquire deeper knowledge through technical lectures and experimental activities about the theme in which they get more interested, and make presentations about investigation contents at the kyodo-studies presentation. In the third year, they set their own theme and write a research paper. Systems thinking is placed in the series of kyodo-studies practices.

Systems thinking, which is a central concept of critical thinking is essential for the success of the educational reform for fostering 21st century competencies. The assessment tools that allow students to visualize systems thinking are valuable tools that take root in a cultural context as a bridge that joins local perspectives and global perspectives in multiple layers. This chapter considers the practice of Goshono Gakuin mainly by the third author, which is assimilated into one of the few global educations that is based on the practice of systems thinking in Japan, and outlines their achievements. As a result, it is made clear through individuals → group → learning processes that use the assessment tools to allow students to visualize systems thinking that (1) it becomes easier to perceive the transformation of students' thinking (they can track the transformation of learning more than many other learning processes), (2) students are able to recognize the limits of learning by themselves and be able to feel the value of cooperative learning, (3) students become capable of thinking from a bird's eye perspective, (4) students become able to visualize the future, and (5) it lifts up the students' merit that encompasses to their cultural diversity and dignity, and their range of interests will cover diverse fields that include not only the natural science point of view, but also humanities and social science points of view. These things also suggest that when you use this system you must remember the cultural factors that are involved.

3.1. The fish game in Akita —considering the conservation of biodiversity through sandfish—

Teachers at the Goshono Gakuin High School have developed and implemented a fishing game using local sandfish in science lessons, in order to introduce the practical application of systems thinking from the perspective of the conservation of biodiversity.

The Japanese character for sandfish is written as a combination of the characters for "fish" and "thunder", as large hauls of sandfish can be caught in rough winter seas which are susceptible to storms. The character for "sandfish" is also sometimes written as a combination with the character for "god" to give the same meaning, based upon the mythology that the god of thunder sent the fish to earth. For this reason, sandfish are considered to be a good omen, and are a very familiar fish to the people of Akita prefecture. In recent years, there have been increasingly poor catches of sandfish, as a response fishing restrictions such as seasonal fishing bans have been implemented (see the Appendix B). Continuing to catch and eat sandfish could result in their extinction, meaning that there is a possibility

that a familiar feature of the students' diet may no longer exist. The goal behind the game is to encourage the students to consider the context of the issue, using the fish as a "textbook" to think about biodiversity.

The key to the game is to prevent the extinction of sandfish, using the four patterns of rules listed below. The students must work in groups to decide the amount of fish that can be caught, discuss the issue with each other instead of only acting according to their own opinion. They learn through the process of solving the issue by themselves, by working out how they can stop the fish from declining, how they can increase and maintain their numbers, and consider the causes of the problem. The game was developed using materials from The Cloud Institute for Sustainability Education.

Ground Rules:
- Students must work in teams of 4 or 5.

- Assuming that there are 20 tons of sandfish in the fishing waters, take turns to catch the fish within the team.

- The class group which catches the highest number of sandfish wins. Fishing can be carried out 10 times in total, but the game ends if the sandfish become extinct.

- Using each pattern of rules, produce a graph to show 1) the quantity of sandfish currently available, 2) the quantity of sandfish you have caught, and 3) the quantity of sandfish caught by your class group.

- Reflecting upon your team's fishing strategy by examining your records and the changes you observed.

Table 2. The rule of the fish game

Rule	Description
Rule 1	Each turn, each person is allowed to catch up to three tons of sandfish. However, you must continue to catch the same quantity of fish decided in the first turn for each subsequent turn. You may increase the number of sandfish remaining by 25% at the end of each turn .
Rule 2	Each turn, each person is allowed to catch up to three tons of sandfish. You are also allowed to change the quantity of sandfish caught each turn. You may increase the number of sandfish remaining by 25% at the end of each turn.
Rule 3	Due to restrictions from the fishing cooperative, each person is only allowed to catch one ton of sandfish per turn. You may increase the number of sandfish remaining by 25% at the end of each turn.
Rule 4	Each turn, each person is allowed to catch up to three tons of sandfish. You are also allowed to change the quantity of sandfish caught each turn. You may increase the number of sandfish by 15% at the end of each turn.

After the game ended, the students shared the following reflections:
- The cause of the issue is that the quantity of fish caught to be eaten is greater than the quantity that is replenished. I think that measures need to be taken to prevent this burden on the population, such as fishing for the minimum quantity needed.

- With these settings, isn't extinction the only possible outcome of the game? More needs to be done to minimize the quantity of fish caught in each turn, such as banning fishing during certain years. I think we also need to think of a way to cultivate the fish.

- Reducing the quantity of fish caught is only one strategy. It's also not a good idea to reduce the quantity caught by a large amount. Although they are part of our diet, there needs to be a focus on conservation, developing fish farming methods, and the preservation of places in which they can lay their eggs.

- I think it's important to give the sandfish a good habitat to live in. Trash gets swept into the water from overseas, and this doesn't have a good impact on the fish. We must keep the seas clean.

The students approached the problem from multiple perspectives in their teams, working out sustainable methods to balance environmental, economical and social priorities, in order to prevent the sandfish from going extinct while catching the maximum fish in their class group. Through this experience, they realized the difficulty of solving the issue. As a follow-up activity, the students also read an article on sandfish fishing. By introducing them to new aspects of the issue, relevant legal regulations, issues with international relations and cultural differences, the article provided the students with an opportunity to become aware of discoveries and *tsunagari* that they would not have been able to make within their teams alone.

3.2. Making a connection circle with peers through an article about the regulation of mackerel fishing

3.2.1. The content used, and the teaching process

After working on the fish game method about the local sandfish, students shifted their focus on mackerel fishing in Japan and China to learn from global perspectives. This theme change led them to consider the international relations, and at the same time, they could make use of knowledge created from the local perspectives. In on science class, the third author as a teacher selected a newspaper article with the theme of the tightening of regulations on mackerel fishing as an assessment task, and followed a meticulous process in order to make the start of systems thinking to which the students are unfamiliar with easy (see the Appendix C).

Table 3. A summary of the class syllabus

Aim: To try the visualization of thoughts using tools that cultivate systems thinking.
Material: "Nations agree to limit mackerel boats"   (August 27th, 2016, created as a reference to the Yomiuri Shimbun News Paper)
Method: Read the material, and select keywords you think are important.   Arrange these keywords in a circle and connect related terms with a line (create a concept circle).

The order of learning activities:
     Step 1 / Personal activity: select keyword form the material and show their relationship in a chart.
     Step 2 / Self assessment: confirm your plan for tackling the work.
     Step 3 / Peer assessment (Stage 1): read the article and deepen your understanding.
     Step 4 / Group activity (Stage 2): write the keywords and organize them and make a connection circle.

3.2.2. Step 1 / Personal activity

First, the students read the material they were given and selected important keywords. Next, they showed their relationship in a connection circle. From the keywords in connection circle they made, frequently appearing keywords made up an additional 30 words. Here, 76.7% of all the keywords are terms that are in the article, and it was found that many students quoted terms as published in the article without modifying them and have reflected them in their charts.

The keywords were China, Japan, mackerel, pacific saury, regulations, fisherman, a catch, fishing resources, mackerel fishing, dinner table, boat, the number of fishing vessels, disguised ship, over fishing, sardine, high class fish, cheap fish for the masses, fishes, domestic management, protection, price, benefit, prolonged war, farming, citizens, humans, domain, home, eel, large fish (Underlined terms are terms that are in the article (makes up 76.7% of the all terms).

3.2.3. Step 2 / Self assessment

Next, the students and their teacher reflected on the personal activity that was based on the dialogue as a whole class, and tried to reach a common understanding of a few points about what should be kept in mind when writing connection circles. They reflected on the points that they were not aware of, and their teacher urged those students who were inspired by their classmates' opinions to pay attention when doing the following group activity.

3.2.4. Step 3 / Peer assessment

After that the students created groups and reread the article. In order to deeply understand the contents of the article, they consolidated points that were hard to understand and questions with their peers, and shared their opinions and impressions. Through deepening their awareness of a fact, they develop a breadth and connection to their thinking. For example, the advancement of keywords of the dialogue from "regulation" to "situational awareness" can be seen in Stage 1.

Table 4. A classroom conversation that took place while talking about "regulation" (Stage 1)

Speaker	Classroom conversation
Student A	"They agreed to set the size of their catches."
Student B	"I think that there needs to be regulation, because they will all disappear!"
Student C	"Even if you regulate it, I don't think anyone would know if those who proposed the regulation hid how much they caught."
Student A	"I guess there is no meaning if people lie...."
Student B	"Right."
Student C	"On top of that, we don't even know how much there are to begin with."
Student D	"I think the ability to understand is important. In one sense or another, how many fish are there? How much do we need to fish? You also need to think about the state of other countries as well."
Student C	"That's true. I also think it's important to understand the situation."

Also, applying the work everyone did as an anchor, the students and their teacher created four criteria regarding the product of a connection circle like the following one, and shared it with the entire class.

- You are able to analyze the information in the material accurately, and chosen vocabulary is not biased.

- The relationship of connected keywords is clear.

- It uses easy to understand symbols (inequality symbols), and is designed in a way that you can visually understand.

- When you see the chart, the flow reminds you of the article.

3.2.5. Step 4 / Group activity

For the students to start making their group connection circles, their teacher had them once again find keywords that they thought were important to the theme and materials, and also reminded them of their own words. When they did that, they consolidated the keywords by doing things like changing concrete terms into something abstract, and by taking out the bad and leaving the good terms. As a result, they proposed an additional 39 words; big eater, frozen, repelling, the number of fishing vessels, catch size, rules, grasp, protection, North Pacific Ocean, China, aquatic resources, drying up, ecosystem, loss of jobs, Japanese food, eel, fisherman, farming, selective breeding, rise in prices, influence on other living things, consciousness, endangered species, protection, resources, amount of consumption, culture, domestic, abroad, amount of resources, dinner table, worth, price, amount of consumption, regulations, friendly relations, the world, situational awareness, and work.

The students, who had started the visualization of their collection circles using the above 39 keywords, were deepening their understanding of the facts between cause and effect through learning activities with their peers and

questions that they had from the discussion with their teacher (Stage 2). Additionally, the fact that there were lots of cases that the students borrowed words directly from the article when doing the personal activity is contrasted by the fact that during collaborative learning they replaced them with new words that they created that were not in the article.

Table 5. A classroom conversation that took place while creating their collection circle (Stage 2)

| Speaker	Classroom conversation
Teacher	"You have a lot of vocab words, but what kind of relationship do they have? Show the relationships by connecting them with lines. Also, show if the cause was positive or negative using symbols (instructed to make a loop chart)."
Student A	"I wonder if it is a negative for the fishermen when regulations get tighter."
Student B	"What do you mean?"
Student C	"When regulations get tighter, they can't fish. Then, because there are less fisherman, it's a negative."
Student A	"That's right."
Student B	"So that's what you mean."
Student A	"What will happen to friendly relations (when regulations become tight)?"
Student B	"I'm pretty sure they'll get worse."
Teacher	"What do you mean when you say friendly relations will get worse?"
Student B	"When they can't fish, they will have to fish together and relations will get worse."
Student C	"That's probably true, let's say it's a negative relationship."
Student A	"And conversely, when the amount of resources grows, friendly relations will get better, right?"
Student B	"Yeah, it's a plus."
Student C	"Yeah, that's it."
Teacher	"Please try and talk about the relationship of other things like you just did. What do you think about the relations near us? (Talk about selective breeding.)"
Student D	"Won't farming get bigger when you selectively breed? That seems like a positive to me."
Student A	"When farming gets bigger, so does the amount of resources, right?"
Student B	"Then, that had a good effect on the dinner table. It's a positive."
Student D	"Because the dinner table gets better, I think the consciousness to protect will rise."
Student A	"When that happens, because it also connects to the protection movement, it's a positive."
Teacher	"You have a lot of positives, but is more positives good?"
Student A	"I think it's good to have a lot of positives. If they are these kind positives, if feels like we are only saying idealistic things that are good."
Student B	"Right. But I don't think it's good to have a lot of negatives."
Student D	"I think negatives turn into thoughts of wanting to improve them."
Everyone	(Words of agreement.)
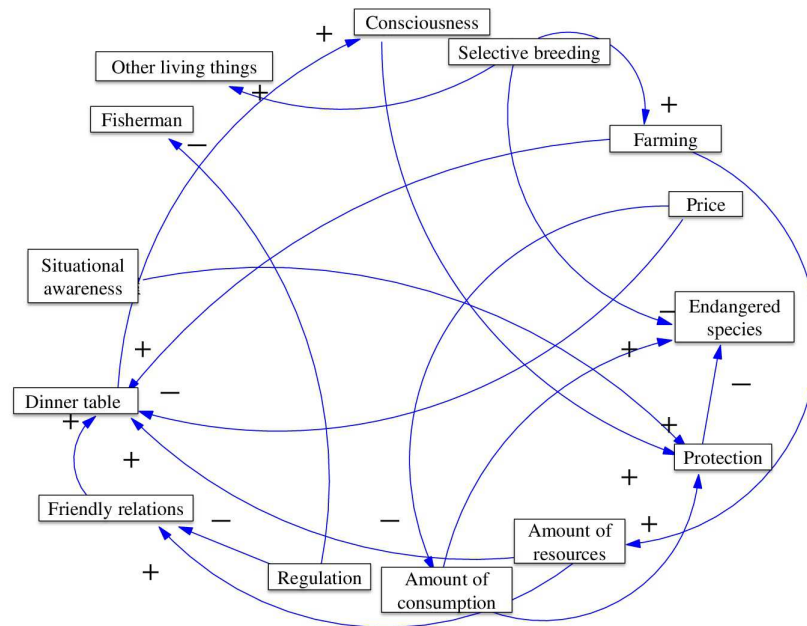
Fig. 3. A connection circle based on systems thinking (the work of a group)

Terms that were refined/used in the group activity are 14 words: price, regulation, dinner table, fisherman, selective breeding, farming, protection, amount of resources, amount of consumption, friendly relations, situational awareness, consciousness, endangered species, other living things (underlined words are terms used in the article (28.6%)).

3.2.6. Observation

In stage 1, they grasped the task regarding the ways of regulation with a comprehensive eye that is situational awareness in relation to the natural limit value (supply) and the amount that is needed (demand). In stage 2, they focused on regulations from the standpoint of the preservation of nature. The students perceived the strict regulations as leading to the worsening of friendly relations at home and abroad, and caught a glimpse of the view that leads to the co-development of nature and humans. They settled at the view point of nature preservation in a long-term schedule by painting a future scenario where, you should encourage the increase in the resources through selective breeding farming, assess the situation of dinner table and the protection awareness will rise. The view point of approaching people's inner lives such as "consciousness," "situational awareness," and "friendly relations" rather than the scientific view point was created through a cooperative dialogue that surpassed the newspaper article. Also, in the connection circles that the students made individually, they took notes like: "I would like them to follow the set guidelines," regarding the Chinese regulations on mackerel catch sizes; "The food that is at the core of Japanese cuisine will disappear," "The culture that is so important to Japan will collapse," as the influence that the decrease of the fish for the masses "mackerel" will have on the dinner table. In this way, the systems thinking that is practiced is suggestive of the contribution to putting into words the learning process that impacts values that go back to the culture at our feet, and reexamines what position is desirable for humans to face nature, as well as understanding the causal relationship that is based on a scientific and technical viewpoint.

Values are thought of as an important concept that we should assess, even in the conception of the Education 2030 project [8]. The side of assessment has values (attaching value to human dignity, and attaching value to cultural diversity), in addition to knowledge, skills, and attitudes. Students aim for the acquisition of global competency while concerting the four elements. Because of this, if you use causal relationship loop diagrams and feedback loop charts that are designed and visualized based on systems thinking as assessment tools, they will shed light on the systems thinking that embosses the personal background including values.

Although the connection circle the students finished this time was not a loop, and didn't show the typical system pattern (such as the self-reinforced loop, and the balanced loop), in an interview survey given to students after the activity with the teacher, there were a lot of comments seen here and there that said they felt the significance of cooperative learning with their peers. For example, you can see a trend that terms towards problem solving increase

when you use cooperative learning, such as "consciousness," "protection," "situational awareness," "friendly relations," "selective breeding," and "regulations." Groups are an environment that creates positive terms that are directed towards problem solving and future predictions while using known knowledge, along with hearing others opinions being a golden opportunity to reflect on their own thoughts [17]. It can be seen that the comments obtained from interviews with following two students realize the significance of finding the whole and relationship, on the basis of collaborative learning with peers and the demonstration of multifaceted thinking.

Student 1

"Firstly, when I took on the work and saw other people's worksheets for the first time, I thought it was great that they had a completely different point of view, and had drawn their lines in ways that I would never have thought of. I thought it was very nice that everyone would always include what I had done too when we were making them together. For example, mine didn't have a lot of lines coming from one part when I compared it to what everyone else had done, but I still thought it would be good to connect them together in a loop as well. I was left with the realization that globalism and the environment are very closely related. For example, with the advancement of globalization comes benefits such as exports, but the increase in industrialization needed to obtain such benefits has an increasingly negative effect on the environment, and that's how I considered the two to be connected. So, with regional studies etc., where the way of thinking about studying has changed, I investigated the internationalization of regional studies, taking 'Society and Akita' as a theme, and researched about global water issues. Then my studies focused on Ethiopia, and I learned many things that you cannot fathom while leading a normal life. Take drinking water for example, in truth there are only 13 countries that can drink the water that comes out of their taps. I never would have thought that. I don't think you can learn things like that from normal classes at all, so that was useful."

Student 2

"After I took on the work, I realized it's important to have a multifaceted perspective. If I just think by myself, I feel things are going to go in one direction no matter what happens. So, not surprisingly, when everyone was together and contributing, I felt able to see things from perspectives that I couldn't see for myself before. This experience has made me want to have a flexible way of thinking that considers things from other sides, rather than thinking about the future arbitrarily as one outcome. How does that sound? With this loop picture, at first I had the somewhat biased view that it was increasing, no matter what. Yet, as expected, when I changed my perspective I found a variety of ways of looking at it, like, 'Really, it's decreasing here,' 'This is interrelated,' and, 'It's unilateral here,' etc. Lastly, I feel I could have expanded more on even the words which I couldn't regrettably allude to. That may be something I regret slightly. "

Comments from the other students after the activity:
- I think that "consciousness" and "situational awareness" are keywords that did not appear in the newspaper article.

- "Endangered species" was not used. Because I have the image of preserving wildlife, I did not connect it to the things we eat. Speaking of which, tuna is an endangered species.

- I could not imagine the words that appear in the article, and only superficial things came to mind, but when we discussed it, I was able to think of the other side, the background, and things that I could not see.

- As the discussion continued, I thought that many ideas for improvement plans (facing the future), because lots of thoughts were coming from other people.

On the other hand, when the practice of Causal Loop Diagram (CLD) based on systems thinking from the perspective of teachers is reviewed, the following two teachers observed the situations in which peer learning deepened individual learning. It was clarified that as a result of combining the students' voices and the following teachers' comments, teachers were not in a position of teaching. They had a characteristic of facilitators who elicit deeper learning, thereby maximizing "student agency" that let students seize knowledge from associates, reviewing and polishing their own thinking, and deepening independent learning with high motivation. It can be said that

systems thinking is an important pedagogy that promotes self-regulated learning and is involved in the development of their assessment literacy.

Recently, Goshono Gakuin High School implemented a writing brush activity as an advanced performance task, which included the destruction of nature related to ESD and *Satoyama*. *Satoyama*, is a word referring to the state in which there exists an ecosystem that is influenced by peoples in the hills and mountains adjacent to a settlement or habitat, or similar geographical conditions. As seen in settlements and houses in Japan, fear caused by vague boundaries with nature, and life that coexists with nature, such as outskirts of country and sacred shrine forests, turned into reverence and appreciation. The homeland rich with mountains and rivers, adjacent to the sea, and blessed with abundant blossoms is called *kyodo* in Japanese.

Teacher 1 (a research collaborator who works for Goshono Gakuin High School for more than one year)

"That student is usually calm and a type of student who does not express her opinion in a class through her appearance on group learning situations that link keywords in a loop. She could do it this time again. After that, she was talking about 'laws' with her friends nearby, staring at remaining sticky notes. It was good to see her serious thinking. Teachers must in a stance to grasp and watch over students' endeavor because it is a student-oriented collective CLD work. I should have said something to students (e.g., 'how do you think about this?'). I regret that I did not do it enough. Students who are not good at expressing themselves in front of a group of people would also show their own ideas by using the CLD figures and share them with others through group works. They think they could find out the validity of their own thinking by listening to others' opinions. Any students could harness their own abilities."

Teacher 2 (a general manager of individual research who works for Goshono Gakuin High School for more than seven years)

"I think the quality of individual research that is a compilation of the local study. I think that the attempts in which the presentation of the local study (doing at the second year) which improved its content three years ago shifted to the guidance of all teachers and we gave guidance to associate it with other subjects led to individual studies at the third year. I was not involved in CLD work directly, but I saw a number of students who organized their own thinking by drawing such figures before writing. It seems that they make use of that methods in accordance with their own learning stages and level of understanding. I think it has good means to enhance the adjustment ability of learning."

4. CONCLUSION

From where does the sensitivity to the *tsunagari* as practiced in Goshono Gakuin High School come from?

Goshono Gakuin High School has three points that stand out. The first is its cross-curricular education; by integrating the different subjects, it can develop students' competency. The second point is its small size. Smaller schools can adjust more easily to large changes. To explain using a metaphor, if the rudder of a large ship turns too suddenly it will capsize, but small ships can turn quickly without capsizing. They're more maneuverable. So, they can respond more easily to changes. The third point is the high awareness level of its staff. The teachers have a fighting spirit; there was a sense that they had to do something.

When creating rubrics to clearly lay out the criteria, they would actively try to get other teachers involved. With this foundation of sincerity, a spirit of curiosity, and mutuality, rather than showing what they've created from the top down, they bring out the parts that make use of each teacher's specialist knowledge and expertise. They worked from the bottom up. They aimed to make it so each member of staff could be involved in the school's overall improvement.

When linking the cross-curricular Local Studies (Heimart-Kunde) with other subjects like physics/biodiversity, we asked for assistance from staff. Below are things the teachers said of their own volition.

Physics teacher: "There's no need to make big changes to learning units or the way the class progresses. I want my class to be linked to Heimart-Kunde so that it can be as relevant to the class material as possible."

Japanese teacher: "At the moment, the theme of my class is "Poverty in the North/Poverty in the South." I think it's related to Heimart-Kunde, so I'd like to incorporate that into my class."

English teacher: "We are working on writing English compositions where the students use English to make an argument for how Japan's energy sources should be. I think that the two subjects are linked for students researching people and the environment. I think it can be done."

Geography teacher: "There are only six students in the geography elective. They'll be the only ones involved, but there is a need to teach them sociological ways of thinking and viewing the world, so I'm willing to try it."

Home economics teacher: "I've worked here for a long time, and I was thinking I'd like to try conducting the class from a cross-curricular perspective. I'm happy for this development. Home economics has a lot of teaching material that develops the attributes needed for a sustainable society, so I'd like to try it."

Heimart-Kunde is a unique curriculum based on the local community. Its purpose is to develop a glocal perspective, where students think about issues on a global scale through activities rooted in the local area. They aimed to create a shared understanding among staff that Heimart-Kunde is a curriculum designed to help develop these attributes/abilities. We also think that the conversations they had to create shared awareness of issues among staff in order to improve, while performing practical research, played a role in building collegiality among teachers.

In addition, the relationship between the modality of human existence and nature will be clarified from the perspectives of Indra's jewel net, Sue no Matsuyama, and Japanese systems thinking.

Indra's jewel net refers to the nets hung on Indra Palace. Gems are decorated in its knots. Each gems shine by illuminating one another, and then own shining gives shining to other gems, symbolizing that the whole comes into existence under mutual relationship. Kenji Miyazawa, a distinguished writer and poet born in Iwate prefecture in Tohoku region wrote a fairy tale titled "Indra's Net" by using Oriental thinking that each gem is indispensable for reflecting other gems, and the world continues by linking each life as one gem in an unbroken line. Here it was shown that the main character who fell down on the grasslands perceives the complex world through a sense of seeing and hearing and wanders into Indra's nets, representing the idea of life that comes into existence by *tsunagari* of everything and the cosmic view of peaceful coexistence with nature. Miyazawa did not treat individuals as the matter that can be separated from one another, as represented by *tsunagari*, emphasizing that the cosmos is identical with the one that exists there and shares life with one another [18].

In this way Miyazawa's philosophy was heavily influenced by the Lotus Sutra, but his involvement with the world view in Tohoku region where he lived is also seen. According to Nakazawa, it is "the world of greeting," in which even Tohoku people who usually do not speak a lot "disclose" themselves at the moment of greeting, and they do not need to maintain the "opening" with words after that [19]. Kenji also consider that we can greet every kind of nature without saying a word, so that characters in his book get involved in every existence such as light, plants, and animals, and shared life with one another.

To be sure, seeing the whole net without seeing each gem on the Oriental characteristic sometimes leads to the neglect of responsibility and the vulnerable claim of a right [20]. But the OTS project triggered the rediscovery of cultural characteristics of Japan and Tohoku because it had strategic ambiguity for involving distributive leadership and multi-stakeholder became the key to create open space for solving complex tasks by a team.

There is also a culture of worshiping nature under the thought of polytheism (Shinto) that seeing nature and god in a unified manner and believing that gods live on all things in Japan and Tohoku region where lives were weaved with natural disasters from a long time ago. In other words, the Japanese have incorporated disaster experience into their own culture and converted it into learning environment that leads to PTG (Post Traumatic Growth) and resilience since 1,100 years ago.

Kiyohara no Motosuke (908-990), the father of Seisho Nagon who wrote *Makura no Soshi* known as one of the three greatest literatures in Japan, wrote the following *waka* (traditional Japanese poem) when Tohoku region was hit by Jogan earthquake that occurred in Sanriku-oki in 869 [21].

We pledged our love.
Wringing tears from our sleeves,
we both vowed
nothing would part us,
not even if great waves
engulfed the pines
of Mount Forever.

On Jogan earthquake hit by tsunami which is comparable to the level of the Great East Japan Earthquake, tsunami became an expression incorporated into a lot of *waka* of love as a metaphor of unlikely events based on a historical fact in which it did not reach *Sue no Matsuyama* (pines of Mount). The above Japanese traditional poetry was chosen as one of *Hyakunin Isshu*, the collection of splendid *waka*. Hokokuji, where *Sue no Matsuyama* is located coincidentally, is in the same district of Tagajo High School, which has the Department of Disaster Science which was established as the second department of disasters in Japan.

There are school songs whose lyrics are about the local history that has developed through the ordeal of tsunami in schools facing Sanriku Coast devastated by tsunami in the Great East Japan Earthquake. The school song whose lyrics are "look up at the tide embankment, a series of challenging tidal waves, we must overcome them for our

land" has been sung in Taro Daiichi Junior High School in Iwate prefecture, the place where Kenji Miyazawa was born, since 1951. Students and teachers in this school, which suffered damage by tsunami in the Great East Japan Earthquake, made an original chorus based on the earthquake experience. It is engaged in education for reconstruction whose cornerstone is the love of own land.

A change of thought occurs due to these spiritual tradition and cultural background. Systems thinking promotes the understanding and development of tasks not only on organizational level but also learning activities in classrooms. Although it is necessary to introduce the practice of systems thinking that has been practiced widely in Europe, the United States, and other place, we must understand how to perceive it in Japan systematically before making it technically modified and introducing it as the best method. The Japanese way of systems thinking whose basis lies on the theory of life that is in harmony with nature derives from Japanese traditional culture. In Japan we seek perspectives that perceives the world from the local, multi-dimensional connections, and the practice of systems thinking based on relations with nature.

The field of ESD and global education presupposes that humans are incorporated into the natural system in order to deal with complex tasks, therefore, it has been called the limit of mechanical paradigm as scientific fundamentalism that rejects values and morality [22]. Yet, there is systems thinking that accords with the philosophy of mechanical paradigm. Kitahara and Ito interpreted it as Hard Systems thinking (systematic perspective) and regarded Soft Systems thinking (systemic perspective) as Japanese Systems thinking. This is thought that arises out of the respect and development of the existence of every life with the pursuit of coexistence with nature (others) [23]. It incorporates even the part of values and sensitivity formed with the influence of individual life experience, tradition, and culture. One of the factors that enhance the coevolution of the self and the others lies on contextualism society that is alive in the emphasis of relationship with nature (others) on the basis of Japanese culture [24].

To understand the features of Japanese after the devastating earthquake, the following eight components to survive disasters have been statistically revealed: (1) leadership (the attitude or habit of gathering and organizing people), (2) problem solving (the attitude or habit of strategically tackling problems), (3) altruism (the personality trait that leads people to care about and help others), (4) stubbornness (the personality trait, attitude, or habit of sticking to one's desires or beliefs), (5) etiquette (the attitude or habit of conforming to social norms in daily behaviour), (6) emotional regulation (the attitude or habit of endeavouring to stay calm in difficult or strained circumstances), (7) self-transcendence (the awareness of the meaning of one's life from a spiritual perspective), and (8) active well-being (the daily practice of maintaining or improving one's physical, mental, and intellectual conditions) [25]. There exists mindsets that assess and emphasize not the self and parts but the whole and relationship on the eighth. It is not unrelated to the fact that *collective consciousness* (the situations in which collective unconsciousness is consciously expressed by instilling it into traditional culture and customs) is historically fostered on the backbone of the Japanese including in the article. It affects pedagogy, assessment, and curriculum on education. For example, a view of improvement (*kaizen* in Japanese) by teachers, students, and communities helps to create the network of school organization in Japan, which is highly contrasted to school environment in the West and other Asian countries [26].

The purpose of this research is to clarify the true identity of learning environment cultivated in cooperative relationship between OECD and Japanese education after the Great East Japan Earthquake, and show that *collective consciousness* that exists as a basis of culture in Japan enhances the quality of the practice of global education through the analysis of pedagogical practice; systems thinking that is seen from spiritual tradition and cultural aspects of Japan. The analysis suggested that a series of projects with OECD made us discover social cultural network that has been implicitly constructed and helped to create context that is able to be visualized through systems thinking.

We can also point out that education projects based on a variety of ESD including OECD projects in Japan promote the construction of School-Based Professional Learning Communities (SBPLC) and School-Based Initiative that sheds light on local perspective [27], and spiritual tradition becomes a driving force of global educational reform. We expect multifaceted and careful assessment in and out of school, the designing of curriculum based on local orientation and integrated studies peculiar to Japanese education, and the development of competency-based assessment through the practice of pedagogy by systems thinking embedded in Japanese cultural foundation.

Systems thinking is a useful assessment tool that visualizes *tsunagari* on the practice of global education. Cultural context that weaves life through interdependence with nature and the involvement with others in Japan is rooted in Japan. We expect the practical extension of systems thinking as pedagogical approach as a method that visualizes *tsunagari* that has been implicitly existed and contributes to extend the practice of global education.

Acknowledgements

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Appendix A. The SGH practice of Miyagi Prefectural Sendai Nika Junior and Senior High School

A.1. Acquire skills to contribute to the global society and gain the power to survive

In fiscal year (FY) 2010, Miyagi Prefecture Second Senior Girls High School made a new start as the reformed coeducational and unified public junior and senior education school, Miyagi Prefectural Sendai Nika Junior and Senior High School. Among its important educational objectives, Nika Junior and Senior High School aims for the "fostering of global leaders" who can carry on Japan's future and play an active role in international society. The school was designated as a Super Global High School (SGH) by the Ministry of Education, Culture, Sports, Science and Technology in 2014 and is now rapidly developing its educational activities.

The school's SGH program has centered on exploratory studies since the school was reborn as a unified junior and senior education school in FY 2010. In preparation for the school's commencement, discussions focused on what the school's new defining feature would be. The answer was exploratory studies in "a program of integrated studies" (IS).

A.2. Students investigate themes related to "the world's water problems"

Let us look at the outline of exploratory studies at Sendai Nika Junior and Senior High School, including the transitions to date.

Students first learn the basic skills needed for exploratory studies during their three years in junior high school before the full program in their first year of senior high school. During the first year of senior high school, an exploratory studies class is taught once a week for two consecutive periods, carrying two credits. In line with the common theme set as "the world's water problems," students decide their own research themes depending on their individual awareness and interests. The former common research theme, "environmental problems," was deemed to be too broad and was replaced with the new, more focused theme in FY 2013 to take advantage of the students' fieldwork experiences at the local Kitakami River and research-based studies on the Mekong River (as described below).

In the exploratory studies class, students belong to a study area in one of two categories: "International Study" (IS), where solutions are sought through human methods, or "Scientific Research" (SR), where solutions are sought through natural scientific methods. Depending on the areas of expertise of teachers each year, six to eight areas of study, such as literature and history for IS and chemistry and biology for SR, are provided for students. Teachers take charge of their respective study areas in pairs, with varying combinations of study areas each year. Students choose their study areas from the provided options, carry out research on their respective themes, and prepare a thesis by February after an interim presentation in the summer.

In the second year, the class on exploratory studies carries one credit. The common theme is "water problems in Asia" and the study is linked with an overseas study trip, such as to Singapore, or Guam. Activities are centered on research-based study conducted prior to the study trip. In FY 2014, for example, students read documents written in English about Guam's history, economy, culture, etc., analyzed the characteristics of the country and its current problems, and prepared a booklet for the study trip. After returning home, the students compiled a report summarizing their opinions and experiences of the study trip.

In conjunction with individual exploratory studies, first-grade students engage in activities to deepen their understanding of water problems. In September, they participate in overnight fieldwork at the Kitakami River. The river once had mines operating along it and still has facilities to neutralize mine drainage. Students visit the facilities and plant trees to neutralize the sulfur drained from the old mines. The objective of this fieldwork is to have a deeper understanding of the water problems in the local area and discover ideas that can contribute to students' exploratory studies.

In order to nurture a global perspective, students also learn an overview of water problems in the world. In particular, all students are assigned research-based studies on the Mekong River, one of the most important rivers in Southeast Asia, and several students are selected to travel to the Mekong River to participate in onsite fieldwork.

A.3. From integrated studies to school-set subjects "theme-based research I, II, and III"

From 2015 onward, the school's framework on exploratory studies has changed from integrated studies to "theme-based research I, II, and III," newly set by Nika High School in accordance with the exemptions provided for SGH-designated schools. In the first year, activities formerly conducted as IS and SR are conducted as a compulsory subject under the name of "theme-based research I" (three times a week, three credits). Students learn the skills necessary for exploratory studies, while also carrying out research and studies related to water problems in the Tohoku region and the Kitakami River through fieldwork and other activities.

In the second year, students choose either "theme-based research II A" or "theme-based research II B." For "theme-based research II A" (three credits), students investigate further into their respective themes based on their exploratory studies in the first year. Fieldwork at the Mekong River is also scheduled, for which participants are selected from among many applicants based on a comprehensive assessment of their motivation, research content, and language ability, etc. In "theme-based research II B" (one credit), activities are centered around the study of water problems linked with an overseas study trip (mainly to Asian countries). In 2015, 45 students chose "theme-based research II A" and 195 chose "theme-based research II B."

A.4. Collaboration with outside organizations and human resources is growing each year

Let us now look at the details of "IS" and "SR" conducted in the first year until 2014.

Teachers in charge of each study area organize students into four or five groups, each of which consists of four to five students whose research themes are relatively closely related with each other. Since students in the same study area may belong to different classes, these small groups are also inter-class.

Exploratory studies classes are carried out in these groups. Formerly, each group set a research theme and students in the group shared study tasks, which were then summarized into a thesis. However, this system was changed several years ago, and now each student sets their own individual research theme and summarizes it in a thesis, while also collaborating with other group members to conduct research activities. This way, students can complement each other through task sharing of research-based studies and through the exchange of opinions on their theses, while also emphasizing individual thinking.

In 2014, study areas such as "water quality," "ecosystems," and "flood control" were provided and students conducted exploratory studies on themes such as "how to get clean water," "the relationship between Japan and Thailand: situations in rural areas," and "the influence of water price fluctuations on our daily lives." At the end of the year, students are expected to present their research achievements in front of members of the same study area and receive comments from teachers and outside lecturers. Finally, the theses are compiled into a book for each study area to summarize the year's activities.

Collaboration with outside human resources and organizations is key for exploratory studies. Relationships between the school and outside organizations such as Tohoku University and the Japan International Cooperation Agency (JICA) have deepened year by year, resulting in an increase in the number of lectures by visiting specialists and opportunities for receiving advice on research themes and content. In addition to university teachers, graduate students also visit the school to assist students with one graduate student assigned per group.

For "theme-based research I" from 2015, students participate in exploratory studies in the same manner as before, but study areas are set differently. In contrast with "IS" and "SR," where the study areas were decided depending on the areas of expertise of the teachers, the study areas are now set depending on the areas of expertise of outside human resources. The three areas being provided in FY 2015 are: "human activities," "economics," and "environmental disruption/disasters". Several subthemes are provided for each study area, such as "the relation between water problems and everyday meals in Japan" and "hydroelectric power and dam construction," from which students choose one to be their study theme. Teachers here act as advisors to assist students with their exploratory studies, and as coordinators to connect students with outside human resources.

Pioneering Spirit : Be Progressive and Creative Loyal Service : Be Sincere and Contribute

GLOBAL LEADERS who truly contribute to the international society

5 abilities which we want our students to have as global leaders
① "Appropriate world view" as global citizens who live in the modern world
② "The power of empathy" which they can use to accept other people's feeling
③ "Ability to relativize" their own thoughts and positions by listening to diverse opinions
④ "Insight into the nature" of the cause and the structure of a problem
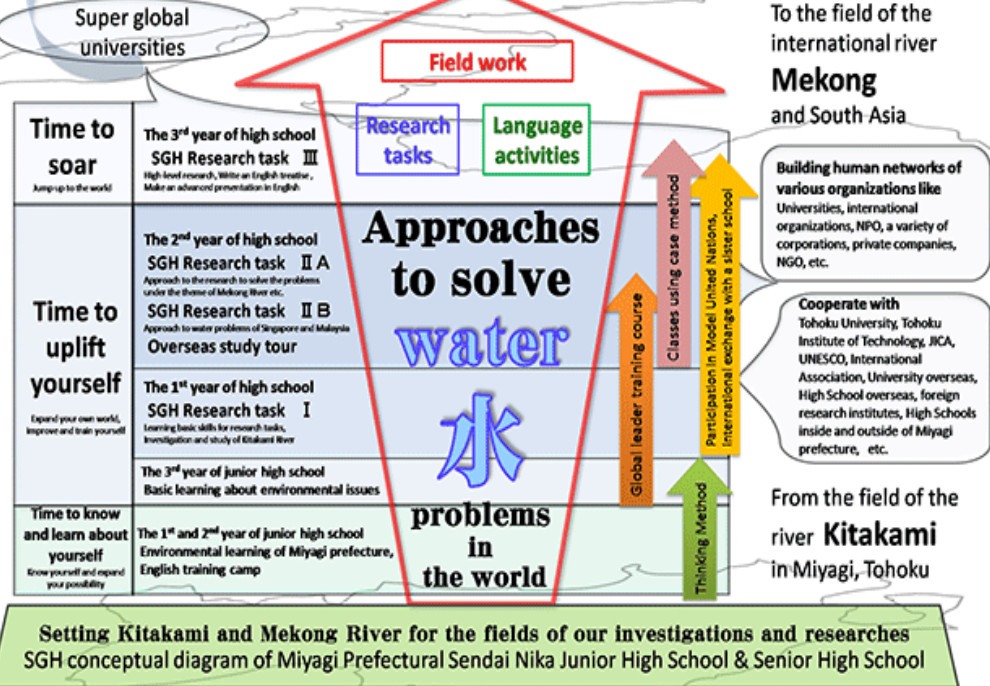⑤ "Conception ability" to embody the ideal situation of human being and society

International organizations
International companies

Super global universities

Field work

Research tasks   Language activities

To the field of the international river **Mekong** and South Asia

Time to soar
Jump up to the world

The 3rd year of high school
SGH Research task Ⅲ
High-level research, Write an English treatise, Make an advanced presentation in English

Approaches to solve water 水 problems in the world

Building human networks of various organizations like Universities, international organizations, NPO, a variety of corporations, private companies, NGO, etc.

Time to uplift yourself
Expand your own world, improve and train yourself

The 2nd year of high school
SGH Research task Ⅱ A
Approach to the research to solve the problems under the theme of Mekong River etc.
SGH Research task Ⅱ B
Approach to water problems of Singapore and Malaysia
Overseas study tour

The 1st year of high school
SGH Research task Ⅰ
Learning basic skills for research tasks, Investigation and study of Kitakami River

Cooperate with Tohoku University, Tohoku Institute of Technology, JICA, UNESCO, International Association, University overseas, High School overseas, foreign research institutes, High Schools inside and outside of Miyagi prefecture, etc.

Global leader training course
Classes using case method
Participation in Model United Nations, International exchange with a sister school

The 3rd year of junior high school
Basic learning about environmental issues

Time to know and learn about yourself
Know yourself and expand your possibility

The 1st and 2nd year of junior high school
Environmental learning of Miyagi prefecture, English training camp

Thinking Method

From the field of the river **Kitakami** in Miyagi, Tohoku

Setting Kitakami and Mekong River for the fields of our investigations and researches
SGH conceptual diagram of Miyagi Prefectural Sendai Nika Junior High School & Senior High School

Fig. 4. The conception picture of SGH of Sendai Nika

		Theme-based research I	Theme-based research II A				Theme-based research II B
			Mekong River/Southeast Asia				
		Kitakami River/Tohoku region	Brackish-water region, sea, fishing village	Mountain tribe, mountain village	Farming village, rural areas	Urban city	Singapore/Guam
Perspectives for considering water problems	Human activities	History of flood control of Kitakami River by Date family and rural development/ History of flood control by Sendai City/Healing effect of water scenery/Relation between water problems and everyday meals in Japan	Difficult labor environment related to shrimp farming/ Illegal laborers from foreign countries and human rights	Shortage of clean water/Poverty/ Infectious diseases/ Migrant labor/HIV/ Poor education on public health	Water worship/ Water festival/ Shortages of clean water/ Poverty/ Infectious diseases/ Migrant labor/HIV/Poor education on public health	Delayed infrastructure due to rapid development/ Shortages of water for daily living/ International support for water and sewerage services	Chronic water shortages due to a lack of water sources/ Shortages of water for daily living/ Security risk of relying on water supply from foreign countries

Economics	Water rights disputes in Isawa district/ Development of water and sewerage/ Hydroelectric power and dam construction/ Rapid and slow filtering at filtration plants	Loss of livelihood due to cutting of mangroves/ Fair trade/ Local production for local consumption and the world economy/ Merits and demerits of commercial crops/ Decreased fishing hauls due to overfishing	Infrastructure development and political hostility	International water problems of rivers/ Monopolies of upriver countries/ Securing agricultural water/ Fair trade/Local production for local consumption and the world economy/Merits and demerits of commercial crops/Virtual water/Weather index insurance by Sompo Japan Nipponkoa	Population increases and economic development/ Securing of industrial water/ Oligopoly by water businesses/ Battle between Japan's fisheries and leading major businesses/ Hostility between political rivals	Shortage of agricultural and industrial water/Costs of producing fresh water
Environmental disruption/disasters	Environmental disruption by dam construction/ Drainage treatment of old Matsuo mine/Tree planting on the former site of the Matsuo mine/ Tsunami and flooding	Cutting of mangroves due to shrimp farming for export/ Water pollution at abandoned pond/ Salt damage due to global warming	Slash-and-burn farming/ Farmland conversion/ Occasional flooding due to poor water retention caused by forest disruption from deforestation	Dilemma between village development and environmental disruption/ Pollution by upriver countries/ Arsenic poisoning in deeply dug wells	Ground sinking due to too much groundwater pumping/ Arsenic poisoning in groundwater/ Increased flood damage due to global warming	Forest preservation for securing of water supply/ Measures to minimize damage from typhoons/ Typhoons and industrial activities

Fig. 5. Themes of "Theme-Based Research I and II," FY 2015

Appendix B. Transition of sandfish catches in Akita prefecture

The following data was retrieved from Akita prefecture web site: http://www.pref.akita.lg.jp/pages/archive/3435. H12 (Heisei 12) on the Japanese calendar means 2000 on the western calendar.
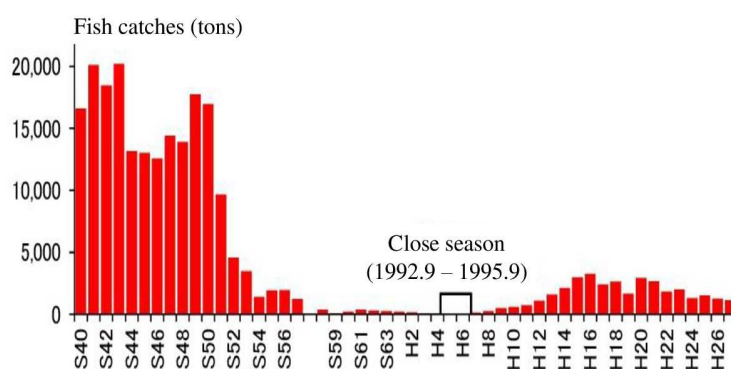
Fig. 6. Transition of sandfish catches in Akita prefecture

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Appendix C. The material about the limitation of the number of mackerel boats

The article by Yomiuri Shimbun News Paper, August 27th, 2016.
Title: Nations agree to limit mackerel boats.

An agreement to adopt a Japanese proposal to limit the number of mackerel boats has been reached at an international meeting to discuss protecting fishery resources in the northern Pacific Ocean.

However, questions about the agreement's effectiveness remain because of strong objections from China, which is trying to grow its domestic fishing industry.

The Japanese government sees the agreement, which was adopted Friday, as the first step in protecting mackerel resources. It intends to continue working with other parties to strengthen regulations, though it is unclear if this will prove successful.

The North Pacific Fisheries Commission first met last year at the request of the Japanese government. The other participants are China, Canada, Russia, South Korea and Taiwan.

Regarding mackerel, the talks resulted in an agreement that included a recommendation not to increase the number of fishing vessels, and a plan to survey matters such as the amount of resources in the near-term.

The Japanese government was initially hoping to clearly oblige each country and region not to increase their number of mackerel vessels more than now, but the final agreement stopped at the weaker "recommendation."

The agreement is not enforceable, and one possible loophole remains whereby using larger boats would allow for bigger catches without increasing the number of boats.

How effective will it be?

The Japanese government's desire to strengthen regulations on mackerel fishing is in response to rapidly increasing catches by Chinese vessels in international waters.

Japanese mackerel vessels mostly fish in Japan's exclusive economic zone (EEZ; see below), and rarely venture into international waters.

However, 20 Chinese mackerel boats operated in international waters in the northern Pacific adjacent to Japan's EEZ in 2014.

In 2015, this number increased to 80 boats that took in 134,846 tons of mackerel - at least five times the previous year's haul.

Nations are free to operate in international waters as they please, but the Fisheries Agency is worried about a negative effect on the Japanese fishing industry if Chinese boats continue to overfish in waters close to good fishing grounds in Japan's EEZ.

To manage mackerel resources, the Japanese government limits the total mackerel catch by domestic fishermen to 822,000 tons per year.

The actual catch has ranged from 400,000 to 600,000 tons, and the price has been stable at about 100 yen to 120 yen per 100 grams.

In China, increased health awareness and rising incomes have led to more fish consumption.

According to China's National Bureau of Statistics, total production by the marine products industry increased from 53.73 million tons in 2010 to 66.9 million tons in 2015.

According to the Chinese society of fisheries science, China's mackerel haul for 2015 was 470,000 tons, or about the same as Japan's catch.

Chinese people do not eat mackerel regularly, but salt-grilled mackerel at Japanese restaurants and sushi establishments has become popular.

China's expanded operations in international waters in the northern Pacific are seen as part of efforts to fill its giant "stomach."

"China strongly resisted" Japan's position during the three-day meeting, a senior Fisheries Agency official said.

A source said China feels that regulations do not need to be strengthened when it is still unconfirmed that the mackerel population is decreasing.

This indicates that the Chinese government does not have the same sense of crisis about managing fishery resources as the Japanese government.

The final agreement appears to be a compromise between Japan and China. This leaves Japan with the problem of how to ensure China will abide by it.

-- Exclusive Economic Zone

An area of sea located outside a country's territorial waters (within 12 nautical miles of the coast) that extends 200 nautical miles (about 370 kilometers) from the coast. Countries have preferential rights to develop marine and other natural resources within their EEZ, but vessels from any nation are free to pass through them.

Sage on the Virtual Stage: Releasing Your Social Persona to Captivate your Learning Audience

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Abstract

One of the key lectures in many teach preparation courses is the famous "Sage on Stage" dialogue between the master instructor and his or her learners. However, just like the days of Aristotle, the learning environment is ever changing, and due to virtual technological enhancements in business and education – the learning environment has now gone virtual. With the virtual enhancements and ever-changing demands of today's instructional staff, teachers need to do more than just the "Sage on Stage". Rather, an educator today has to deal with new learning software, e-books, and social media in order to stay abreast of new technological and teaching requirements. In fact, with the retirement of many Baby Boomer instructors, many educational systems are rushing to recruit and train new instructors, in particular, even non-traditional candidates with the necessary education as needed by accrediting bodies are being considered. As a result, many of the incoming candidates need expediated instructions and teaching mentors to help the quickly prepare for this new phase of their professional development. Consequently, the need for more Sage on Stage is a requirement for a number of growing faculty/teacher preparation training courses. As a result, this paper will focus on this transition from the traditional stage to a virtual one, along with an analysis of the characteristics of today's Sage in order to teach, train or mentor new faculty members.

Keywords: social media, online learning, adult learning, teaching philosophy

1. INTRODUCTION

While teaching is centuries-old profession, it has been either praised, admonished, and even threatened by some cultures. During the day of Socrates, he would prepare his students by educating them with current knowledge and being prepared for life's lessons and a whole new world of discovery. In fact, some of this "magic" or "mystery" of teaching was limited to only a select group of learners, since learning was only enjoyed by certain members of society as deemed appropriate by the given culture. While education has changed over the centuries, learners still have the same problems and issues today. In fact, not all learners may achieve competence over specific course concepts, objectives, ideas or theories. Consequently, the Socratic Method has been useful over the centuries, some learning methods have changed over the years, educators have had to "re-think" their approach for their student in terms of mastery of content knowledge, as well as its application.

Hedberg (1981) wrote about the concept of "unlearning" in order for people to get past previous ways of thinking and learning and to enable them for a new way of approaching learning. Thus, in order for universities to compete in today's growing market, they may need to unlearn some types of strategies in order to better learn different ways to strategize. [1] Further, Hedberg (1981) noted that "knowledge grows, and simultaneously it becomes obsolete as reality changes. Understanding involves both learning new knowledge and discarding obsolete and misleading knowledge." [2] Thus, the world, as we know it, now evolves, and technology developers continue to add more "apps" designed for various type of technology tpo expand knowledge and innovation. Therefore, this

expansion requires students to learn more technology, while still trying to obtain current core content knowledge to prepare them for the real-world experience. As a result, we may have questions as to whether our current teaching methods and core competencies are a sufficient for today's learners and tomorrow's workforce in order for them to best achieve high performance and well-educated graduates? On the other hand, we may question whether some educators or educational institutions are still adhering to the "status quo" of traditional teaching methods to maintain the "acceptance and normalcy" of our academic community?

In any event, it should be noted at this juncture that while change is an on-going process in our society, we need to question whether members of our teaching profession are truly keeping up to date with leading trends, teaching techniques and strategies, and continuously improving upon our courses and programs of study? While we, as instructors, focus on various "core content items," the question is whether we are engaging our students enough to want them to excel in their field of student? This is where our students need the Sage on the Stage to share our wealth of knowledge and to enlighten them with the tools of research and discovery. Finally, do our students find our courses and programs of study stimulating and motivational enough to help them focus on the mastery of content knowledge? Finally, Knowles (1987) noted that "everyone [learners] should be able to participate and control their own learning process." ([3,4] To put this into more context, we have to realize that most of these adult learners are returning back to education to gain more content knowledge, enhancing skills sets, and learn more technology. Also, they are realizing that many organizations are starting to recognize the importance of their workforce and seeing them not as employees or a number, but rather as a form of capital. In particular, this leads to another leading thought – will our students have the necessary skills for tomorrow's workplace.

In the literature, we find a variety of studies on workplace studies, but now the time to look fast forward and consider the workplace of today with more technology and increase needs for faster data collection/retrieval in order to meet the needs of business. Harris (2000) noted that the "new workplace requires a new type of employee, one who is highly skilled, flexible, creative, and attuned to working as a member of a team" (p. 1). [5] In order to prepare our students as this new type of employee, we need to offer different types of recruiting and hiring methods to find the best-qualified instructors. Consequently, we need to focus on training online instructors to be able to work with the training entity, whether it be an institution of higher education or training learning programs, in order to develop and design, implement, and evaluate current and future educational and/or training course offerings. Finally, education, as well as training and development, for the workplace has evolved continuously, and the Ivy Tower of Academia will have to make concessions and implement changes in order to meet these needs. In the next section, we will overview the field of online learning and teaching preparation in a new learning environment, known as online learning or virtual learning.

2. LITERATURE REVIEW OF ONLINE LEARNING AND TEACHER

While education has changed over the centuries, the literature also has changed. In fact, the mediums used to communicate the expression of ideas, as well as to memorialize our thoughts, research, and learning overall has moved from papyrus to memory sticks. From the drawings of stories on caves by prehistoric man, we now organize our stories and communication in terms of communities online or as some called communities of practice. However, for the purposes of this discussion, we will focus on online communities as one way of learners and instructors interact with each other in the learning and sharing process. Preece (2000), these online communities "consists of people who interact socially as they strive to satisfy their own needs or perform special roles; a shared purpose that provides a reason for the community; policies that guide people's interactions; and computer systems to support and mediate social interaction and facilitate a sense of togetherness" (p. 10). [6] Thus, we need to focus on some important questions that administrators and instructors need to consider as they consider the design and development of online learning and how they can use this learning to best reach the needs of the learning community.

- Do today's instructors utilize a variety of teaching strategies and techniques to meet the needs of online learners in terms of learning from the various forms of cultural differences in the virtual classroom in order to enhance the learning experiences of all?

- Do teachers fully appreciate the value of a diversified, online learning community and create an opportunity for these adult learners to share and build upon their own experiences?
- Finally, do these instructors (whether traditional or non-traditional educators) follow curricular constructs to conform to traditional educational methods and practices, instead of trying to evolve and adapt to the needs of this ever-changing, diversified student population?

While we consider these questions in the context of learning, especially online learning, we need to understand a little about the new types of teaching candidates apply for jobs, especially in light of the exodus of Baby Boomer teachers now retiring and causing a decline in available teaching faculty. In 2005, the WEA and AFT Taskforce wrote that, "Part-time instructors bring unique skills and expertise into workforce preparation and academic classrooms. Employing part-time instructors allows colleges to offer more classes, when and where students need them and the ability to respond to emerging student, community and business needs. However, low salary levels, variable working conditions and over-reliance on part-time faculty have contributed to staffing concerns in Washington State and nationally - as colleges and universities absorb greater numbers of students without appropriate funding." [7] While more and more part-time teachers are being recruiting, it is due to the growing need for more online courses, which are growing faster than previously anticipation. A key study in the United States showed that there were more traditional students moving from traditional, Face-to-Face (F2F) classes to the non-traditional online learning environment. In this study, Babson College (2015), there were several interesting findings published that help educators and educational institutions to understand this new brand of learning, now known either as adult learners, online learners or virtual learners. The following were the key findings reported:

- "A year to year 3.9% increase in the number of distance education students, up from the 3.7% rate recorded last year.
- More than one in four students (28%) now take at least one distance education course (a total of 5,828,826 students, a year to year increase of 217,275).
- The total of 5.8 million fall 2014 distance education students is composed of 2.85 million taking all of their courses at a distance and 2.97 million taking some, but not all, distance courses." [8]

Further, they discovered that these figures on online learners revealed additional demographics to be considered (Babson, 2014).
- Public institutions command the largest portion of distance education students, with 72.7% of all under-graduate and 38.7% of all graduate level distance students.
- The proportion of chief academic leaders that say online learning is critical to their long term strategy fell from 70.8% last year to 63.3% this year.
- The percent of academic leaders rating the learning outcomes in online education as the same or superior to those in face to face instruction is now at 71.4%.
- Only 29.1% of academic leaders report that their faculty accept the "value and legitimacy of online education."
- Among schools with the largest distance enrollments, 60.1% report faculty acceptance while only 11.6% of the schools with no distance enrollments do so." [9]

While the literature has focused on the reasons why many people are apply for online teaching positions and students apply for online programs, the rest of this section of the paper will look at the characteristics of teachers and requirements for online learning.

It should be noted that teaching is not for everyone, and some people do better in traditional teaching environment, but it has been observed that people who are technology savvy – online teaching and learning may be the best approach. Thus, let us look at some of the characteristics of an online educator, as described in the following segment.

2.1. Characteristics of an Online Educator

As noted earlier, not everyone can be or would like to become an online instructor. However, it is should be noted that in some academic universities, some current faculty are being "forced" to take these online teaching training programs due to the rising need for more online instruction. In particular, some institutions may only want to train current teachers who are more acquainted with the current educational (organizational) culture. Nonetheless, many potential candidates may have a variety of reasons for applying or online instructional jobs. For some applicants, online teaching is a wave of the future, and for others it may be a more convenient option for a teaching career or a part-time job. For purposes of this discussion, here are some characteristics of online instructors.

- Many online teaching positions are being filled by part-time instructors.
- Many colleges and universities have found that this helps to reduce some administration of benefits and pay – so part-time faculty have been a "quick fix" for their current need.
    - Part-time adjuncts are used more than full-time faculty.
    - They usually work a full-time job, along with teaching part-time for one or more online programs.
    - There has been an increase of instructors teaching online that have online degrees themselves.

Consequently, may academic institutions which offer online courses and program offerings, they are filling their current (and anticipated) online teaching positions with adjuncts in order to meet this growing demand. Why are this the growing trend? Well, rather than recruiting full-time, permanent instructors and paying full benefits and salaries, these academic institutions are seeking an immediate temporary workforce to fill their immediate needs. However, prior to their selection for hire and training, some universities have a set of technological requirements needed by potential candidates as described in the next section.

2.2. Technological and Skills Requirements of Online Educators

While it has been the researcher's experience, as well as many other colleagues, most people may not enjoy driving to a physical classroom or lecturing for periods of 2-3 hours straight. Also, some may see this as an opportunity to teach in their own home or office on an arranged schedule. However, most educational institutions have to check the applicant's education, experiences, and technological skills sets. Therefore, some of these skills range from technological, educational, teaching and/or relevant work experience. Listed below are some questions to quickly overview some of the skills necessary in each of these areas.

- Technological Skills
    - Is the candidate computer literate?
    - Can the candidate use email, word processing, and spreadsheet software?
- Educational Skills
    - Does the instructor have a master's degree with at least 18 graduate credits in the given subject area?
- Teaching Skills
    - Has the candidate taught before (private or public sectors)?
- Work Experience
    - Does the candidate have work/industry experience?

Now that there has been an overview of online learning and requirements for the recruitment and selection of potential online teaching applicants, the next section will provide an overview of this Work-In-Progress on the online teacher training program of a current university with varying online degrees ranging from Bachelors to Doctoral degrees.

3. METHODOLOGY OF WORK-IN-PROGRESS APPROACH

While this is still a Work-In-Progress, this has been a summary of the researcher's observations on the teaching approaches and strategies used at a leading university with a strong online learning program which is over two decades into its infancy, but yet still developing. Before any an online class is assigned, the instructor must go

through online teacher training. While some experienced instructors may question taking additional training, this helps to reinforce established teaching principles, as well as give a holistic approach to online teaching and technology.

Thus, what do these online instructors learn during this type of training program? In order to best prepare a candidate for any online teaching position, it should be noted that all candidates are carefully selected by HR and then by the educational administrators. Department chairs are notified by potential candidates, but no candidate is submitted for departmental review until they have completed the entire teacher training successfully. This training offers instruction in the field of what is online learning, what are learning styles, how to operate the educational software for the learning management system, and examines the policies and procedures of the educational institution. Finally, throughout the training the instructor will have more time to adequately assess if a potential instructor (candidate) is doing well enough in training to become one of our online instructors. If they do complete the course with a possible need for additional reinforcement, the use of in-house coaches and mentors, who are current online teachers will be used. Further discussion on the topic of coaches and mentors will be held later in this paper.

3.1. Methods of Instruction

Traditional, most course instruction was given in a physical, live classroom. However, over the past several decades, this type of course environment has changed with the introduction of distance education or what is called online learning. Listed below are some examples of components, or activities, offered in Traditional Teaching and Online Teaching.

Traditional Teaching
- Classroom Lecture - Live

- Demonstrations - Live

- Assignments - Live (or in Syllabus)

- Classroom Discussions - Real Time

- Exams - Timed or Distributed

Online Teaching
- Classroom Lecture - Recorded or Live

- Demonstrations - Recorded or Live

- Assignments - Posted for Students

- Classroom Discussions - Discussion Threads or Real Time Discussions

- Exams - Timed or Distributed

The following section will highlight the key components taught by the researcher for a six-week teacher training program geared for both the experienced and inexperienced instructor.

3.2. Instructor Strategies Training Program

- Module 1 – Teaching and Learning

During this module, students learn about the various communications tools used in the online learning environment. Potential instructors examine and discuss how adults learn. Also, they explore how teach and learning are connected.

- Module 2 – Teaching Strategies

In this particular module, students learn the important of time management and how to effectively plan their teaching schedules. A key focus is on team facilitation and conflict management strategies. While we hope that all learning experiences are positive, instructors need to know how to handle conflicts that may occur.

- Module 3 – Helping Students to Think Critically

Please noted that in this module, students will look at Bloom's Taxonomy and how it is used in course design and curricula. There is a key discussion on the connections between teaching and learning theories. Finally, potential instructions will discuss how critical thinking is used in the classroom.

- Module 4 – Providing Feedback

During this module, students will look at sample student work and critique it with the use of a standard rubric. They will focus on various criteria, as well as applying comments on APA style and format.

- Module 5 – Ethical Issues

Why is confidentiality important in the learning environment? Students will look at the problems associated with plagiarism and learn how to use a plagiarism database. Finally, the class will explore critical issues of disability, harassment, and the Family Educational Rights and Privacy Act (FERPA).

- Module 6 – University Teaching – Policies and Procedures

It should be noted that during this final module, students will learn more about their role and function as a facilitator in online learning. A key discussion will be held on the university's mission and how it reflects the university's culture. Finally, the instructor will lead a discussion on how to follow correct procedures when certain policy issues arise.

Finally, upon completion of these modules, the course instructor prepares an overall evaluation for each participant in the course. Thus, it should be noted that the instructor should determine that a candidate would best benefit from additional mentorship or coaching, the instructor will recommend this on the evaluation form, as well as discuss these facts with the program manager. Further this discussion on this topic will be found in the next segment.

3.3. coaches and mentors

Not all applicants may test well or exhibit their best qualities, this is why the field of education needs to be open and consider other forms of instructions. In cases when potential online candidates may not be a strongly "matched or fitted" for online teaching jobs, they can be given a "second chance" with the use of a coach or mentor in their first and/or second course to mentor their growth. It should be noted that coaches are used when a new instructor may not be too assured of online teaching – or is recommended by the trainer as a reinforcement tool for the learner. However, some universities may use different terminology and/or definitions, and they may employ the use of mentors. For example, mentors are usually assigned for the first 1 or 2 courses that a new online instructor is assigned to (a good measure, which is another Industry Standard). In any event, seasoned educators are recruited to fill these positions, in order to help work with new online instructors to help guide them during the early part of their online teaching careers. Finally, if the mentor or coach sees that the mentee has shown notable improvement, they will make the recommendation to the appropriate teaching recruiter and/or department chair.

4. CONCLUSION

To re-emphasize the key theme of this paper is the infamous adage of the Sage on Stage or rather the new Sage on the Virtual Stage. Today's online learning environment needs such Sages in their environment, as does the traditional learning environments. While learning may be in face-to-face classrooms and online, educators today are now seeing the benefit of being skilled in both learning environments. Nonetheless, not all instructors can teach in

both learning environments – but yet, each hav their own skills sets and talents. As more and more academic institutions see applicants to fill the void left by the departing Baby Boomer instructors, we also need and will always need more Sages on the Stage. Thus, one possible recommendation for future study may be in the area of measuring the wisdom and impact of varying levels of Sages and in terms of their efficiency and effectiveness.

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Providing Accessible Data Visualization

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Abstract

In a modern and digital society information and data have become one of the most important resources. Data is needed in order to understand the current situation and to predict future trends. Data is also an unavoidable tool in education, scientific research and development of new technological solutions. Despite the importance of data for both research and development activities the issues regarding presentation of data in an accessible manner is still one of ongoing challenges and visually impaired are still not able to deal with data in an adequate way in many cases. Data mining and big data research trends have made this problem even more prominent. In this paper an overview of a number of possible solutions for accessible data visualization is given, along with the analysis of characteristic of these solutions and possible future trends in accessible data visualization development.

Keywords: data visualization, accessibility, tools, visually impaired

1. INTRODUCTION

The importance of information and data in a modern world that is highly dependent upon its digital infrastructure cannot be overstated. Information science and information technology has become of vital importance and many students tend to choose this direction as their career path. However, the increasing amounts of data that need to be analyzed in order to make a proper decision or conclusions have become increasingly more challenging for the visually impaired computer professionals. This kind of situation has been made additionally prominent by modern trends in research and development, such as data mining and big data science. For years visually impaired computer professionals have used computers by utilizing aiding software, such as various text-to-speech synthesizers, screen readers and refreshable Braille displays. The list of more known aiding solutions of this type includes the following software tools [1; 2; 6; 7; 9; 11; 14; 20; 22; 25; 28]:

- Kurzweil 3000
- Window-Eyes
- NVDA
- JAWS
- Narrator
- NaturalReader
- Orca
- VoiceOver
- Talkback
- BrailleBack
- Capti Narrator

Incorporation of graphical user interfaces into computer usage has made the challenge of reading the screen content far more prominent. It can be said that the days of a simple but effective screen readers are gone. For example, a Windows screen reader nowadays has to be able to function with numerous web browsers and it has to provide both speech and Braille access. As the major browsers become more sophisticated and software designers find new ways to display text on the screen, the screen readers must be updated to accommodate those changes. Many factors make it difficult for screen readers to stay up-to-date with the ever-changing computer environments. Screen reader designers are almost always behind the curve because software designers do not tend to make them aware of upcoming changes ahead of time. Based on mentioned facts, the need to develop new and more effective

aiding tools has become an imperative. This direction is compliant with the social model of disability [24] which, opposed to the medical model of disability [24], examines the disability as a result of the way the systems and society are organized. In this context the tools that are being developed serve as adding solutions that are designed to help visually impaired and people with other disabilities to overcome the barriers that restrict their activities and their possible choices. The issues of presenting various data in an accessible way present ongoing problem that affects visually impaired students, scientists and professionals. As such, this problem needs further efforts to be resolved in a satisfactory manner. In this paper, an overview of a number of different existing solutions for accessible presentation of data is given, along with the discussion about the future trends in the development of accessible data visualization solutions.

2. ACCESSIBLE DATA VISUALIZATION CHALLENGES

When considering data visualization usually complex graphs with many details and different colors are used. However, when considering accessible data visualization these concepts cannot be used as such. World Health Organization (WHO) reports that there are about 314 million people worldwide who have some form of visual impairment [26]. In the case of visually impaired users, two main aspects need to be addressed when developing appropriate aiding technology [13]:

- The first aspect is the need to substitute visual sensory information with another type, such as haptic or auditory.
- The second is to try improving or rehabilitating parts of cognitive ability since visual impairment does not only impair a part of sensory information, it also leads to spatial and social impairment at the cognitive level.

When taking into consideration the previously mentioned aspects it can be concluded that when trying to create an accessible data visualization one has to keep in mind several important guidelines, such as:

- All data graphs need to be made as simple as possible.
- All colors should be simplified and made distinct enough one from another.
- The number of colors should be brought to a minimum.
- All elements and fonts should be enlarged.

Guidelines as the ones previously mentioned are important because when substituting sensory information by using haptic media, sonification or audibilization one has to keep in mind that these modes of representations do not enable the users to perceive as many details as visual mode. Based on this fact, when considering converting a data graph into haptic or audio format, one should remove all unnecessary details that could distract the person from perceiving what is really important and one should always keep in mind that these formats require much more concentration and that the users are not able to keep such large quantities of information in their mind at once, compared to visual sensory information.

The same arguments can be stated when talking about the other guidelines. For example, when trying to represent data graph in a haptic format it is imperative that all colors which are close one to another are distinct enough. This will then enable representation of these colors as different textures. Keeping in mind that it is not easy to distinct textures in a haptic manner one has to make textures that are close one to another different enough to be distinct and not perceived as one and the same texture.

Another aspect that needs to be considered when creating accessible haptic graph is the fact that if one wants the graphs to be usable and perceivable it is necessary to keep the number of colors represented by different textures to a minimum because the number of different textures that can be recognized and remembered at once by a person is limited. Since the amount of information that can be perceived through a haptic interface is considerably less than the amount of information that can be perceived through vision [12], multimodal representations or augmented haptic representations of data graphs are sometimes used in order to enable the users to perceive improved data graphs representation by using haptic devices, sonification and various Braille devices.

Almost all modern Braille displays not only provide Braille output but also contain Perkins-style keypads that enable the users to navigate and operate the computer from the Braille device if they choose to do so. While multi-line Braille displays may not yet be on the horizon, the cost of single-line refreshable displays is coming down

considerably. Not only will most current Braille displays function well via USB in the Windows environment, but they can also be paired via Bluetooth with an iOS or Android mobile device. All previously mentioned and many other aspects present a set of challenges for the developers who are creating technological solutions for accessible data visualization.

3. SOFTWARE TOOLS USED FOR ACCESSIBLE DATA VISUALIZATION

Many various software tools for accessible data and graphs visualization can be found with different characteristics and options. The list of this kind of software solutions includes the following tools [4; 5; 8; 10; 15; 16; 17; 19; 21; 23; 27; 29]:

- Multimodal Graphs
- Pie Chart Sonification
- MultiVis
- BATS
- Graph Builder
- TACTICS
- 3D Shapes Visualization
- exPLoring Graphs
- VizTouch
- MathTalk
- Highcharts
- SAS Graphics Accelerator

All mentioned software tools attempt to overcome the barriers that data visualization imposes on its visually impaired users. Although there are many different solutions available, data mining, big data science and trend of constant increase in data amounts and its importance has created additional demands and many more challenges for this kind of aiding tools. For example, if one thinks about accessible visualization of data then it is far less challenging to represent a small amount of data or small data tables then trying to represent big data. In some cases it would be convenient to create a subset of big data or summary tables that can represent the core information which could then be made accessible in an easier manner. In the area of refreshable Braille displays and refreshable tactile displays a great effort has been put into trying to make affordable refreshable Braille displays as well as refreshable tactile displays which would be suitable for displaying various graphics in a haptic form [3; 18; 30; 31; 32]. The efforts to make these displays as affordable and detailed as possible represent an ongoing challenge.

4. CONCLUSION

In this paper, the discussion about the different aiding solutions for visually impaired computer users has been given, along with the overview of a number of different tools that are available and that provide aiding solutions for screen reading and accessible data visualization. Assistive technology that enables accessible representation of graphics has also been mentioned and reflected on. It can be concluded that visually impaired computer users have been able to use computer and provide professional programing services for years by using assistive technology in the form of various text-to-speech synthesizers. This situation has been changed when graphical user interfaces have been introduced which has made computer usage much more challenging for visually impaired since the existing aiding technology was not sufficient to describe the context of the graphical screen content.

The importance of data analysis and visualization has become even greater when data mining and big data science emerged as a trend in modern research and development domain. Although there are many different solutions available that can help visually impaired in using computers, reading screen content and interpreting the data, many challenges have yet to be resolved through the future development of new and improved aiding technologies. Some of these challenges include accessible visualization of big data and further development of accessible graphical representation technologies. Detailed analysis of existing technologies and emerging development trends regarding accessible data visualization and other assistive technologies for visually impaired and people with other type of disabilities will be a part of the future research.

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A Statistical and Historical Analysis of India's Economy

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Abstract

During the last several years, a country that has been making serious moves towards becoming an industrialized country and changing its status is India. The authors' purpose in this paper is to do an evaluation, historical, political and economic, to determine how successful India is, and where it is headed. In our attempt to do that we are going to start with an in depth economic analysis, which will give us the tools to derive conclusions.
The rest of the paper will concentrate on statistical analysis. In order to do that, we are going to present economic data for India for about 36 years, including the GDP, unemployment, inflation, exports, imports, net exports, the growth rate and population. After we analyze the data, we are going to run several regression models, to show us the impact that one indicator had on others, and at the same time determine which economic indicators are the most important for India's economy.

Keywords: India, stronger, growth, development

1. HISTORICAL BACKGROUND

In this section we are going to do an in-depth research into India's history, to present to the reader a solid background of India. After all our history is the basis of our future.

India, as will be discussed later in a time line, has a history of more than 5000 years. Obviously we cannot discuss and present everything that took place over these years, but we are going to discuss some of the most important events that played a major role in India's development.

Geographically, India has always been very attractive to invaders, of which some were the Persians, the Greeks, the Chinese, the Arabs and the British, but even though all these invaders went through India, they were not able to stay very long or influence the culture of India.

India's history shows us that the first invaders were the Aryans, around 1500 BC. The Aryans that came from the North brought with them cultural traditions that we can find in India even today. The Aryans remained there for about 700 years and then moved on to occupy the Ganges Valley and built their kingdoms there.

The second major invasion, took place around 500 BC, when two Persian kings, Cyrus and Darius conquered the Indus Valley. The Persian occupation did not last very long since Alexander the Great and the Greeks invaded and occupied the region around 326 BC. The next major development in India was the dynasty of the Maurya, and their king was Ashoka. The Mauryas conquered almost the entire subcontinent. King Ashoka also introduced Buddhism to most of central Asia, but the Maurya Empire lasted only 100 years after his death.

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The next invaders were the Muslims, under Mohammed of Ghor, during 1192. The Turkish kings that ruled the Muslims stayed there until 1397 when the Mongols invaded. In more recent years, India was under British control, and this lasted for about 300 years. India had some good years under British control, but they finally got their independence under their great leader Gandhi by 1947. When the British left though, they created two separate

states, Pakistan and Bangladesh. When the British left, the first Prime minister of India was Jawaharlal Nehru, and he kept that office until his death in 1964. Ever since then, India has been a parliamentary democracy.

As was mentioned earlier, India has a history of more than 5000 years, which of course cannot be discussed in a few pages. So below we are going to present a timeline of the most important years and events of India's history.

INDIA TIMELINE

2500 BC	Dravidian civilization
1500	Aryans invade India
518	Persians conquered Pakistan
326	Alexander the Great invaded India
322 – 182	Mauryan dynasty
320 AD	The Gupta Indian dynasty
700	Muslims invade India
1498	Vasco de Gama – the first European explorer
1526 – 1857	Mughal rule in India
1857	First war of independence
1858	India comes under direct rule of the British Crown
1905	British divided Bengal into Hindu and Muslim sections
1935	The Government of India Act and the creation of a new Constitution
1948	Mahatma Gandhi assassinated
1962	War with China
1964	Death of Prime Minister Nehru
1971	Third war with Pakistan
1984	Indira Gandhi assassinated and son Rajin becomes Prime Minister

Again this is not a complete timeline for India, as a history of thousands of years cannot be presented in just a few pages, but we presented some of the most important events and years.

2. CURRENT LITERATURE

This section will present the current economic situation in India. We all know what happened in the world economy since 2007; although India was affected, as the information will show below, it was not affected as much as the rest of the world.

India is a country with an abundance of natural resources, such as coal, iron ore, manganese, titanium ore, natural gas, diamonds and petroleum among others, and it is able to take advantage of all these resources and benefit out of them, but it also has a number of environmental issues, such as deforestation, soil erosion, air pollution, water pollution, and the fast growing population is using all these natural resources at a very fast rate.

On a different economic aspect, India is developing into an open market economy, where economic liberalization and industrial deregulation are obvious everywhere. As a result of this, India's average growth rate since 1997 is more than 7% per year, during 2016 and 2017 it is expected to grow at 7.00 – 7.75 per cent. Also India's GDP is projected to grow by 7.7% during 2016 and 2017 and then accelerate to 8% during 2018 and 2019 due to the implementation of structural reforms, higher disposable income as well as continuous increase in economic activity. India's economy is an agricultural one, since more than half of its labor force is in agriculture, but most of its growth is because of services which account for almost sixty seven percent of its output. In fact out of a GDP of $1.93 trillion during 2012, 17% was out of agriculture, 18% was out of industry, but the goal of the government is to reach 25% of the GDP with the help of newly implemented plans for investments. Another thing that is expected to help increase the percentage of industry is that the government is trying to improve its ease of doing business ranking from 130 during 2015 to within the top 100 by 2016 and eventually in the top 50 during late 2017. Finally 65% out of services. What makes this more interesting is that out of 498.4 million labor force (2012), 53% were in agriculture, 19% in industry, and only 28% in services.

Even though India's economy was very strong for a number of years, it started slowing down around 2011 due to some tight monetary measures to fight rising inflation, which rose to 9.2% in 2012, up from 8.9% in 2011. As a result, its growth rate during 2012 dropped to 5.6%, down from 10.13% during 2010, and its unemployment rate rose to 3.6% up from 3.5% in 2011.

The overall production of India consists of agricultural products, such as rice, wheat, oilseed, cotton, tea sugarcane, onions, potatoes and dairy products. On the other hand the industrial production includes products such as textiles, chemicals, food processing, steal, transportation equipment, petroleum, machinery and pharmaceuticals. India's exports in 2012 totaled $463 billion and its imports $523. Obviously a trade deficit of around $60 billion.

Finally in the middle of all this world economic turmoil and slowdown, the International Monetary Fund, (IMF), projects that India will outpace China in growth with a 10.4% growth rate as opposed to 10.3% for China.

3. STATISTICAL ANALYSIS

In this next section, we are going to present India in numbers, in order to get a better picture about its economy during the last thirty years. Some of the data that will be presented include the Gross Domestic Product, Exports, Imports and Net Trade, Population, Inflation, just to name a few.

Table 1 that follows includes the GDP, Exports/Imports, Population and the GDP Growth Rate.

Table 1. Economic data for India 1980 - 2015

YEAR	GDP BIL $	GROWTH	X BIL $	M BIL $	NET EXPO.	INFLATIO.	UNEMPL.	POPUL
	2010=100	RATE	2010=100	2010=100	Xn bil.$	%	%	MIL.
1980	283.3	6.7	19	18.7	0.3	11.4		697.2
1981	300.3	6	18.9	20.6	-1.7	13.1		713.6
1982	310.7	3.5	20	21.3	-1.3	7.9		730.3
1983	333.4	7.3	19.8	25.9	-6.1	11.9		747.4
1984	346.1	3.8	21.3	22.2	-0.9	8.3		764.7
1985	364.3	5.3	19.9	25.3	-5.4	5.6		782.1
1986	381.7	4.8	21	29.6	-8.6	8.7		799.6
1987	396.8	3.9	23.7	29.1	-5.4	8.8		817.2
1988	435.1	9.6	25.5	31.8	-6.3	9.4		834.9
1989	460.9	5.9	28.5	32.5	-4	3.3		852.7
1990	486.4	5.5	31.7	33.6	-1.9	8.9		870.6
1991	491.6	1.1	34.8	33.6	1.2	13.9	4.3	888.5
1992	518.5	5.5	36.5	40.7	-4.2	11.8	4.2	906.5
1993	543.1	4.8	41.5	48.5	-7	6.4	4.3	924.5
1994	579.3	6.7	46.9	59.5	-12.6	10.2	3.7	942.6
1995	623.2	7.6	61.6	76.2	-14.6	10.2	4	960.9
1996	670.2	7.5	65.5	74.3	-8.8	8.9	4	979.3
1997	697.4	4.1	64	84.2	-20.2	7.2	4.2	997.8
1998	740.5	6.2	72.8	102	-29.2	13.2	4.1	1016.4
1999	806.1	8.8	85.9	109	-23.1	4.7	4.4	1034.9
2000	836.9	3.8	102	114	-12	4.1	4.3	1053.5
2001	877.3	4.8	106	117	-11	3.7	4	1071.9
2002	910.7	3.8	128	131	-3	4.4	4.3	1090.2
2003	982.3	7.9	141	149	-8	3.8	3.9	1108.4
2004	1060.1	7.9	179	183	-4	3.8	3.9	1126.4
2005	1158.6	9.3	225	242	-17	4.2	4.4	1144.3
2006	1265.9	9.3	271	294	-23	6.1	4.3	1162.1

2007	1374.9	8.6	287	324	-37	6.4	3.7	1179.7
2008	1428.4	3.9	329	398	-69	8.4	4.1	1197.1
2009	1549.5	8.5	314	389	-75	10.9	3.9	1214.2
2010	1708.5	10.3	375	450	-75	11.9	3.5	1230.9
2011	1821.9	6.6	434	545	-111	8.9	3.5	1247.4
2012	1924.2	5.6	463	523	-60	9.3	3.6	1263.6
2013	2051	6.6	499	530	-31	10.9	3.6	1271
2014	2200	7.2	508	534	-26	6.4	3.6	1300
2015	2370	7.6				5.9		1310

EXPORTS : World Bank national accounts data, and OECD National Accounts data files

IMPORTS: World Bank national accounts data, and OECD National Accounts data files

INFLATION: International Monetary fund, International Financial Statistics and data files.

UNEMPLOYMENT: International Labour Organization, Key Indicators of the Labour Market
                                database

GROWTH RATE: World Bank national accounts data, and OECD National Accounts data files

GDP: World Bank national accounts data, and OECD National Accounts data files

POPULATION: United Nations Population Division. World Population Prospects

Data from database: World Development Indicators   Last Updated: 11/17/2016

   This table gives us some very interesting conclusions. If we take a look at the GDP and the Population growth, we see that the GDP grew by more than 700% between 1980 and 2015, whereas the population grew by 88%, which means that India's growth of the GDP did not result out of the population growth but out of improved efficiency and better use of resources. Another interesting conclusion is that the trade deficit has been steadily decreasing. Even though it reached a high of $111 billion during 2011, it has been decreasing since then and during 2015 it was at $26 billion. This shows that India is getting to a point where even though its population is growing tremendously, it seems that it can meet most of the demands for goods and services domestically. The following pages present some figures which illustrate the data presented in Table 1.
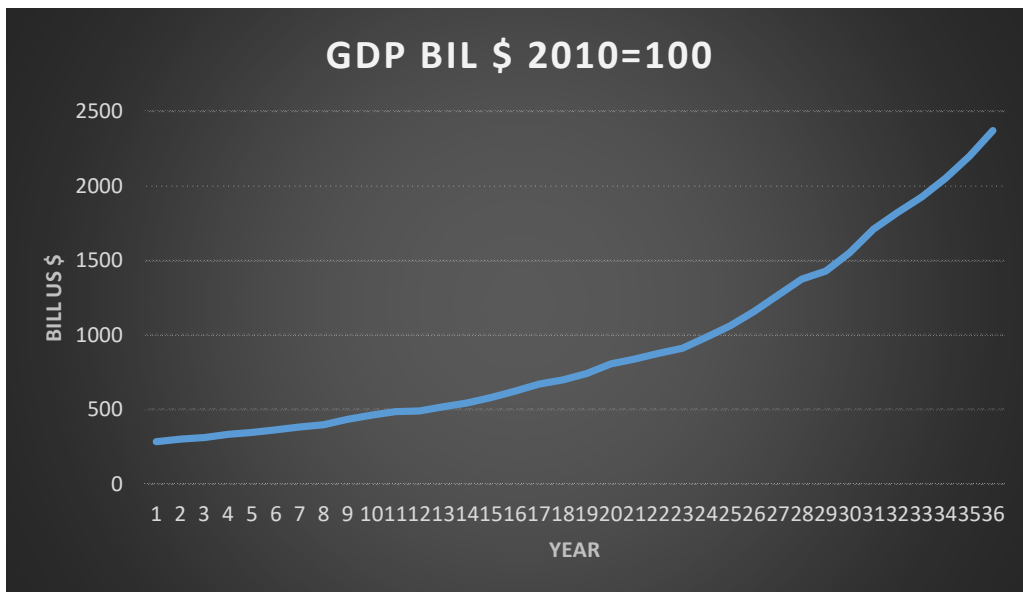
FIGURE 1

Figure 1 shows India's GDP in bill. of US $. Obviously the plotted data shows that during the last 36 years has been steadily increasing, with a pretty steep increase during the last 10 or so years.
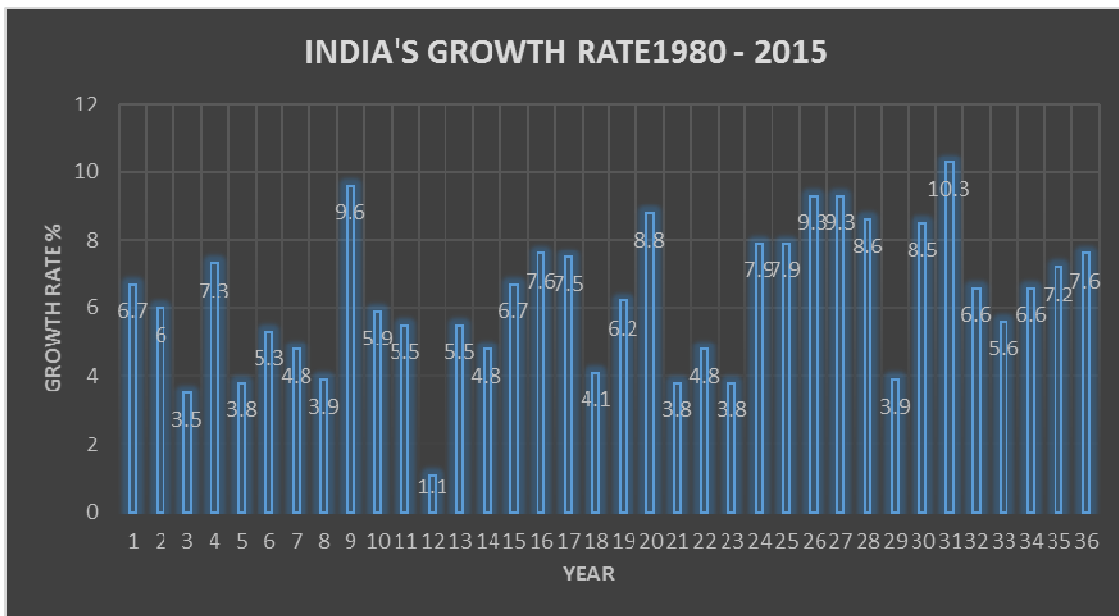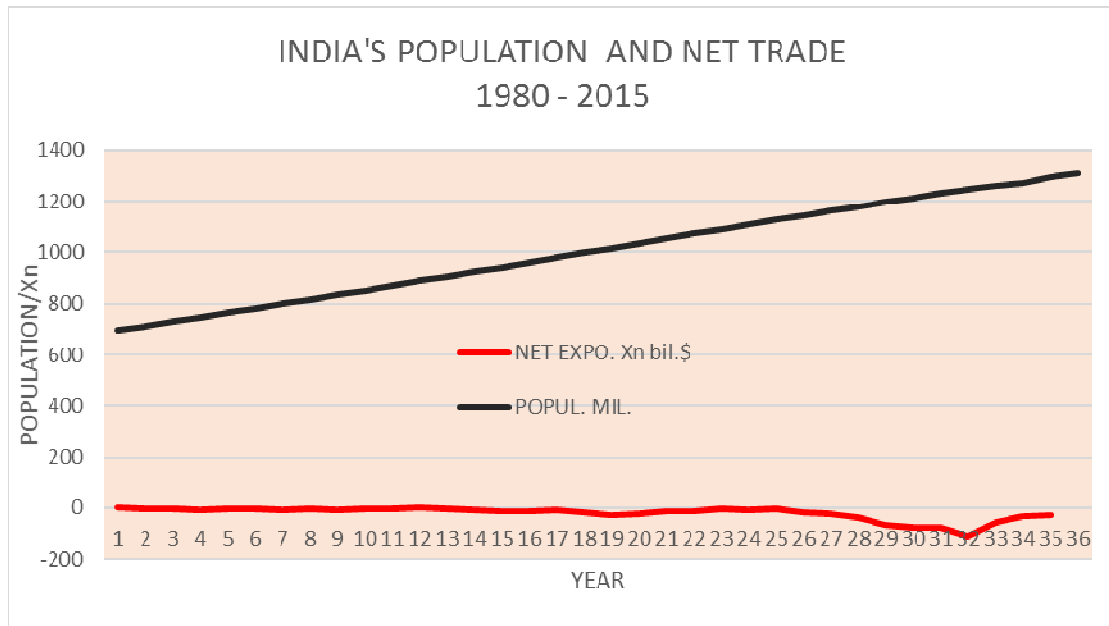
FIGURE 2

Figure 2 above shows India's growth rates during the last 36 years. As can be seen it has not been an easy and steady ride. India had some very good years and some that were not as good, but it is obvious that it had some growth every year.

FIGURE 3

The above figure also shows something we discussed above, that the increase in population has not created a big trade deficit. If anything from the data above we can clearly see that the trade deficit actually declined.
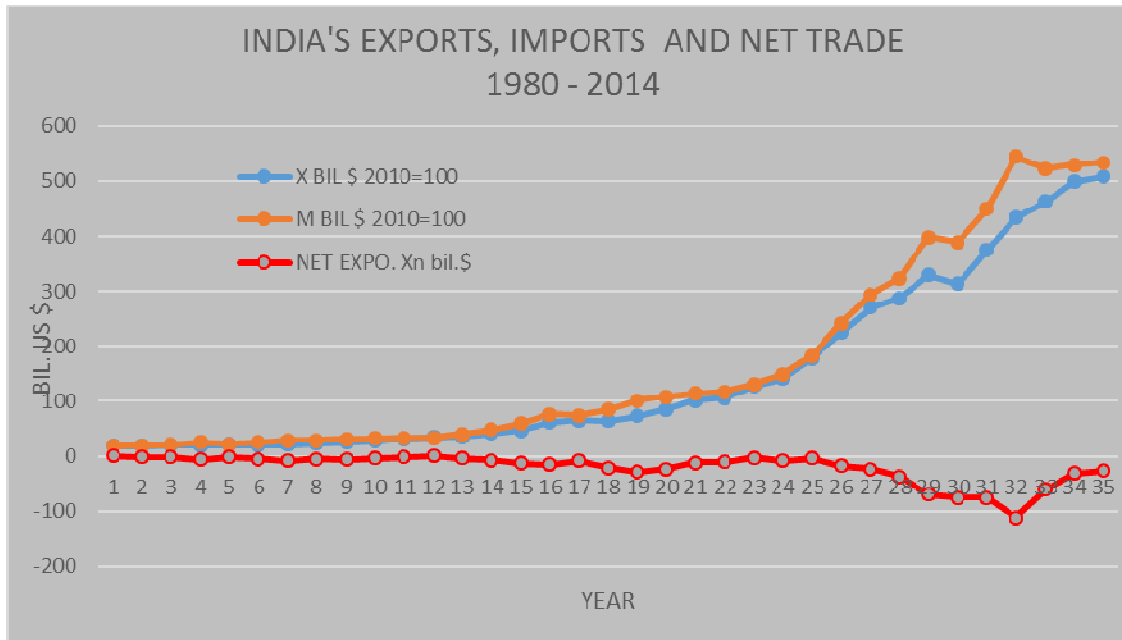
FIGURE 4

Figure 4, shows graphically the relationship between Exports and Imports, basically Net Trade. Looking at the export/import data they more or less go along with each other, and the gap between exports and imports closing down during most recent years.

4. Conclusion

Finally in the conclusion we are going to put everything together, and try to derive some projections and possibly some recommendations.

Although India is growing with fairly fast rates, and this was shown in Table 1 and the figures that followed, it has a long way before it becomes a superpower. Obviously it is much better today than it was 30 years ago, with an increase in its GDP by more than 700%, but there are other things that need improvement as well, such as education, infrastructure and standard of living.

At this point we can make a couple of recommendations that can ultimately help the economy of India. The first thing is that they should try to improve their productive efficiency. They have both the human resources as well as the natural resources to do that, it is a matter of finding methods to do that, starting with education. If this is accomplished, it will lead India to the second recommendation which is to reduce the trade deficit, as this is very costly. Even though it has been declining, they can do better.

Finally a third recommendation is for India to take advantage of its IT industry. It is well known that India has an advantage in this area over a lot of countries, labor cost and know how, they should invest heavily in this in order to bring more investments in India. Once more, the first thing that India can do here is investment and improvement in education.

In conclusion, this paper is not complete by any means. Any suggestions or recommendations to improve this paper will be appreciated.

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Appendix A: Regression models

In this section of the paper, the authors ran several regressions using the data presented earlier in the paper. The regressions are an attempt to measure aspects of India's economy. The hypothesis for each test is presented along with the findings and a graph illustrating the regressions. From these regressions, we should be able to make some recommendations.

A1. Model #1

The first model uses population as independent and GDP as dependent. The hypothesis is that GDP does not depend on population. The value of the R^2 is 0.887, so roughly 89% of India's GDP depends on population. The P value for this hypothesis test is 3.69×10^{-17}. Since this value is smaller than 0.05, the hypothesis is rejected, meaning that the population has a huge positive impact on the GDP. The results are show in the figure below.

Figure 1
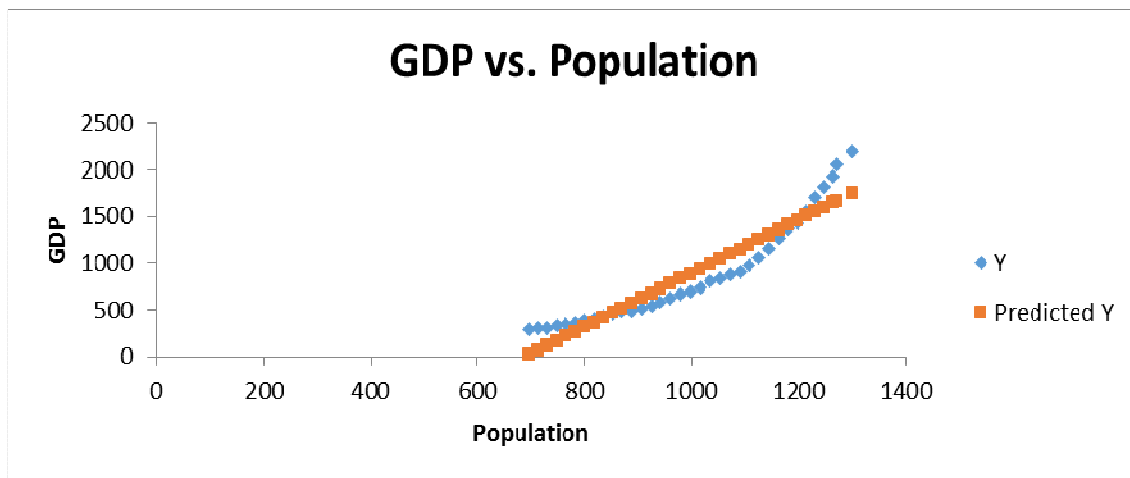
A2. Model #2
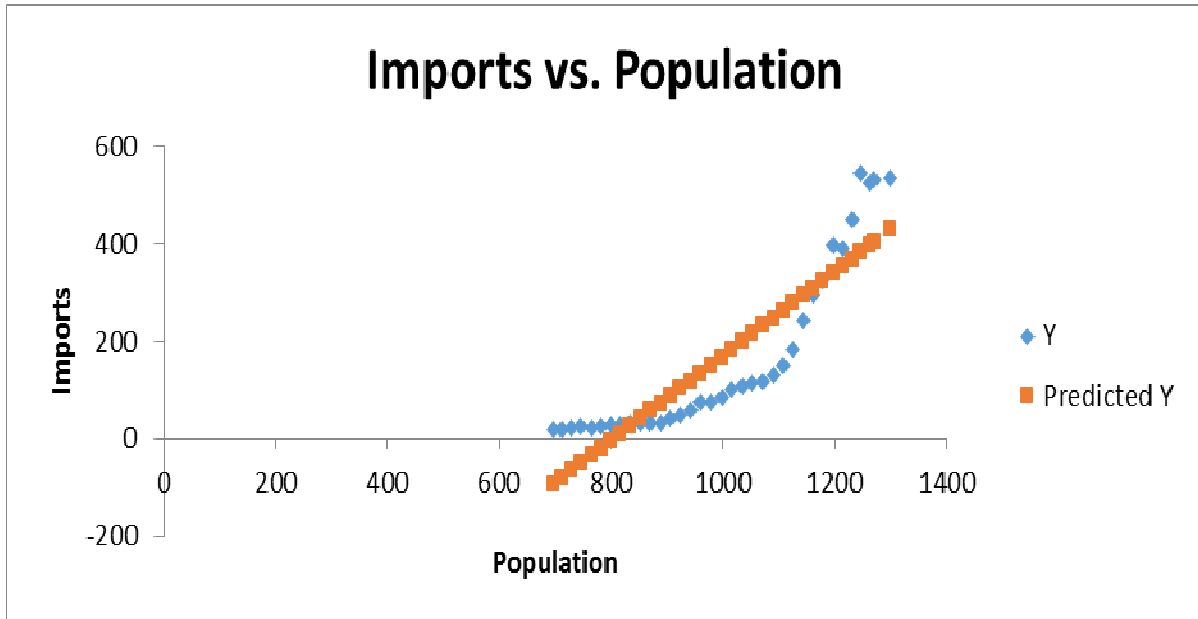
The second model uses population as independent and imports as dependent. The hypothesis is that imports do not depend on population. The value of the R^2 is 0.791, so roughly 79% of India's imports depend on population. The P value for this hypothesis test is 9.62×10^{-13}. Since this value is smaller than 0.05, the hypothesis is rejected. These results are shown below in Figure 2

Figure 2

Imports vs. Population

A3. Model #3

The third model uses population as independent and net exports as dependent. The hypothesis is that net exports do not depend on population. The value of the R^2 is 0.485, so roughly 49% of India's net exports depends on population. The P value for this hypothesis test is 3.4×10^{-6}. Since this value is smaller than 0.05, the hypothesis is rejected. The conclusion for this model is that the population is a major determinant of net trade. These results are shown in Figure 3 on the next page.

Figure 3

Net Exports vs. Population
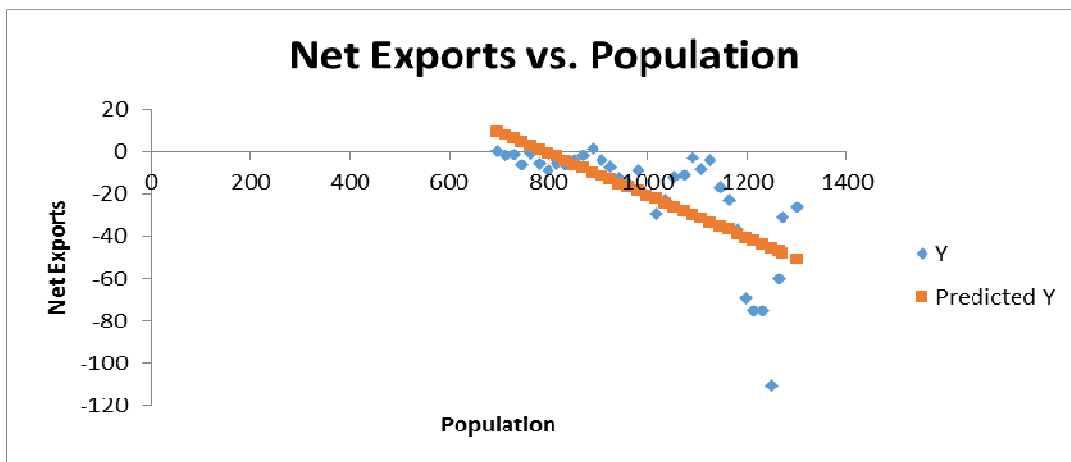
A4. Model #4

The fourth model uses growth rate as independent and imports as dependent. The hypothesis is that imports do not depend on growth rate. The value of the R^2 is 0.117, so roughly 12% of India's imports depend on growth rate.

The P value for this hypothesis test is 0.044. Since this value is smaller than 0.05, the hypothesis is rejected, but the impact is minimum. These results are shown below in Figure 4.

Figure 4
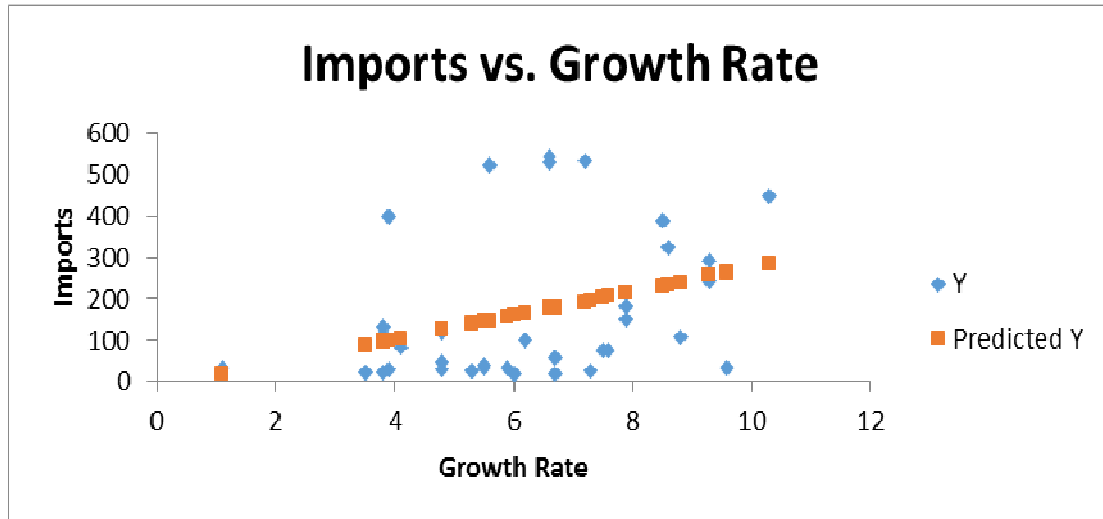
A5. Model #5

The final model uses growth rate as independent and inflation as dependent. The hypothesis is that inflation does not depend on growth rate. The value of the R^2 is 0.004, so less than 1% of India's inflation depends on growth rate. The P value for this hypothesis test is 0.72. Since this value is larger than 0.05, the hypothesis is accepted, and here we can conclude that growth is not a thread, and should be promoted further.
These results are shown below in Figure 5.

Figure 5
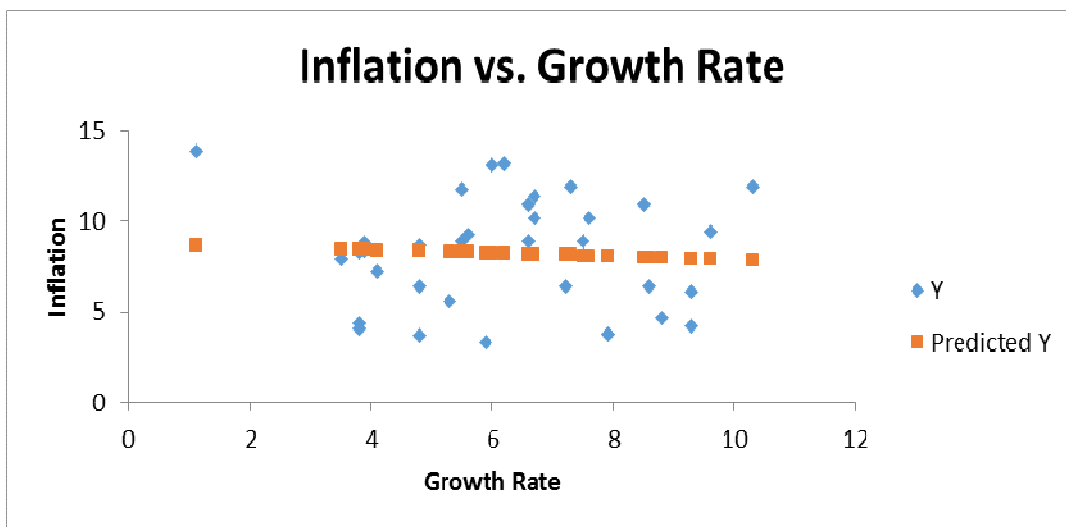
Conclusion

In concluding the appendix, the authors attempted to explain in more detail several aspects of India's economy. We believe this way we can get a much better picture of India's economy. . Even though the results are interesting,

they are not 100% conclusive. More work is needed before we can say that the results are solid, but we can still make a couple of recommendations. India's population is very critical to its economy, as can be seen from the regressions, and so more should be invested, in the form of education and training, and this will cause an increase in growth, productivity and efficiency. The second recommendation is that since growth does not cause inflation, from model number 5, the government should promote growth, and this can be achieved by investing on the population, just like it was suggested above. To that end, any suggestions or recommendations that can improve and can take this paper a step further will be appreciated.

Decision making in healthcare and the role of stakeholders in Germany

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Abstract

Patient safety is a significant healthcare issue with substantial clinical and economic consequences. The extensive research in 1999 on patient safety stated that preventable medical errors in US resulted in as many as 99,000 deaths per year. Kuhn's report increased awareness and concern about patient injuries worldwide. The aim of this research is to analyze the relevance of stakeholders in decision processes and their impact to patient safety in order to improve the safety of patients. This research is based on a dependency model: f(x) = y (x: stakeholders in decision process; y: patient safety). To define patient safety, literature review was combined with the results of six semi structured expert interviews, which is not part of that paper. In order to analyze the impact of different stakeholders in decision process a quantitative questionnaire was developed. The answers are measured on a 5-point likert scale and all stakeholders were involved. This paper presents the result of 113 questionnaires. The high level result is that there is a correlation between stakeholders in decision processes and their influence to patient safety. Further, there is a significant difference between self-awareness and awareness of others. The closer the stakeholder to the patient the more risk averse the self awareness and accordingly, the higher the awareness of others.

Keywords: decision process, hospital management, healthcare management, stakeholder management

1. Introduction

Health is a basic human right and taking the WHO definition into account, health care has to provide more than just curative services. The modern health systems of today have evolved over more than a century with the expectations and the demands drastically changing during this time. Still, the main aim of any health system has stayed the same: to provide adequate, high-quality care to those who need it. Unfortunately, many system structures and actors have not changed with them. The task and responsibility to design a framework, set standards and define goals within which boundaries the health system and its actors perform lies with the decision makers in the hospitals and the health policies they set forth. This paper focuses on the decisions in the hospitals and how these decisions can influence patient safety. And further how different stakeholders do play important role or not.

2. Decision making in healthcare – theoretical background

Many stakeholders and actors influence decisions in healthcare. The following paragraph outlines the overall system of healthcare. A system is defined as an organized set of components, performing a unique behavior, where each component contributes to the system and all are interdependent. Groups of components may form subsystems and the whole system is affected if one component changes or is removed. Furthermore the system has an environment with which it exchanges inputs and outputs.[1] Following systems theory, a social system of its own right performs a task unique to the system and which no other system can perform; and it has autonomy not controllable externally[2].

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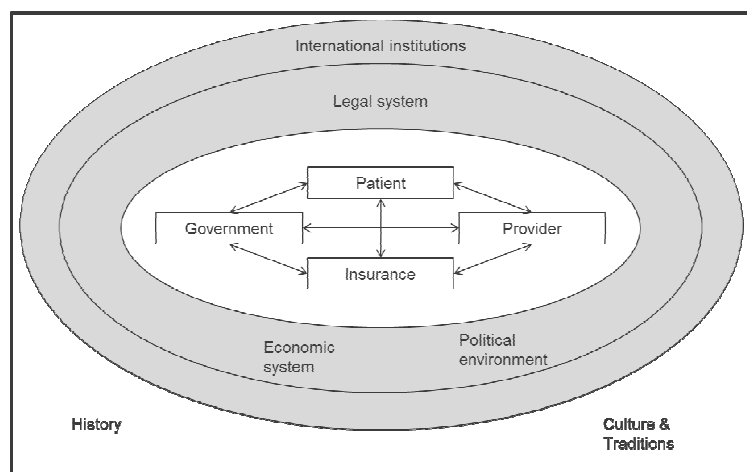
Figure 1: The healthcare system and its environment

Source: Authors illustration, based on Güntert (2008)

As represented in Figure 1, the components of the health care system are the patients, the service providers, the insurances, and government. Its environment is the economic, legal, historical and cultural structures of society. The inputs are represented not only by resources but also by regulations and expectations of the people entering the health system, while the outputs comprise individual and public health, productivity and revenues, research and medical advancement, among others. Typically, the components of the health care system are called actors and/or stakeholders. They are the ones forming relationships and exchanging fees and services. Consequently, they all follow their own sets of goals, adhere to specific principles and define their expectations according to their view of the system. Within such a system it is always a shared decision making. Shared decision making (SDM) is a process by which a healthcare choice is made jointly by the practitioner and the patient and is said to be the crux of patient-centered care3. A number of surveys have shown that a significant proportion of patients would like to play an active role in decisions concerning their health4. Shared decision making (SDM) is defined as a process by which a healthcare choice is made jointly by the practitioner and the patient5 and is said to be the crux of patient-centered care.

The talent to solve problems is essential to management. Problems and making decisions are a constant component of a manager's work. A manager's job is to solve problems and to make decisions; in fact, a managers worth is assessed by how well she/he is able to do this6 Healthcare managers, in particular, have to deal with a much larger number of and harder decision-making and problem-solving challenges7. As concepts, problem-solving and decision-making could be regarded as a result of strategic thinking. It is well known that the process of strategic thinking ends with the action of making a decision. A decision can be defined as a choice made among given options8.

Charles, Whelan and Gafni (1999) analyzed the three basic models of decision making in healthcare. The most common one, they say, is the Paternalistic Model. They describe the model as particularly one-sided and therefore stressful to both doctor and patient. This approach considers the ailment a problem that can be solved in the same manner as a mathematical equation. Without involving the patient or recognizing his/her personal preferences, the doctor will make the best decision for the patient based on his medical expertise. Some authors have argued let a

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patient may actually prefer this approach. However, this would require the preceding discussion of alternative decision-making models, which is normally not likely at the beginning of a doctor-patient relationship.9

The Paternalistic Model is not a co-operation between doctor and patient, at all. While the focus is on the doctor in this particular model, the focus of the Informed Model is on the patient. The main thing the doctor has to do is to provide information. There is a doctor communicates comprehensively all treatment options and the benefits and risks associated with them. In the following deliberation, only the patient will make a final decision based on the information provided to him/her. The patient may be aided in his decision-making process by friends, relatives or his/her spouse, but not necessarily so. According to his/her own preferences, it may very well be that two patients with the same ailment decide on two different treatments in that model.

Therefore, Shared Decision-Making is the preferred method for many medical practitioners. This model focuses on an interaction between doctor and patient who go through all stages of the decision-making process together. Both sides can propose treatment preferences and explain the rationale behind them. This should establish an environment of mutual trust between the doctor and the patient.

Table 1: Decision-making models

Analytical stages		Paternalistic model	Intermdediate approach	Shared model	Intermediate approach	Informed model
Information exchange	Flow	One way		Two way		One way
	Direction	Doctor > patient		Doctor > patient Patient > doctor		Doctor > patient
	Type	Medical		Medical and personal		Medical
	Minimum amount	Legal requirements		Anything relevant for the decision-making		Anything relevant for the decision-making
Deliberation		Doctor alone or with other doctors		Doctor and patient (plus potential others)		Patient (plus potential others)
Who makes the decision?		Doctors		Doctor and patient		Patient

Source: Authors design, based on Charles, Whelan and Gafni 1999, p. 781.

Shared decision-making (SDM) is a complicated procedure, though, especially because it includes both medical practitioners and patients. The choice of the treatment for an ailment is first and foremost up to the patients. This is of course not simple, as the patients may or may not have any medical expertise. Nevertheless, all of them will have some initial preference concerning the treatment, regardless whether it is well-informed or not. Therefore, the medical practitioners must transform their patients' initial preferences into informed preferences.

Elwyn et al. (2012) suggest the procedure that includes three talks with the patient about the options for treatment. This is the first talk is supposed to be a Choice Talk, i.e. the medical practitioner informs the patient about reasonable options for his/her treatment. Since this is a planning talk, the medical practitioner will not impose any ideas on the patient. After presenting the options, it is even better for the medical practitioner to step back and summarize the options and to offer choices.10

This, however, may lead to a misconception on the side of patient. He or she may consider the medical practitioner as incompetent and incapable of offering a definite solution. Therefore, all options must be presented in the same well-informed way, including possible consequences of the treatment. The medical practitioner must monitor the patient's reaction carefully and be willing to offer more information if necessary. However, if the patient enquires of the medical practitioner what to do, closure of the talk should be deferred.

The next step should be the Option Talk. This talk should provide the patient with a structure on which to base his/her decision. Therefore, it is advisable to conduct to talk in a structured way. Elwyn et al. (2012) suggest the following steps:

a) Check knowledge. Even if some patients may appear well-informed, it is best to assume that they are not and to check their before the actual talk.

b) List options. This will provide structure to the following talk.

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9 Cathy Charles, Tim Whelan, AmiramGafni, What do we mean by partnership in making decisions about treatment? in BMJ. 1999 Sep 18; 319(7212): 780–782

10Elwyn, G., Frosch, D., Thomson, R., Joseph-Williams, N., Lloyd, A., Kinnersley, P., ...& Edwards, A. (2012). Shared decision making: A model for clinical practice.*Journal of General Internal Medicine*, *27*:10), p. 1363.

c) Describe options. This step is meant to generate dialogue and explore preferences. Here, the medical practitioner must point out the differences between the options (surgery or medication). The various points that speak for or against different options are the main focus of shared decision-making, as the authors point out. Both, harms and benefits must be made clear.
d) Provide patient decision support. The authors suggest to use such instruments as decision boards or option grids.
e) Summarize. According to the authors, the medical practitioner should make a list of the various options and determine whether the patient understood the point by asking for reformulations. This so-called "teach back method" has proven to be a good test for the occurrence of any misconceptions.[11]

Only then, after the patient has been very clearly informed about the rationale behind each suggested treatment, is it possible for the patient to make a decision based on the shared information. However, not only the information should be shared. The patient good should not be left alone with the decision.

Therefore, the focus of third talk, the Decision Talk, is on preferences. After giving the patient and time to reconsider, the medical practitioner should elicit a preference and move the patient to making a decision, unless the patient is still in doubt and it is preferable to defer a decision. A review of the decision made should then provide the possibility of closure. The following table illustrates the framework.

Table 2: Decision-making Framework

Deliberation				
Initial Preferences	Decision Support			Informed Preferences
	Choice Talk	Option Talk	Decision Talk	

Source: Own design, based on Wong et al. 1999, p. 444.

However, not all patients are capable of making such a decision that is required of them. The patient's capability to make decisions is usually judged by three criteria.12
Criterion 1: Outcome
This is the most simplistic approach and judges capability based on the outcome of the decision-making process.
Criterion 2: Status
The next approach is less simplistic, but not less questionable. The patient's capability this determined on the basis of his/her membership of a particular social group. Education, chronological or mental age, profession or other characteristics are used under the presence that a) the group is homogeneous and b) the characteristics shared by the members of the group are helpful in making such a decision. However, there is no empirical support for any of these assumptions.
Criterion 3: Functionality
It is one of the tasks of the talks mentioned above to determine whether a person's understanding, knowledge, and abilities our sufficient to make the required decision. This means that the medical practitioner/s present at the talk must evaluate the following abilities:
Communication of a choice: If the patient is not capable of communicating his/her choice, he/she is certainly not capable of making such a decision. However, a mere expression of a choice does not indicate whether enough consideration has been given to the issues in question.
Understanding relevant information: It is a matter of course that provided information must be understood by the patient. However, in healthcare this standard is only applicable if explanations in broad terms and simple language are sufficient to convey the nature and purpose of the treatment.
Appreciating the personal significance of treatment information: Even if the matter is explained in plain language, not all patients will be able to sufficiently weigh the risks and benefits of the different options presented to them. This is a basic requirement for a successful talk, though.
Reasoning and rational manipulation of information to arrive at a decision: The authors state that when a patient is required to make a health care decision, the mere appreciation of the information provided is not good enough. The patient must show factual understanding. The patient must recognize that he or she has an ailment that can be cured by a particular treatment.

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[11]Elwyn, G., Frosch, D., Thomson, R., Joseph-Williams, N., Lloyd, A., Kinnersley, P., ...& Edwards, A. (2012). Shared decision making: A model for clinical practice.*Journal of General Internal Medicine*, *27*:10), p. 1363.
[12]Wong, J. G., Clare, I. C. H., Gunn, M. J., & Holland, A. J. (1999). Capacity to make health care decisions: Its importance in clinical practice. *Psychological Medicine*, *29:*02, 437-446.

Unfortunately, the patient's interest is not the only main factor in decision-making on the side of the hospital. Some treatments are very expensive, and a doctor who enters a talk with a patient might be required to withhold information about expensive treatment alternatives due to a cost-effectiveness analysis (CEA). This very technical approach considers the additional cost per extra unit of "effect" in terms of, for example, quality-adjusted life-year (QALY) gained.

3. Research

Aims and tasks of the research

This paper target is to investigate the dependency of involved stakeholders in decision process for investment goods in hospitals in Germany. The extensive growing awareness of patient safety in German hospitals has attracted particular interest in how to improve the safety of the patients. This recent development is caused by an increasing cost pressure and more need for reputation and image because of direct competition between hospitals in Germany. Furthermore, the interest making efficient decisions is not only driven by hospitals but also from health insurance, government, medical device industry and of course patient initiatives. To develop a dependency model, the first step is to identify one area in the hospitals which has influence on patient safety. This paper focuses on decision processes and more specific if the involved stakeholders do have an influence on different stakeholders. For this thesis research, the example of a buying decision for an investment good (e.g. infusion pump) is used. The study gives more insights on self-awareness and awareness of others in importance in the decision process.

The main aim of this paper is to explore if there is a relationship between involving different stakeholders during the decision process and patient safety in hospitals in Germany. Furthermore, the research aim is also to find out if there is a difference between self-awareness and awareness of others as well as to operationalize patient safety. Consequently, this research aims to determine which stakeholders have to be involved to increase success in decision processes by improving patient safety. In doing so, it will address various elements that can help hospital managers to adjust their decision processes and to improve patient safety and therefore increase their economic performance.

Figure 3 shows the underlying basic dependency model: f(x) = y
(x: stakeholders in decision process; y: patient safety)
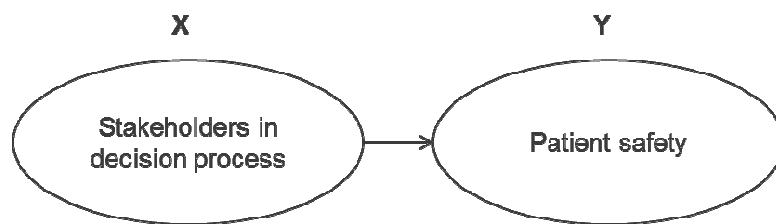
Figure 3: Basic Dependency Model

Source: Authors illustration

The key research question for this research is: Is there a relation between involving different stakeholders in the decision process in hospitals and improving patient safety? How to define patient safety? These research questions lead to the main hypothesis driving the overall research:

H0: Involving different stakeholders in decision processes in hospitals has an influence on patient safety.
H1: There is a difference between self-awareness and awareness of others regarding the role in decision processes.
H2: Self-awareness shows a higher influence on patient safety in decision process than awareness of others.
H3: Physicians and nurses have a higher self-awareness with regards to importance in the decision process than management and buyers.

The better the role of different stakeholders in decision process in hospital is understood and defined the better this research can help to improve patient safety. Furthermore, by involving the right people in the decision process in healthcare setting, the better patient safety can be achieved. And even more, the more reduced costs and the more efficient the system can be.

Research Methodology and Design

After conducting the semi-structured expert interviews, analyzing and evaluating those, the results are the operationalized definition of patient safety. Based on this definition, the dependency model is further advanced and taken as a basis for the development of the structured questionnaire. The structured questionnaire used consisted of and an introduction to the research topic, structured questions based on comparable questions applying a 5-point-likert-scale as well as an inquiry of personal and key hospital data. With this questionnaire, 113 stakeholders were interviewed, either in person or via email.

All imperial data were analyzed by content analysis and statistical evaluation - preferably via SPSS. Wherever applicable, quantitative analysis of both quantitative and qualitative data was realized. Parametric tests were applied. Hereinafter an overview of the evaluation methods applied:

- Content analysis – catchwords in the answers to open questions of expert interviews and questionnaires are evaluated and summarized,
- Expert interview content certification scheme in order to evaluate the status quo of patient safety based on expert interviews,
- Parametric tests – Correlation analysis, regression analysis, t-test, variance analysis via SPSS

As a result of the expert interviews, the dependency model is further developed and the independent variable Y (patient safety) further defined. The combined results of theoretical research and expert interviews about definition of patient safety are three main variables: pain-free patient / reduce pain, reduce medication errors and reduce risk.
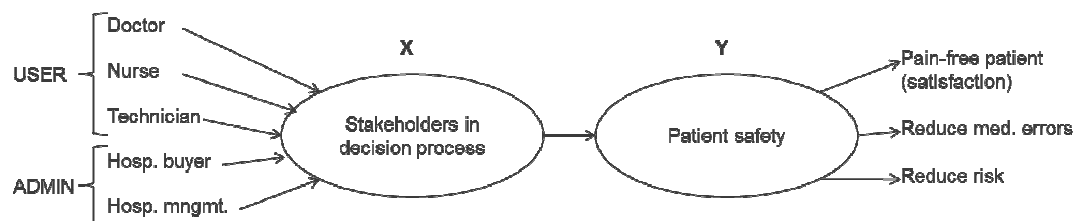
Figure 4: Dependency Model

Source Authors' Illustration, 2017

Stakeholder = dependent variable = exogenous variable
Patient safety = independent variable = endogenous variable
Patient safety = f (stakeholder x)
Questions are focusing on investment decisions (definition of investment decisions)

Because the survey was carried out in Germany, the survey was formulated in the German language. Besides the fact that context is easier to understand in the first language, it also needs to be mentioned that English as business language is not so common in hospitals, especially at a nurse level. To avoid any misunderstandings or misinterpretations, an English translation was also provided for every item. Rules for creating new surveys have to be applied, as a question should:

- be formulated clearly and unambiguously
- contain simple words and avoid foreign words, abbreviations, and technical terms
- be brief and refer only to facts
- appeal to facts directly and concretely. Abstract terms have to be concretized
- provoke no specific response (no leading questions)
- be formulated as neutral and not include 'polluted' or evaluative terms
- not be hypothetical

Double questions, addressing two or more issues in a question, ought to be avoided. In addition, statement should not have complicated grammatical constructions.
The developed questionnaire is structured in a general section with personal questions and questions about the hospital first and followed by the five main questions and concluding with two general questions. The main five questions are all structured into five sub-questions which are referring to the different stakeholders: physician, nurse, biomed, buyer, and management. This indicates automatically that every stakeholder is filling out self-awareness

and awareness of others. Question one and five are of importance and relevance in decision process whereas question two, three and four are about the operationalized patient safety (pain-free patient, reduce medication errors, reduce risk) and how stakeholders do influence these factors while taking decisions.

The possible answers were fixed with a 5-level Likert-scale, which ranges from value 1 'strongly disagree to 5 'strongly agree'. To make later statistical analysis easier, all statements were formulated in a positive meaning, which implies 'strongly agree' has a positive valuation of the project success dimension.

Table 3: Sample characteristics (n=113)

Type of hospital (n=113)		Role (n=113)		Experience (n=113)	
public	51%	physician	27%	1-5 years	7%
privat	20%	nurse	59%	6-10 years	24%
church	27%	biomed	3%	11-15 years	17%
others	1%	managemen	11%	>15 years	53%
		buyer	2%		

Research Results

Correlation analysis is used as a first step to show and quantify the association between independent and dependent variable. Dependent variable: Patient safety (pain level, reduction of medication errors and reduction of risk); Independent variable: Stakeholders (Physician, Nurse, Technician, Buyer, and Management) – this is operationalized with the variables: Contribution in decisions processes, Importance in decision processes and the mean value of these two. All statistical test will be conducted two ways: self-awareness and awareness of others.

Self-awareness and awareness of others shows a significant or even highly significant correlation between dependent and independent variable.

After having proven that the stakeholders are isolated variables this paper will use the regression analysis to show which kind of influence the different stakeholders do have in the decision process on patient safety. At the same time when testing the regression, the significant level has to be tested as well. This statistical indicator shows if the hypothesis can be accepted or not. Regression explains how high the correlation is and further to how many % the dependent variable is explained by the independent.

To prove the fit of the model, the statistical R-square will be used. This test shows to how much percentage the Y (patient safety) is determined by the x1, x2, x3… (Stakeholders in decision processes). R-square is between 0,39 and 0,085 for self-awareness and 0,075 and 0,188 for awareness of others.

The t-test shows, that the groups do have a significant difference, 2-sided significance is <0,005 - except for importance, this is with 0,079 nearly significant.

Table 4: group statistic; self-awareness and awareness of others

group statistic		N	Mean	Standard deviation	Standard error of mean
BEP	0 = self awareness	114	2,24	0,779	0,073
	1 = awareness of others	114	2,66	0,792	0,074
Importance	0 = self awareness	114	2,33	1,086	0,102
	1 = awareness of others	114	2,55	0,716	0,067
Contribution_Importance	0 = self awareness	114	2,285	0,7842	0,0734
	1 = awareness of others	114	2,603	0,6022	0,0564
Pain	0 = self awareness	114	1,95	1,046	0,098
	1 = awareness of others	114	3,27	0,613	0,057
Medication	0 = self awareness	114	2,09	0,858	0,08
	1 = awareness of others	114	3,02	0,761	0,071
Risk	0 = self awareness	114	1,82	0,779	0,073
	1 = awareness of others	114	2,84	0,637	0,06

Importance / Contribution there is no difference between the groups
Pain / Medication / Risk -> awareness of others is higher than self-awareness

➔ Fear to take too much risk
➔ Others do think stakeholders can do more than what they think

Variance analysis

Table 5: Variance analysis

		N	mean	standard deviation	standard error	95% konfidence intervall
BEP	physician	114	2,17	0,775	0,073	2,02
	nurse	114	2,35	0,831	0,078	2,2
	biomed	114	2,68	0,857	0,08	2,52
	management	114	2,94	2,117	0,198	2,55
	buyer	114	2,74	1,073	0,1	2,54
Importance	physician	114	1,91	0,771	0,072	1,77
	nurse	114	2,54	1,049	0,098	2,34
	biomed	114	2,9	0,931	0,087	2,73
	management	114	2,54	1,27	0,119	2,3
	buyer	114	2,64	1,22	0,114	2,41
Pain	physician	114	2,06	0,855	0,08	1,9
	nurse	114	1,8	0,778	0,073	1,65
	biomed	114	3,51	0,905	0,085	3,34
	management	114	3,79	0,846	0,079	3,63
	buyer	114	3,85	0,833	0,078	3,7
Medication errors	physician	114	2,13	0,804	0,075	1,98
	nurse	114	2,02	0,741	0,069	1,88
	biomed	114	3,14	1,063	0,1	2,94
	management	114	3,4	1,054	0,099	3,21
	buyer	114	3,47	0,989	0,093	3,29
Risk	physician	114	1,95	0,762	0,071	1,81
	nurse	114	1,75	0,649	0,061	1,63
	biomed	114	2,82	0,998	0,093	2,64
	management	114	3,16	0,927	0,087	2,99
	buyer	114	3,5	0,924	0,087	3,33

- → Management, buyer, and MedTech consider themselves as being more important than nurses/physicians
- → Every stakeholder wants to be careful; the closer to the patient the less responsibility will a stakeholder take

ANOVA showed that there is significant difference between the groups: physicians, nurse, MedTech, management, and buyer

4. Conclusions

Both – literature review and empirical research – confirmed that patient safety in hospitals is a big issue and that stakeholders do play an important role in this process.
The key research question for this research is if there is a relation between involving different stakeholders in the decision process in hospitals and improving patient safety? Yes, correlation analysis shows that there is a relation
These research questions lead to the main hypothesis driving the overall research:
H0: Involving different stakeholders in decision processes in hospitals has an influence on patient safety. → YES, regression analysis proves that there is an influence
H1: There is a difference between self-awareness and awareness of others regarding the importance in decision processes. → No, t-test shows that there is no difference
H2: Self-awareness shows a higher influence on patient safety in decision process than awareness of others. → No, other way round: awareness of others shows a higher influence
H3: Physicians and nurses have a higher self-awareness with regards to importance in the decision process than management and buyers. → No, other way round
H4: The closer the stakeholder to the patient, the more influence on patient safety (nurses, physicians are closer to patient than buyer and management) → self-awareness no, nurses and physicians do consider themselves as less influencing patient safety

Overall, the recommendations for hospital management are as following:

With the aim to increase patient safety the management should wisely consider who to involve when taking investment decisions

There is still hesitation to take responsibility the closer the stakeholders are to the patient. Verified with expert interviews this is due to the highly hierarchical culture in the hospitals and the fear to take a wrong decision – management needs to work on that.

Empower nurses and physicians and create an open culture is an essential conclusion after seeing that these two groups are influencing patient safety the most but not taking the lead

Limitations

In the course of the configuration of this empirical research, some limitations either arouse or were set in order to specify the underlying conditions:

- Limitation to "hospital environment" instead of investigating the "health care industry" e.g. elderly home, outpatient centers, day-care centers
- Including healthcare providers into the research without considering the patient's view
- Decision process was analyzed based on an investment decision, not an actual procedure on the patient
- Geographic scope of the research is Germany

Additional factors such as individuality of hospitals, external influence factors on stakeholder's situation, restricted number of experts interviewed and stakeholders surveyed might set further limits to the present research.

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Is Strategic Human Resources Management Profitable for Small, Medium, and Micro Enterprises?

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Abstract

The main aim of this study was to advance a Strategic Human Resources Management Integrative Theoretical Framework. The main objective was to identify the impact of SHRM and business management on SMME growth. The problem is that lack of Strategic Human Resource Management skills cause high failure rate in South African Small, Medium, and Micro Enterprises. This descriptive survey, quantitative and theory-driven employed descriptive and inferential statistical techniques to analyze the data obtained from the survey questionnaires. The study found out that SHRM has an impact on SMME growth. The conclusions derived were that a Strategic Human Resources Management Integrative Theoretical Framework enhances the ability to show and evaluate the SHRM primary linkages. SHRM practices are important in the implementation of SMME strategies. It is recommended that SMME use SHRM as means through which they choose resources and communicate organizational goals, priorities, and behavioural requirements.

Keywords: Strategic Human Resources Management (SHRM), Integrative Theoretical Framework, Small, Medium and Micro Enterprises (SMMEs), Resource Based View (RBV)

1. Introduction

1.1 Background to the Study

In South Africa SMMEs are a vital pillar for economic development, source of revenue and employment, innovation and technological advancement (Rogerson, 2004, 2008a; Timms, 2011; Malefane, 2013). SEDA (2010) elaborate that SMMEs form the backbone of South Africa's economy, in 2010. About 2.8 million South African small, medium, and micro enterprises contribute 57% to GDP and making up nearly 61% of employment and produce 39% to national output (SA Yearbook, 2011: 138). Chodokufa, (2009) and Kongolo, (2010) reveal that 90% of the African business operations are SMMEs they contribute to over 50% of African employment and GDP. South African SMMEs perform poorly by employing 55% of the population as compared to 90% in China, India and Indonesia (SBP SMME Growth Index, 2013).

Despite their major contribution in economic development and employment, South African SMMEs have poor performance and high failure rate levels (Ladzanani & Netswera, 2009). This

high failure rate of SMMEs is from 70% to 80% (Willemse, 2010; Fatoki & Odeyemi, 2010). The majority of SMMEs fail in their fifth year at a rate of between 50% and 95% (Robert, 2010; Willemse, 2010). About 75% of new SMMEs fail to establish firms, ranking highest in the world (Robert, 2010; Willemse, 2010). The major reasons for the high failure rate of SMMEs range from lack of access to finance to lack of management skills.

Furthermore, Kelliher and Reinl, (2009) maintain that SMME should instil their valuable resources in the core business strategies, and implement best strategies using the best business practices as a means to enhance their performance, thereby ensuring success and long-term business growth. In addition, Van Tonder (2010) depicts that the low success rate of SMMEs in South Africa is due to lack of financial skills; brain drain; lack of skilled labour; lack of proper business management practices; analysis and evaluation skills of business performance/operations and incompetent managers.

1.2 Significance of Study

The main purpose of this article was to assess the impact of SHRM on SMME profitability in Limpopo Province in South Africa to advance a SHRM integrative theoretical framework that owners/managers will use to enable SMME growth as a set of managerial practices. Comparatively the results of this study will make an important contribution in the areas of theory, by the advancement of a Strategic Human Resources Management Integrative Theoretical Framework that embodies a Multiple Stakeholder Perspective, Systematic Agreement Theory (SAT) (horizontal and vertical linkages) along with Resource Based View to enhance the ability to reveal and evaluate the primary linkages of SHRM. Correspondingly, this study aimed at closing the gap between theory and practice of Strategic Human Resources Management and Small, Medium and Micro Enterprises.

1.3 The Problem Statement

Many Scholars such as, Kunene,(2008), Nkonoki,(2010), Chittithaworn,(2011), Smit,(2012) confirm that human resource problems such as inadequate trained employees, high employee turnover rate, poor staff planning, multi-functional management, low productivity and difficulties in recruiting quality staff are impediments to SMME success. Importantly, managerial skills influence owners' perceptions regarding their business, efficiency and effectiveness resulting in SMME failure (Naicker, 2006; Pansiri & Temtime, 2008). Indeed, the owner/manager characteristics also act as a barrier to growth in that the personality, managerial skills and management style negatively affects enterprise growth (Leopoulos, 2006; Pansiri & Temtime, 2008). Rajaram (2008) and Kotze and Smit (2008) illustrate that human resource problems lead to low levels of entrepreneurship and high failure rate of South African SMMEs.

The problem statement is that lack of Strategic Human Resource Management skills cause high failure rate in South African Small, Medium and Micro Enterprises.

1.4 Objectives of the Study

(a) To identify the impact of Strategic Human Resource Management on SMME growth; and
(b) To determine which Human resources management competencies are important for Small, Medium, and Micro Enterprises sustainability.

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1.5 Research Questions

a) To what extent has lack of adequate and appropriate strategic human resource management, business, entrepreneurial, and technical skills affected the growth of SMMEs?
b) What are the Human resources management competencies Small, Medium, and Micro Enterprises need to be sustainable?

1.5.1 Research Hypotheses

Hypothesis 1 (H_1); There is a positive association between the adoption of strategic (RBV) resources based view approach to the management of human resources and SMME experiencing growth.

Hypothesis 2 (H_2) the theoretical and applied discipline of Strategic Human Resource Management demonstrates relevance not only for large organizations but also for growing SMMEs.

1.6 The Scope of the Study

The study was only examining the impact of SHRM skills in SMMEs; the population of the study was only SMMEs in the retail sector in Limpopo Province; since the method indicated that responding was voluntary, it could be that a lot of important information could have been provided by those who did not choose to complete the questionnaires

2. REVIEW OF RELATED LITERATURE

2.0 Conceptual Framework

Small, Medium and Micro Enterprises are independently owned and operated entities that are not dominant in their field of operation and exist to provide specific goods and services to buyers that include other businesses, governments and individual consumers (Raduan, Naresh and Lim, 2006; Maas & Herrington 2007). Maas & Herrington, (2007) emphasise that the impact of SMMEs on macro-competitiveness, creativity, job creation and innovation, is in strategic management, economics and industrial organization literature.

Besides, Strategic Human Resources Management (SHRM) is a process where HR practices and business strategy are linked (Ulrich and Lake, 1991). Truss and Gratton (1994) add that SHRM is the alignment of HRM with strategic goals and objectives to promote an organisational culture that fosters innovation and flexibility thereby improve organisational performance. Similarly, Strategic Human Resource Management refers to the overall direction the organization wishes to pursue in achieving its objectives through people (Armstrong, 2012). SHRM should provide guidelines for successful business action, and the ultimate test of the reality of strategic HRM in the extent to which it has stimulated such action (Schuller & Jackson, 2008; Armstrong, 2008; 2012).

In fact, several studies on Organizational Effectiveness, have reported a positive association between SHRM and organizational outcomes (Becker & Huselid, 2006**;** Alişkan, 2010; Ayanda, 2011; Kahiri, 2012; Sani,2012 ;Vermeeren,2014). Furthermore, these studies have also reported a positive association between SHRM and financial accounting outcomes. Thus, there is evidence to suggest that SHRM can have a positive impact on capital investment outcomes.

2.1 Strategic Human Resources Management Theories

The first theory is Resources-Based View Theory (RBV) which instils a conceptual perspective from which organizational science research can focus on internal organizational assets or resources as a strong basis for sustainable competitive advantage (Barney, 1991; Barney, Wright, & Ketchen, 2001; Wright, Dunford & Snell, 2001). For example, competitive advantage is sustained because SHRM enhances organizational effectiveness (Delery & Shaw, 2001, Ericksen, 2004, Kahiri,2012, Schmitt,2013). While RBV helps illustrate to determine the need for organizational effectiveness, the theory does not explain how to achieve it; however, this has created a gap in the body of knowledge. Moreover, this study adopted the idea that in isolation, RBV is inadequate in providing explanatory power for the impact of SHRM. I addition, RBV is a component in an integrated theoretical framework. In addition, scholars like Cavetti, (2008), and Aldaibat, (2012) concluded that SHRM can produce a sustainable competitive advantage and enhance organizational effectiveness, what the researchers find missing from this theory is insight into the process how SHRM produce sustainable competitive advantage, this has created a gap in the body of knowledge.

The second theory is the multiple stakeholder perspective that provides a theoretical framework that can enhance the ability to accurately measure and define organizational effectiveness (Daft, 2009; Jacques, 2010; Hult, 2011). In fact, the theory behind this perspective in SHRM research is in systems theory (Ackoff, Addison & Carey, 2010; Buckley, 2011). Systems theory illustrates that organizations are open systems rather than closed ones requiring the support of all stakeholders in order to address relevant organizational matters and problems (Garavan, 2007; Schuler & Jackson, 2008). This article concentrated on the influence of customers, employees, and owners/managers in SMME. The powerful stakeholder relationships, goals, and objectives influence organizational goals, objectives, and strategies pursued by the organization. These powerful measures of effectiveness evaluate the impact of SHRM on the organization (Garavan, 2007; Schuler & Jackson, 2008). For this study, the researcher supported the idea that multiple stakeholder perspective can provide a theoretical framework that can enhance the ability to define and measure organizational effectiveness (Buckley, 2011).

The third theory is Systematic Agreement Theory (SAT) which gives a framework for organizational alignment that is the degree to which organizational culture, strategies and designs corporate to achieve the same intended goals. The SAT framework proposes to enhance organizational effectiveness that is the achievement of organizational goals and objectives by creating competitive advantage (Semler, 1997; Way, & Johnson, 2005, Lengnick-Hall & Lengnick-Hall, 2009). According to Semler (1997), SAT introduces four major aspects of organizational alignment namely: environmental alignment, cultural alignment, structural alignment, and performance alignment. The study investigated on whether small enterprises that align or integrate their formal and informal SHRM practices and strategies with the business strategies would result in increased performance.

2.2 Theoretical Framework

The theoretical framework allows for the implementation of different HRM systems that comprises of different HRM practices aimed at achieving the same outcomes (Lepak & Snell, 2007; Tan, 2011). HRM strategies show how the organization's human resources and the HRM function contribute to the attainment of organizational goals and objectives (Lengnick-Hall & Lengnick-Hall, 2006 Ayanda, 2011, Sani, 2012).

Many scholars like Bowen & Ostroff, (2004), Collins &Smith ,(2006), Becker & Huselid, (2006) and Storey, (2007) out line Human Resources Management Systems as the actual practices that are included within these systems and what the human resources system is trying to influence. The product of the HRM strategies employed by the organization and the actual versus the desired HR outcomes of these human resources. When designing these unified sets of HRM practices, SHRM has a menu of practices from which to choose from those that staff, motivate, develop, and retain the organizational human resources show those behaviours that produce those outcomes which enable the organization to enact their strategies and meet organizational goals and objectives (Way, 2002; Wright & Snell, 2009).

2.3 Empirical Literature

Strategic Human Resources Management in Small, Medium, and Micro Enterprises is now an important research area. A study by Dincer, Tatoglu & Glaister (2006) showed that Turkish SMMEs were increasingly turning their attention towards strategic planning practices. This was because of the many benefits of strategic planning for SMMEs. A study by Fabling and Grimes (2007) reveal that strong SHRM practices positively affect firm performance. Aguinis (2007) propose that a positive relationship exists between Performance Management and better business performance.

King-Kauanui, Ngoc, and Ashley-Cotleur (2006) found out that HRM practices had a significant positive effect on Vietnamese SMME performance concluding that SMMEs can thus increase their performance by developing and executing best HRM practices.

An examination by Karami, Jones and Kakabadse, (2008) on the nature and impact of human resource capabilities and involvement on the firm's performance in the SMME sector outlined that the competitive advantage a firm comes from the involvement of HR specialists in the of strategic management processes of the firm. The message sent by this study is that SHRM has an impact on organizational outcomes.

While, Vichitdhanabadee, Wilmshurst, and Clift (2009) established that in order for SMMEs to survive and succeed in their business operations, they must continually improve performance and ensure that they maintain adequate resources such as information, employees, and instruments and use them to generate competitive advantage for their businesses. On other hand, Wang, Walker, and Redmond (2010) have established that strategic planning practices are more common in better-performing SMMEs and Syed (2012) identified the impact of Strategic Human Resource Management on firm performance. More interestingly, many other important studies by (Jarventaus 2007; Rizov & Croucher 2008; Khan 2010) have also determined a strong positive relationship between SHRM practices and firm performance.

3. MATERIALS AND METHODS

Introduction

This section focuses on issues such as the research design, data collection methods and procedures, research instruments, validity of instruments, data presentation, analysis and interpretation procedure, ethical considerations and the statistical techniques used. According to Creswell, Vicki and Plano, (2011), the positivists paradigm was used in this study because positivists believe reality is independent of researchers, they assume the act of investigating social reality has no effect on that reality.

3.1 The research Method

This article used a quantitative approach. The quantitative research approach describes inferiors, and resolve problems using numbers (Curwin & Slater, 2002). The quantitative method was selected because it clearly specify both dependent and independent variables under investigation, the study goals, hypothesis testing, elaborating issues of causality and guiding towards more objective conclusions.

3.2 Research Design

The study used a descriptive survey research design (Mouton, 2008). A descriptive survey research design aims at measuring the variables by asking the respondents questions and then examine the link between the variables. The descriptive survey research methodology was to collect both primary and secondary data from a given sample and enable generalizing the results to a population.

3.3 Population of the Study

A research problem relates to a specific population. The population for this study comprised Small, Medium and Micro enterprises in Limpopo province of South Africa. Organisations such as Limpopo Development (LIMDEV), Small Enterprise Development Agency (SEDA) and Limpopo Business of South Africa (LIBSA) provided the database on SMME, which was the population in this study for sampling. The database indicates that there were approximately 1 000 formal SMMEs in Limpopo Province. The same database provided both the location and contact details of owners/ managers of SMMEs that make up the study sample. This was for easy location to administer the questionnaires.

3.4 Study Sample and Sampling Method

One Hundred (100) SMMEs was the study sample. The sampling fraction of 10% of 1000 registered formal SMMEs, determines the sample size in this study. The SMMEs owners and/or managers represented the SMMEs in this study. Random probability sampling technique was used (Welman et al., 2009). Simple random probability sampling procedure employed gave every element in the target population an equal chance of be selected. In this study sampling was done without replacement that is after an element was selected from the sampling frame, it was removed from the population.

3.5 Data Collection Instruments

3.5.1 Testing Instrument Validity

Validation of the questionnaire is the extent to which an instrument measures what it is intended to measure. From a long list of validity testing methods namely divergent, convergent, concurrent,

content, face, predictive and construct, this study used content, face, construct and criterion related (predictive) validity methods. In fact, the research instrument used in this study was a survey questionnaire. Furthermore, the questionnaire composed of closed questions because the positivist paradigm suggests that closed questions in this study helped the respondent make quick decisions in choosing the most relevant response out of several alternatives.

Moreover, the questionnaire also presented another advantage that they enabled triangulation of methods. Methodological triangulation involves the use of two or more research methods in one study at the level of data collection (Taylor, Kermode and Roberts, 2007). A questionnaire in this study was used in a cross- method triangulation which involved a combination of research strategies. The researcher used data from the owner/ managers interviewed to reinforce and complement the data from the research questionnaire because concepts mentioned by the owners/mangers were checked while triangulating information from the questionnaires. Using methodological triangulation complementary findings in this study objectives and goals enhance diversity and make a more valid contribution to theory and knowledge development (Cox & Hassard, 2005). Questionnaire use in triangulation enable the researcher to capture a more complete and holistic portrait of the phenomena under this study.

Five ratters from Tshwane University of Technology, who reviewed clarity, readability and comprehensiveness of the questionnaire, agreed on items to include in the final instrument. The ratters first checked to see that the questionnaire was measuring what it was designed to measure. All the five ratters commended that the instrument measured the trait or characteristics of interest in the research (Cooper and Schindler, 2008) Content validity is the degree to which the survey instrument fully measures the construct of interest. This study checked whether the instrument was covering the constructs on small enterprises and Strategic Human Resources Management. The study tested the instrument to check whether the instrument was covering the constructs on SMME and SHRM.

The ratters checked face validity as part of content validity to see if it was measuring the characteristics or trait of interest that is measuring what it was to measure. It was agreed that the instrument was measuring what it was intended to measure. On criterion-related validity the ratters checked on the questionnaire to see if it was testing all SMME owner/managers for the same skills and items and their impact on SMME growth and survival. Construct validity is the degree to which an instrument measures the theoretical construct that it is to measure. The survey questionnaire was tested to see if it measuring the theoretical constructs on SHRM integrative theoretical framework in SMME. All the five ratters unanimously agreed the instrument measured the theoretical construct that it was to measure.

Apart from test for normality, the statistical validity of the questionnaire was tested using factorial design. Factor analysis (Cronbach Alphas) was employed to measure the instrument for reliability and validity. The Cronbach Alphas' Coefficient using SAS illustrated that the Alphas Coefficient for the (42) forty-two strategic human resources management variables used in research was 0.95, suggesting that the items had relatively high internal consistency.*Note that a reliability coefficient of 0.70 or higher is acceptable in most social science research situation.

3.5.2 Testing instrument Reliability

The questionnaire was divided into six sections:
First: The personal demographics variables for which information was obtained for included age, gender, and ethnic group, level of education and work experience. Second: The business demographic variables for which information was obtained were number of years in retail business (experience), the number of employees, annual income and the business location.

Third: Strategic human resources management shows information about the respondent's strategic skills training data. The strategic skills training variables for which information was obtained included; specialist knowledge, technical skills, functional/ operational knowledge, marketing skills, product knowledge, sales knowledge, budgeting skills, competitor analysis skills, financial/ resources management skills, analytic skills, project management skills, innovation skills and strategic management skills.

Fourth: The link between human resources training and SMME profitability. The information was derived from four groups of skills for an entrepreneur to start a new business. These are management, technical, personal and business operations skills. This section was testing the linkage between HR training and organizational profitability.

Fifth: This section focused on the strategic human resources management aspects that are most appropriate for SMME growth. A comparison was made between management, technical, personal, and business skills to find out the most appropriate aspects for SMME business growth. Sixth: The last section explores the human practices/aspects that are necessary to implement HR strategies in SMME business to enable SMME survival.

Reliability is an assessment of reproducibility and consistency of an instrument. In this study, test-retest reliability process was by asking respondents to complete the same questionnaire on two separate occasions at least two to three weeks separate. Using the weighted Kappa 12, the two sets of responses were statistically analysed by comparing them, for categorical data and Spearman's Rank Correlation Coefficient for continuous data. The researcher asked the same questions from the questionnaire in two different ways to determine internal consistency of the questionnaire. The researcher compared the two sets of responses for internal consistency testing. The reliability of survey instrument was important to understand data whose characteristics were normal during descriptive analysis.

3.6 Data Presentation, Analysis and Interpretation Procedures

In quantitative research, data analysis is normally used to refer to the process of breaking down collected data into constituent parts in order to obtain answers to research questions (Terre Blanche & Durheim, 2002).The study questionnaires were prepared in the Statistical Package of Social Science (SPSS) package which was used to compile descriptive and inferential statistics (Codwell & Herbst, 2004).

3.6.1 Descriptive Statistics

In this study, the descriptive statistics aimed at describing the data by investigating the distribution of the scores for each variable in determining whether the scores on different variables relate to each other (Terre Blanche & Durheim, 2002). Chi-square tests was used to find out if there was a relationship between two nominal variables such as SMME growth and sustainability or whether they were independent of each other (Cooper & Schindler, 2008).

3.6.2 Inferential Statistics Tests

In this study, while the descriptive analysis helped the researcher to generalize from the sample to the population, inferential statistics helped the research to draw conclusions about the population

based on data obtained from samples. The testing of two independent variables calls for the introduction of ANOVA (Cooper & Schindler, 2008). The ANOVA analysis proved whether a particular independent factor positively correlate with the failure of the SMME.

3.7 Ethical consideration

The researcher was responsible to ensure that the study processes maintained high levels of dignity and integrity. Indeed, the research was ethical by seeking the consent of the respondents to be part of research, while maintaining their privacy as respondents. In many instance the researcher translated his sound business and personal ethics. Even more, the study protected the identity of all respondents. The researcher above all, maintained respondent anonymity. An informed consent form, was used to grant security to respondent

4. RESULTS

More importantly, the study results reveal the situation of the effects of lack of SHRM skills on SMME Growth. The results show the effects on SM*ME* annual turnover, the level of business, entrepreneurial and professional (technical) skills. Results also provide the managerial competency level in SMMEs.

4.1 THE EFFECTS OF LACK OF STRATEGIC HUMAN RESOURCES SKILLS ON SMALL, MEDIUM AND MICRO ENTERPRISE GROWTH

Table4.1 - Small, Medium and Micro Enterprise annual turnover

Income per year	Frequency	Percent	Valid Percent	Cumulative Percent
Below-R50 000	19	19.0	19.0	19.0
R51 000 to R300 000	24	24.0	24.0	43.0
R301 000 to R1M	16	16.0	16.0	59.0
Above R1 M to R6 M	20	20.0	20.0	79.0
Above R6 M	21	21.0	21.0	100.0
Total	100	100.0	100.0	

Table 4.1 shows that the majority comprising of 24% of the SMMEs got between R51 000 to R300 000 turnover per year,21% got above R6 million turnovers per year, 20% got between R1 million and R6 million, 19% SMMEs realized below R50 000 turnover per year, and% got between R301 000 and R1 million turnover per year. Results show that there is a normal distribution between successful and less successful SMMEs.

Table 4.2 The level of professional skills in Small, Medium and Micro Enterprise

Technical Skills	Very Poor	Poor	Satisfactory	Good	Very Good
Specialist knowledge	2%	3%	22%	46%	27%
Technical knowledge	1%	2%	47%	32%	18%
Functional/Operational	0%	4%	41%	15%	40%
Marketing knowledge	0%	1%	23%	37%	39%
Product Knowledge	0%	1%	18%	28%	53%
Sales Knowledge	1%	14%	10%	28%	47%

Table 4.2 shows that professional skills were very low in SMMEs. The highest professional skill was product knowledge with 53% followed by sales knowledge 47%, then functional/operational knowledge 40%, then marketing knowledge 39%, then specialist knowledge 27%, and lastly technical knowledge with 18% in support of the results.

Table 4.3.The extent training impacted positively on business

Positive Impact	Strongly Disagree	Disagree	Do not know	Agree	Strongly Agree
Skill level of employees has improved due to the training received	0%	4%	22%	47%	27%
Training received was relevant to your business needs	30%	0%	1%	45%	24%
Sales improved due to the training received.	0%	22%	0%	48%	30%
Product/ service quality has improved due to training received	0%	22%	0%	48%	30%
SMME is growing due to the training received	0%	8%	1%	61%	30%
Worker motivation & confidence levels improved due to the training received.	0%	2%	0%	75%	23%
Customer satisfaction improved due to training	0%	3%	18%	55%	24%
The knowledge and skills received are going to be of use in the next 5 years	0%	3%	19%	54%	24%

Training was strategic	0%	0%	7%	52%	41%

Hypothesis 1 (H$_1$): That there is a positive association between the adoption of strategic (RBV) resources based view approach to management of HR and SMME experiencing growth

Table 4.3 shows that **between** 69% and 98% of the respondents showed that training impacted very well on their   SMMEs. The total results for those agreeing and strongly agreeing were in descending order:

1.	Worker motivation & confidence levels improved due to the training received	98%
2.	Training was strategic	93%
3.	SMME is growing due to the training received	91%
4.	Customer satisfaction improved due to training	79%
5.	Sales improved due to the training received.	78%
6.	Product/ service quality has improved due to training received	78%
7.	The knowledge and skills received are going to of use in the	78%
8.	Skill level of employees have improved due to	74%
9.	Training received was relevant to your business needs	69%

Table 4.4   The level of importance of professional (technical) skills in SMME

		Sum of Squares	df	Mean Square	F	Sig.
Specialist knowledge	Between Groups	29.627	4	7.407	14.394	.000
	Within Groups	48.883	95	.515		
	Total	78.510	99			
Technical knowledge	Between Groups	23.515	4	5.879	12.267	.000
	Within Groups	45.525	95	.479		
	Total	69.040	99			
Functional/Operational knowledge	Between Groups	37.725	4	9.431	15.325	.000
	Within Groups	58.465	95	.615		
	Total	96.190	99			
Marketing knowledge	Between Groups	30.358	4	7.590	21.407	.000
	Within Groups	33.682	95	.355		
	Total	64.040	99			
Product Knowledge	Between Groups	23.103	4	5.776	13.381	.000
	Within Groups	41.007	95	.432		
	Total	64.110	99			
Sales Knowledge	Between Groups	61.517	4	15.379	24.300	.000
	Within Groups	60.123	95	.633		
	Total	121.640	99			
Budgeting	Between Groups	26.506	4	6.626	20.814	.000
	Within Groups	30.244	95	.318		
	Total	56.750	99			
Analytical skills	Between Groups	10.104	4	2.526	7.808	.000
	Within Groups	30.736	95	.324		
	Total	40.840	99			
Business skills	Between Groups	8.137	4	2.034	4.617	.002
	Within Groups	41.863	95	.441		
	Total	50.000	99			
Competitor skills	Between Groups	3.822	4	.956	3.371	.013
	Within Groups	26.928	95	.283		
	Total	30.750	99			
Financial/Resource Management	Between Groups	2.575	4	.644	1.774	.140
	Within Groups	34.465	95	.363		
	Total	37.040	99			
Industry Knowledge	Between Groups	20.609	4	5.152	4.066	.004
	Within Groups	120.381	95	1.267		
	Total	140.990	99			
Work organisational and priority in management	Between Groups	28.904	4	7.226	6.372	.000
	Within Groups	107.736	95	1.134		
	Total	136.640	99			
Organisational Understanding	Between Groups	8.187	4	2.047	6.000	.000
	Within Groups	32.403	95	.341		

	Total	40.590	99			
Project Management	Between Groups	8.521	4	2.130	5.442	.001
	Within Groups	37.189	95	.391		
	Total	45.710	99			
Innovation	Between Groups	.964	4	.241	.410	.801
	Within Groups	55.786	95	.587		
	Total	56.750	99			
Strategic Management	Between Groups	2.543	4	.636	1.571	.188
	Within Groups	38.447	95	.405		
	Total	40.990	99			
Action Orientation	Between Groups	2.982	4	.745	.695	.597
	Within Groups	101.858	95	1.072		
	Total	104.840	99			
Systems Thinking	Between Groups	2.012	4	.503	.536	.710
	Within Groups	89.228	95	.939		
	Total	91.240	99			
Legal	Between Groups	2.085	4	.521	.476	.753
	Within Groups	103.955	95	1.094		
	Total	106.040	99			
Strategic human resources management	Between Groups	1.967	4	.492	.915	.458
	Within Groups	51.033	95	.537		
	Total	53.000	99			
Strategy and business planning	Between Groups	3.855	4	.964	1.414	.235
	Within Groups	64.735	95	.681		
	Total	68.590	99			
Research and development	Between Groups	7.926	4	1.981	1.806	.134
	Within Groups	104.234	95	1.097		
	Total	112.160	99			
Operations management	Between Groups	4.708	4	1.177	1.299	.276
	Within Groups	86.042	95	.906		
	Total	90.750	99			
Marketing	Between Groups	6.148	4	1.537	1.414	.235
	Within Groups	103.292	95	1.087		
	Total	109.440	99			

The test used the 95% confidence level meaning that the p value must be lower than 0.05.
The results are: **Accept the Hypothesis (H₁)**

There was a statistical significance which shows a positive association between the adoptions of strategic (RBV) resources based view approach to strategic management of HR and SMME experiencing growth.

The results show that (SHRM) and business management have an impact on SMME survival and growth. This shows that there is a positive association between the adoptions of strategic (RBV) resources based view approach to management of HR and SMME experiencing growth. It could be stated that the lack of adequate and appropriate strategic human resource management, business and technical skills affects the growth of SMMEs.

4.4 THE LEVEL OF IMPORTANCE OF PROFESSIONAL (TECHNICAL) SKILLS IN SMME

Proposition A1: Less successful SMMEs are less likely to have been trained in the following professional (technical) skills than successful SMMEs.

Applying the accepted rule that the proposition is acceptable if only the $p < 0.05$. If the p value is > than $\dot{\alpha} = 0.05$; it must be rejected; the results are summarized

Proposition A1.1: Specialist Knowledge	000	Accepted
Proposition A1.2: Technical Knowledge	000	Accepted
Proposition A1.3: Functional/Operational Knowledge	000	Accepted
Proposition A1.4: Marketing Management	000	Accepted
Proposition A1.5: Product Knowledge	000	Accepted
Proposition A1.6: Sales Management	000	Accepted

Proposition A1: was accepted

Business Skill	Very Poor	Poor	Satisfactory	Good	Very Good
Budgeting	16%	34%	49%	1%	0%
Analytical skills	62%	30%	8%	0%	0%
Business skills	53%	34%	13%	0%	0%
Competitor skills	58%	39%	3%	0%	0%
Financial Management	70%	25%	4%	1%	0%
Industry Knowledge	13%	17%	40%	16%	14%
Organisational management	30%	10%	34%	26%	0%
Organisational understanding	39%	51%	10%	0%	0%
Project Management	39%	50%	10%	1%	0%
Innovation	22%	41%	37%	0%	0%
Strategic Management	21%	59%	20%	0%	0%
Action Orientation	15%	49%	11%	25%	0%

Systems Thinking	58%	14%	24%	4%	0%
Legal	6%	0%	25%	40%	29%
SHRM	32%	46%	22%	0%	0%
Strategic business planning	47%	27%	26%	0%	0%
Research and development	28%	34%	20%	18%	0%
Operations management	20%	39%	27%	14%	0%
Marketing	33%	33%	19%	15%	0%

It could be stated that professional (technical) skills are very important for SMME to remain profitable, competitive and to grow.

4.4. THE LEVEL OF BUSINESS AND ENTREPRENEURIAL SKILLS IN SMMES

Table 4 indicates that the majority of SMME in Limpopo had very poor business and entrepreneurial skills.

The majority, about 50 to 97% of the SMME owners and/or managers interviewed indicated that they were very poor skills such as:

Budgeting skills	50%
Analytical skills	92%
Business skills	87%
Competitor skills	97%
Financial Management skills	95%
Organisational Understanding	90%
Project Management	89%
Innovation	63%
Strategic Management	80%
Action Orientation	64%
Systems Thinking	72%
SHRM	78%
Strategy & business planning	74%
Research and development	62%
Operations management	59%
Marketing	66%

The other group of SMMEs that constituted from 16% to 39% of the respondents revealed that SMME owners were very poor in strategic human resources management, strategic management, innovation, project management, systems thinking, industry knowledge, work, and organizational priority in management, organizational understanding, action orientation, legal, operations management, marketing and research and development.

Results show that the majority of SMMEs in Limpopo had very poor business and entrepreneurial skills

4.5. CHI-SQUARE TESTS

In what ways are human resources training and development linked to SMME profitability?
Hypothesis 2 (H$_2$): There is a positive impact of training on SMME annual turnover as a result of worker qualification

Table 4.5- The extent training impacted positively on business

	Qualification				
Annual turnover	**Gr 8**	**Gr12**	**Diploma**	**Graduate**	**Total**
R50 000	5	14	0	0	19
R51 000 to R300 000	4	10	9	0	23
R301 000 to R1 M	0	4	10	0	14
Above R1 M to R6 M	0	3	17	0	20
Above R6 M	0	6	14	4	24
Total	**9**	**37**	**50**	**4**	**100**

The Pearson Chi-Square

Table 4.5 Positive association between the adoptions of strategic resources based view (RBV) approach to management of HR and SMME experiencing growth

Chi Square tests	Value	Df	Asymp. Sig.(2-sided)
Pearson Chi-Square	65.777[a]	12	.000
Likelihood Ratio	74.519	12	.000
Linear-by-Linear Association			.000
N of Valid Cases	100		

Confidence interval: 95% $\dot{\alpha}$=0.05

a. 10 cells (50.0%) have an expected count of less than 5. The minimum expected count is 0.64. The test used the 95% confidence level meaning that the p value must be lower than 0.05.
The results are: The Pearson Chi-Square showed a significance of ($p < 0.0001$) which was less than the minimum expected of .64.

Results show that lack of adequate and appropriate strategic human resource management, business, and technical skills affected the growth of less successful SMMEs. It could be stated that there is a positive association between the adoptions of strategic (RBV) resources based view approach to management of HR and SMME experiencing growth and that the adoptions of strategic (RBV) impacts positively on SMMEs.

Table 4.6 Managerial Competency Levels in SMME

Managerial Skills	Very Poor	Poor	Satisfactory	Good	Very Good
Communication skills	0%	35%	53%	8%	4%
Personal Qualities	0%	38%	49%	4%	9%
Interpersonal Skills	0%	22%	25%	50%	3%
Results Orientation	0%	68%	23%	8%	1%
Managing People	1%	19%	62%	12%	6%
Business/Entrepreneurial	0%	77%	13%	5%	5%
Self-Management	0%	25%	42%	32%	1%
Leadership Competencies	0%	36%	34%	28%	2%

Table 4.6 shows that the minority of the SMMEs have good managerial competencies communication 4%, personal qualities 9%, interpersonal skills 3%, interpersonal skills 3%, results orientation 1%, managing people 6%, business &entrepreneurial 5%, self-management 1%, and leadership competencies 2%.

4.2 DISCUSSION

Results on SMME annual turnover show that there is a normal distribution between successful and less successful SMMEs. In support of these results, extending the concepts of liability of smallness and newness, (Maas & Herrington, 2007) show that many firms with more financial slack should experience fewer SHRM problems. Furthermore, low-performing, cash-strapped owners/managers have difficulty in attracting, developing, and retaining quality employees (Dess & Lumpkin, 2003). It could be stated that there is a marked difference between successful and less successful SMMEs and that an average income of a successful SMME is between R301 000 and R1 million

Results indicate that the majority of SMMEs in Limpopo had very poor business and entrepreneurial skills. In support of the results, the (2001) Global Economic Monitor report showed

that only 26% of South African adults had the knowledge, skills, and experience required to start a business. One of the most significant reasons for the failure of SMMEs is their passive application of essential business and management practices (Alasadi & Abdelrahim, 2007; Ladson and Van Duren, 2007). Lack of business and entrepreneurial skills limits the full range of knowledge, skills, and abilities an individual can use to produce a given set of outcomes. Ladson and Van Duren, (2007) indicate that in South Africa 50% of all small businesses eventually fail. Maas and Herrington (2010) indicated that SMME owners lack of business knowledge and skills limiting the ability of businesses to maximize growth opportunities. Ahmad and Seet (2009) state that lack of management skills affect the growth rate of SMMEs. Thus, SMMEs in Limpopo lack necessary business and entrepreneurial skills.

Results reveal that the majority of SMMEs managers in Limpopo had very poor managerial competency skills. Lyles et al. (2004) find out that managerial competency as measured by the managerial experience, start-up experience, entrepreneurial experience, education of the founder and functional area experience positively influences new SMME performance. Other studies by Smallbone and Welter (2001), Hisrich, and Drnovsek (2002) concur with Lyles et al. (2004) findings that managerial competencies as measured by start-up experience, knowledge of the industry, manager's educational level, and managerial experience positively affect the performance of new SMMEs. In South Africa, Herrington and Wood (2003) point out that lack of education and training has reduced management capacity in new firms in South Africa. This is one of the reasons for the low level of entrepreneurial creation and the high failure rate of new ventures.

In support of these results Mandal, Venta and El-Houb (2008) note that best business practices produce best performance. This study also explains several ways through which business practices establish in specific areas, which can lead to outstanding business performance. Mandal et al., (2008) reveal that the implementation of business practices based on the use of quality management principles and tools in business management will lead to a systematic improvement in business performance, especially where key practices in business excellence are applicable to all functional areas in an enterprise.

The various reasons for the high failure rate of SMMEs in South Africa have been established and range from mainly shortage of management skills (Willemse, 2010) to lack of access to finance (Willemse,2010; Fatoki, 2010). Herrington and Wood (2003) established that lack of education and training were the major causes of high failure rate of new ventures in South Africa. Van Tonier (2010) notes that the success rate of SMMEs in South Africa is not impressive because of lack of proper business management practices, skilled labour, brain drain, financial skills, performance analyses of business operations and incompetent senior managers.

Analoui and Karami (2003) added that the major reasons for SMME failure is due to managerial causes such as the lack of strategic thinking and long-term planning. Martin and Staines (2008) revealed that management competence is very important for small firm's success. Managerial competencies are very important to the survival and growth of new SMMEs (Martin and Staines, 2008). Martin and Staines (2008) find that lack of managerial experience, skills, and personal qualities as well as other factors such as adverse economic conditions, poorly thought out business plans and resource starvation are the main reasons why new firms fail.

4.3 A STRATEGIC HUMAN RESOURCES MANAGEMENT INTEGRATIVE THEORETICAL FRAMEWORK
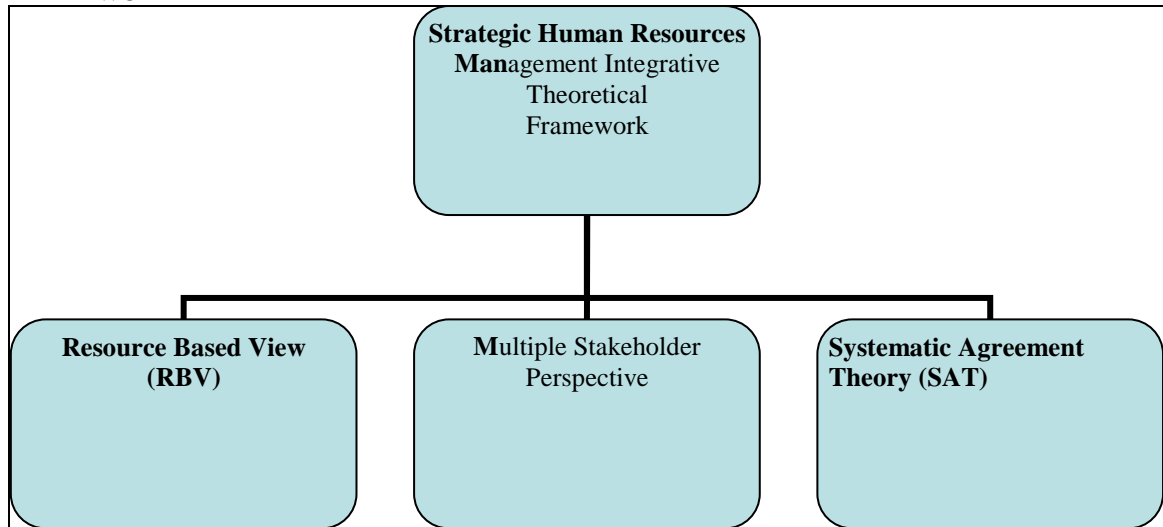
(Source: Sungwa, 2014

This study advanced a Strategic Human Resources Management Integrative Theoretical Framework that incorporates a multiple stakeholder perspective, Systematic Agreement Theory (SAT) (horizontal and vertical linkages) along with Resource Based View (RBV) in SMMEs that shows SMMEs necessary tools to define and evaluate important primary linkages of SHRM in SMMEs.

SMME managers use The Strategic Human Resources Management Integrative Theoretical Framework in the following way**;**

- o Resource Based View (RBV) provides a framework used to determine all the resources needed for SMME effectiveness;
- o Multiple stakeholder perspective provides a framework of how SMMEs would define and measure organizational effectiveness; and
- o Systematic Agreement Theory (SAT) provides a framework for SMME to align their organizational culture, strategies and designs corporate to achieve the same intended goals.

5. CONCLUSIONS

The conclusions are that:

- o Most SMMEs fail because they lack important business, entrepreneurial and technical skills;
- o Professional (technical) skills are very important for SMME to remain profitable, competitive and to grow;
- o Lack of strategic human resources management skills affects owners/managers in how they manage SMME growth;
- o Strategic Human Resources Management practices play a role in the implementation of different firm SMME strategies through strategic management, strategic human resources management, strategy and business planning and operations management; and
- o The theoretical and applied discipline of Strategic Human Resource Management demonstrates relevance not only for large organizations but also for successful, growing, and sustainable SMMEs.

6. RECOMMENDATIONS

The recommendations are that:

- o SMME owners/managers employ Strategic Human Resources Management practices in the implementation of different firm strategies through strategic human resources management, strategy and business planning, operations management and marketing; and
- o SMME owners/managers use strategic Human Resources Management Integrative Theoretical Framework to choose all resources, align organisational culture, goals, objectives, and strategies, and lastly measure their organisational effectiveness.

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BIOGRAPHIES
Author 1

Photo

Dr Sungwa Jealous intends publishing an article –"Is Strategic Human Resources Management Profitable for Small, Medium, and Micro Enterprises?" This article used the same data and results as the (Sungwa, 2014) thesis which was submitted in fulfilment of the requirements for the Doctor of Philosophy Degree in Business Studies at Zimbabwe Open University.

Dr Sungwa Jealous is now at the University of South Africa (UNISA) as a Post-Doctoral Fellow in the College of Economics and Management Sciences, Faculty of Management, Department of Human Resources Management (2016-2017). He is converting his Thesis into articles.

Effects of Behavioral Economics and their Influence on Consumers Decisions

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Abstract

Behavioral pricing supplements the classical economic perspective and contributes to a comprehensive understanding of price effects. As well researched and described in the recent years, economic management and marketing do not perform on the assumptions of the homo oeconomicus. The classical theories are complemented by valuable psychological insights of behavioral economics research and the neuro pricing. Price management and its sub-processes must be therefore understood and used not only exclusively economically, but also behavior scientifically. Pricing as one of the main four aspects in the marketing mix must be redefined and exploited more professional. A more global and intensive competition leads to an interchangeability of products and services. Due to the habituation to the internet, the convenient use of search engines and the communication between customers via rating platforms, a more price-related orientation is forced rapidly and represents a decisive success-factor. In general, the term *pricing actions* is used as a collective name for a wide variety of various measurements with differently distinctive price-political provisions and effects. Such effects of behavioral economics form the focus of this work. Different behavioral pricing strategies and basics for framing will be identified, linked to theories they derived from and discussed.

Conference Topic: Management, Social Sciences and business

1. INTRODUCTION

Human beings make a variety of decisions every day. Whether at work, at home or in the supermarket. Thereby, we assume that we consciously make the right choice for us. But instead, our subconscious has long decided for us. We follow in our decisions principles that successfully evolved in the evolution[1]. As initially mentioned, the behavioral economics revised the basic assumption of the homo oeconomicus model. According to this model of economics, man behaves according to the principle of utility maximization, in any action seeking the own personal benefit to maximize[2]. Many economic assumptions, predictions and advice are based on this theory of rationality[3].

Economists are convinced that any behavior can be awarded to this basic idea. Therefore, any acts that appear at first not utility maximizing, are explained by being at least indirectly linked to the principle of utility maximization. If for example a product is purchased from a friendly seller, although the same product is cheaper at another store, then this behavior can be rational, because it does not endanger the relationship to the seller and can pay off in the future. The behavioral pricing research focuses on the cognitive processes and can therefore be formulated a complementary perspective to the classical theory of price [4]. Felser describes some vulnerabilities in the principle of utility maximization. First, there is no evaluation of projects according to their usefulness and secondly, cooperation is possible only to a limited extent. Usually, the model used for such challenges is expanded by the criteria of justice[2].

The forecast and creation of customer reactions on different prices was originally based on microeconomics. Already in 1890, Alfred Marshall formulated a theory of economic actions by households or customers, which is reflected in the well-known concept of the demand curve - the function of the demand quantity as a function of the price. This theory of the homo oeconomicus assumes an entirely rational acting customer, whose willingness to pay is equivalent to the additional use of goods, in practice translated into the benefits of monetary units while purchasing the product [5]. The benefits of a product depend on the individual preferences of each consumer, while the price of the good is perceived by all customers objectively in identical height [6]. If two customers perceive the value of a product in an identical way, the reaction on the same price will be the same. Vice versa we will find a different purchase behavior at an identical price only because the different perception of benefits.

According to the micro-economic base theory, the requested amount for goods decreases linear monotonic with increasing price. Even if phenomena that are contrary to this theorem or limiting this point of view are already identified from the outset, they were only declared to be exceptions (like *Giffen-Goods* or status symbols) in the textbooks without further explanations [7], [8].

Significant impetus for the establishment of behavioral pricing research came from psychophysics, quantitative research focusing on the effects between physical stimuli and psychological reactions. For the behavioral pricing research, Weber's law became most relevant [9].

This requires that the measurability of the difference of two various levels of stimulus-intensity is proportional to the absolute level of these irritations. Consequently, to make the reaction measurable, the difference of stimulus must be greater the higher the base stimulus level[10]. Transferring Weber's law to the price perception of the customer, it is found that at a high price level the same absolute price difference is perceived by customers less than at a low-price level. In this context, for the first time the concept of price thresholds in the behavioral pricing Theory was introduced. The transfer of knowledge from Psychophysics to price-related investigations was carried out in the early works of Monroe[11].

Individual behavior relevant phenomena were scientifically investigated in a series of works. These are the concept of the reference price, the acceptable price range and the knowledge about the relationship between perceived quality and price. The first systematic empirical studies in this area took place in the work of Gabor and Granger. In methodological terms, it involves observations and simple questionnaire surveys in non-controlled environments. An overview of the preliminary phase of behavioral pricing research is found in Monroe[12], [13].

The field of behavioral economics itself is strongly influenced by the studies of Kahneman and Tversky, who began their long-term cooperation in the field of decision making research in 1969. They showed that people may quite differ from the clear thinking and this is not due to feelings, but on the development of the cognitive system. Their findings about principles of heuristics (rules of thumb) and cognitive distortions was soon adapted not only in social sciences. The prospect theory describes howdecisions are made, if the probabilities and risks of the decision are unknown. It differs from the expected benefit theory of economists, because the perception of the problem is more significant[14].Through a limited rationality, the human image in the behavioral economics is characterized differently than the model of homo oeconomicus Not all decisions can be made optimally, since the individual has only limited cognitive abilities. We usually work with mental tricks to reach an approximately exact decision. In addition, that the preferences of the people and consequently its behavior are not constant. Also man is affected of various effects unconsciously[15].

The aim of this article is to explore and to highlight, which key effects influence the cognitive processes and could be appliedand integrated in operational practices without bigger efforts.The research field of behavioral pricing as a subfield of behavioral economics deals generally with the question, how customers absorb and process rates or pricing information. It also examines, what reactions are taken on price quotes and how that information is used for decision preparing and decision making.

2. DUAL PROCESS THEORY

The dual process theory focusses the idea that notions can be developed in two ways, or better in two diverse processes. They consist out of an implicit (or unconscious) and explicit (conscious) characteristic. Explicit processes represent attitudes which might rather be changed by education and experiences, whereas implicit processes, representing opinions and behavior, can hardly be adapted. It is linked to economics (prospect theory and behavioral economics) due to comparable research objects[16], [17].

2.1. Type 1

Two Types, Type 1 and Type twoform the basis for the judgment and decision theory from Kahneman. By using these cognitive systems, he conveys the automatic processes of intuitive thinking. It is however to be aware that it these systems are formed fictional. They do not consist of parts that form a group and interact with each other. Instead, they are imaginary systems and not be localized in the brain[18]. Type 1 works automatically and quickly, largely effortlessly and without voluntary control. This type is "quick thinking", in which emotions and impressions emerge, which serve as a source for the voluntary decisions in Type 2. The functions of Type 1 are present from birth. Such skills are for example:

- perception of the environment

- recognition of things

- control of awareness

- prevention of losses

Some skills can be acquired only by a few people, a certain education in culture and language is required for others. Type 1 can learn, stores the knowledge and recalls it unintentionally and without efforts. We cannot escape many mental events, because they expire completely unconscious, such as understanding simple sentences in the mother language. Other processes, such as chewing, can be controlled, but typically work like an autopilot. Type 1 is responsible for the following activities:

- disgusting from a voice heard

- simple computing tasks (such as 2+2=?)

- reading words on a promotion poster

- driving on a free road

- recognizing distances of objects, [18].

The automatic system,Type 1, projects perceptions, instincts, intentions and emotions that are proposed toType 2. It is also able to produce simple content references and to develop a coherent story from collected information and impressions. Even if this information is limited, the system judges and corrects itself only if more information is available.

2.2. Type 2

Type 2 draws attention to the exhausting mental activities that rely on them, including complex calculations" [18]. Here are some examples of such activities:

- count the frequency of a letter on a page

- wait for the start signal at the competition

- drive into a tight parking space

- making price-performance comparisons

All these mentioned activities of the Type 2 require attention of the actor. If the concentration is no longer maintained, the function of the system is (negatively) affected[16].
Type 2 receives signals from Type 1 in the form of intuitions and feelings. It checks, whether these thoughts may be expressed in the behavior. If not, they are oppressed by the system. Type 2 is therefore the "guardian of the

behavior". This type is not only able to suppress the impressions and intentions of Type 1, but can affect also the manner, as the other system works[19].
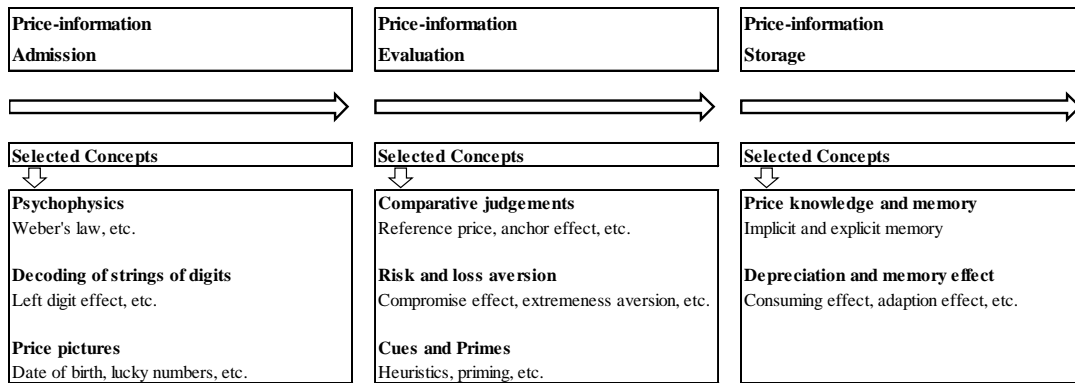
3. THE INTEGRATIVE CONTEXT OF BEHAVIORAL PRICING

The selective use of behavioral pricing instruments to influence the customers decision in means of making a subjective price perception of an objective price to become more acceptable is called *framing*[20].Further researches will have to continue to picture which determinants and key instruments can be recommended and modelled for operational use in different industry and how can behavioral pricing effects can be measured in daily practice (ceteris paribus challenge).

Table 1. Framing, *author's construction based on [20]*
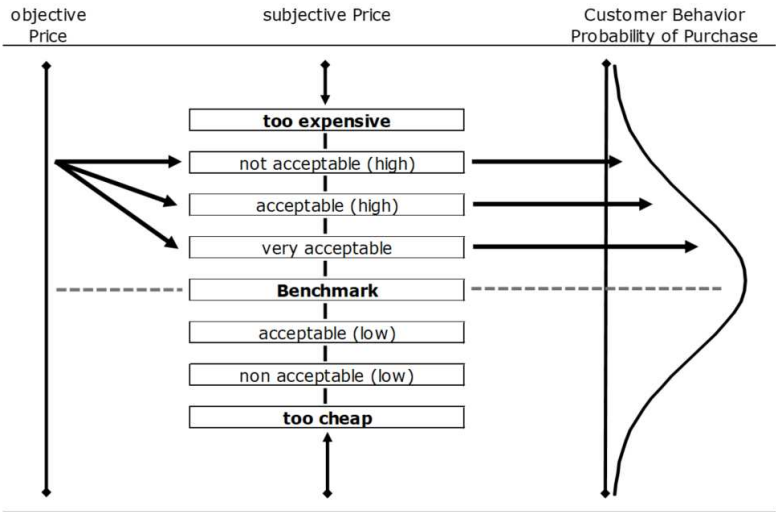
To give a better orientation and systematization about the development of behavioral pricing theories, it seems to be appropriate to use the psychologic paradigm of the cognitive method of information processing. This concept assumes, that external stimuli rather influence behavior indirectly than directly. In the first step attractions must be perceived and evaluated before they might result in decision processes or different (purchase-) behavior[20].Accordingly, the principles of cognitive information processing deal with processes in terms of remembering, deciding, thinking, perceiving and finally the structure of our memory. Following this concept, one can differentiate three phases: admission of price-information, evaluation of price-information and storage of price-information[13].Along this process chain, different concepts can be identified, which are influencing the costumer´s psychologic converting of price-information.Even an excellent product is only profitable if it can be sold with the right price. The price is the most crucial factor of economic success as well as the use of resources. From the perspective of classical economics, price formation is setting a price for a product, which is generated regarding a recoverable sales volume to receive the greatest possible profit. Keeping in mind a price based on the downward sloping demand curve, it is assumed that the amount of demand drops, the higher the price and increases if the price is lowered. At the same time, the contribution margin (price minus variable cost) grows with the price. In this context, it is to find the optimal price, where the profit margin is greatest[21], see table 1.

Table 1. Integrated frame of behavioral pricing references, *author's construction based on [20] and [13]*

Price-information Admission	Price-information Evaluation	Price-information Storage
⟶	⟶	⟶
Selected Concepts	Selected Concepts	Selected Concepts
Psychophysics Weber's law, etc. **Decoding of strings of digits** Left digit effect, etc. **Price pictures** Date of birth, lucky numbers, etc.	**Comparative judgements** Reference price, anchor effect, etc. **Risk and loss aversion** Compromise effect, extremeness aversion, etc. **Cues and Primes** Heuristics, priming, etc.	**Price knowledge and memory** Implicit and explicit memory **Depreciation and memory effect** Consuming effect, adaption effect, etc.

3.1. Psychophysiks

Psychophysics is one of the oldest research fields and focusses on the correlation between external stimulations and individual, subjective perception[22]. Weber's law - as well as the Weber-Fechner law belong to the classical laws of psychophysics, a part of the experimental psychology of perception. The central fact of Weber's law is that the perception of differences between two stimuli depends on the initial stimulus. The greater the intensity of the output stimulus, the stimulus change or stimulus difference must be higher, to be noticed. In the context of pricing strategies this means the following: the customers perception of a price reduction from a 6 Euro expensive bottle of wine by 2 euro equals the perception of a reduction by 4 Euro of a 12 Euro bottle of wine. The Weber-Fechner law, however, adopts a transformation of the objective intensity of stimulus in subjective sensation strengths. The absolute difference in price must rise with rising prices. Therefore, price changes and price differences are perceived relative and not absolute[23].

3.2. Decoding of strings of digits

Price thresholds are suspected between broken (truncation) and round prices. Round prices are given, when the very last or the last digits of the price round up to zero. Fractional prices end accordingly with other digits. E.g. it is believed that the price assessment due to an increase of a price with an 9 extension to a round price with a 0 extension changes the perception of the customer disproportionately high. Stiving and Winer distinguish between level and image effects. Level effects explain how price endings with a 9 can lead to an underestimation of rates. The level effects assume that a purchaser completes prices with 9 endings, that they read rates from left to right (left digit effect) and have a limited capacity for information processing. This, for example, causes that only the first left-hand numbers are remembered[24]. Image effects can be recognized, however, when customers associate a special meaning with the last digit. This price-image effects (9 price endings as a signal for a discount) and quality image effects (9 price endings as a signal for an inferior quality) can be distinguished. While the effects of the level and the price-image effect justify a higher sales volume by 9 price endings, the quality-image effect should adversely impact on price perceptions or even the sales quantity.

3.3. Price pictures

Customers recognize in a very individual way in single digits or in combinations of numbers within a price, price pictures or also so-called price figures. These can have subjective meanings and affect the emotional perception consciously or unconsciously. Depending on the cultural background, some numbers can have a meaning as a lucky or unlucky number. Similar reaction can be seen with customers, recognizing in the price their own date of birth, the date of birth of their children or the date of other meaningful events. Of cause, this effect can appear in a negative way too[25].Any numbers are called anchor, which people in numerical assessments influence. It is irrelevant whether the anchor stands in a relation to the verdict. Even the existence of this effect or motivation to ignore it or to suppress it does not let disappear the anchor effect[18].In contrast to many other psychological operations, the anchor effect can easily be measured. The ratio of the difference of the estimates to the difference of the anchor values is the so-called anchor-index, and indicates the influence of an anchor on the decision[9].Arielycalls the

anchor effect an *arbitrary coherence*. Even if an anchor is set arbitrarily, for example the last two digits of the social security number.It is not only consistent to the current appraised value or price, but also on all the following ones. In the case of one anchorage by a random anchor charm, many future decisions will be affectedby the former ruling[3].

3.4. Comparative judgement

Although each customer is free to use an endless number of sources of price information, behavioral pricing researchers determine again and again, that many purchase decisions are made rather emotional than rational. It is not surprising, therefore, that it is difficult for customers to evaluate prices according to their absolute level. Therefore, customers use their own - not always current or objective – experience. Reference prices can be divided into external and internal reference prices. External reference prices are developed during the purchasing process by comparing prices of comparable products or by benchmarks, offered by the seller. For example, a price out of price lists or price recommendations (given by the producer). These so-called reference prices serve as reference values. Internal reference prices are experienced and remembered prices, information given by third parties or friends, expected prices, fair prices, the average price for comparable goods or a mixture out of the before mentioned characteristics. In the context of reference prices, the anchor effect describes the customers general need to get some orientation[26].Sellers can use this effect to manipulate the customer by showing higher prices for comparable goods. In general, customers are judging not in an absolute way. They always look for a relation to an internal or external anchor or a reference[27].

Only a group identified and known as "market-marvenists" (Hebrew, Yiddish: maven means an accepted expert who tends to spread his knowledge), appear to be well equipped with information for a purchase of specific products. In general, the term is used to describe consumers who have an up-to-date information about products, places to shop best at and even different markets[28].

3.5. Risk and loss aversion

Other typical effects in the context of behavioral pricing are the *compromise effect* and the *extremeness aversion effect*. These can be proved very often and are extensively researched in some industries. To illustrate this, imagine a range of three articles, of which no one stands out in all essential criteria at the same time. Because customers perceive losses more negatively than comparable benefits, they intuitively want to reduce the negative characteristics of the bought products. At the same time, they want to avoid extreme positions and tend to make compromises that can be justified later towards partners, relatives or friends[14].

3.6. Cues and primes

Cues or *primes* are stimuli, which can influence the customer consciously or unconsciously. They change the perception by activating mental memories. Cognitive notions are stimulated by cues, which can be described as information signs. Consumers tend to use simplified heuristics in complex situations. Heuristics areabstract shortcuts that comfort the cognitive load ofdetermining. According to an often-quoted study by Miller, people are not able to consider more than seven criteria for decision making [29]. People try to behave generally rational, nevertheless in certain borders, which means *restricted rational*. Due to these restrictions, they tend to use heuristics as signposts to reduce complex problems to mentally more simple challenges.

The *halo effect* is well knownsince the beginning of the 20th century. It derived from the Greek word *halos*,which means a light ring around the sun or the moon and was used for the first time by Thorndike in 1920. Wells had observed this phenomenon 13 years previously[2]. Under the effect the tendency is understood, to perceive de facto independent or only moderately correlated properties of persons or things as connected. Individual characteristics of a person, such as disability, attractiveness or social status create a positive or negative impression that "outshines the other perception of the person" and disproportionately affect so the overall impression. A typical example of a halo effect is when a teacher assessed the school performances of a good-looking and friendly student better than they are objectively compared with other students[18].

The effect often occurs when the person to be judged about, is characterized by prominent, distinctive characteristics or behaviors. The influence of the halo effect is particularly strong, if the reviewer specifically emphasizes on a specific behavior or characteristic and correspondingly exaggerated this. Lack of motivation or information also enhances the effect[30].

3.7. Price knowledge and memory

Based on experiences and observations, costumers are learning price information and recall them in case of purchasing comparable or even the same goods. Explicit price-knowledge is a composition out of exact data, facts and figures. Implicit price-knowledge can be defined as unconscious experienced information, which enable the customer to judge about the price for a certain product. It is strongly linked to the implicit reference-price[27].

3.8. Depreciation and memory effect

The strongest perception of losing money is felt in the moment of paying (*pain of paying*). This perception decreases in the run of time, comparable to the concept of depreciation. This relates to the idea of *mental accounti*ng. In the moment of payment, the costumer books the amount paid as costs. This can even cause pain. Typical examples are yearly insurance fees, advance payments for holiday trips or bigger payments in the process of buying houses or cars. The consumption-effect means, that in the run of using the formerly bought (and paid) goods, more and more advantages are booked on the benefit-accounts and reducing the perceived price[20].

The *adaption effect* is based on Helsons theory of adaption-levels. He described that, in the time elapsed, customers integrate formerly done payments in their financial status quo. The perception of prices is changing in the run of time. Purchases with single payments are reducing price-perception by trend. Purchases with repeating payments keep the payment necessity alive, an effect which is called memory-effect[31].

4. HEURISTICS

Heuristics can be mental shortcuts that ease the cognitive load of deciding. Examples of this method include using a rule of thumb, an educated guess, an intuitive judgment, stereotyping, profiling or even common sense. According to an often-quoted study by Miller, people are not able to consider more than seven criteria for decision making[29]. People try to behave generally rational, nevertheless in certain borders, which means "restricted rational". Due to these restrictions, they tend to use heuristics as signposts to reduce complex problems to mentally more simple challenges. If the quality of a good cannot be judged without further efforts, customers tend to use a widely spread heuristic: the higher the price, the better the product[32]. Heuristics are gross processes, helping to make complex situations solvable. In contradiction to an algorithm, a heuristicmust not necessarily deliver a result. Different conditions lead to an application of these rules, such as: lack of time; the amount of information that is too large to be fully evaluated; unimportant problem; lack of experience with a Problem[2].

Such decision rules work quickly and efficiently. However, the probability that the result is correct, is low. Rather, the heuristics are considered sources of error for cognitive distortions. Heuristic can be grouped in four distinct categories: availability heuristics, re-cognition heuristics, representativeness heuristic and affect heuristics.

4.1. Availability heuristic

The availability heuristic is based on the ease with which you can retrieve events from memory (demand ease) and influences most of all decisions made that under uncertainty.These heuristics can be illustrated in the following experiment, which Kahneman and Tversky conducted. The subjects were asked to evaluate whether it is more likely that the letter K shows up as a first or third letter in a word. The likelihood that someone immediately knows this answer is very low. The subjects did not know the answer and thought about how many words they knew with the letter K in the appropriate place. While the words with the letters in the first place come to mindvery quickly, it is too complex to find the words of the other category (letter K in third place). Since they faster caught words with K in the first place, they automatically assumed that there are more words of this category. In English, this answer however is wrong[18]. The ease of information retrieval is regarded as an indication for truth, relevance or importance. Many prejudices are thus the product of the availability heuristic phenomenon[33].

4.2. Re-cognition heuristic

The re-cognition heuristics is a decision-making strategy for comparative judgments. If two objects with respect to a criterion should be assessed, it says the following: "If one of two objects is recognized and the other is not, then infer that the recognized object has the higher value with respect to the criterion" [34].

A typical and often used paradigm is the task to decide which of two towns has more inhabitants, such as Bremen and Leipzig in Germany. This application of re-cognitive heuristics will show a person knowing only one of the two

cities decide for the well-known one. If a person known both cities or both are unknown, the re-cognitive heuristics do not apply.It shows that re-cognition is a valid reference in many environments. Because the re-cognitive heuristics takes advantage of the natural connection between recognition and criterion, it is called rational ecologically[34].

4.3. Representativeness heuristic

In the context of assessing probabilities of differingoccasionsor conditions, the representativeness heuristic is often used. When these heuristicsare carriedin mind, the representativeness of an occurrenceis the most significantmeasurefor weighingthe probability, in contradiction to other factorslike probability axioms. The higher an event or an object of a category is similar, the higher the probability that it will be assigned to this category[15]. By using this application, danger occurs, that important information has not been observed for the probability assessment[35]. Two factors confuse the probability assessment: Individuals estimate a too high frequency of unlikely occurrences, and on the other hand, the quality of the given values is neither judged nor noticed[36].

4.4. Representativeness heuristic

The affect heuristic toleratesto determineand solve difficultiesquickly and efficiently based on situate emotions, or psychologicallyconcerns. It is a subconscious practicethat abbreviatesthe decision-managingactivityresponding to a stimulus. If people´s feelings in a situation or towards an object are positive, then they likely tend to judge the risks lower and the benefits higher. If the attitude is negative, the more the risks will be perceived as high and the benefits as low. [37]Thus, the affect heuristic describes decision-making under the unconsciously influence of feelings, such as preference or rejection. Answering a complicated question ("*what do I think?*") is substitutedby answering a simplified question ("*what do I feel*?")[18].

5. CONCLUSION

Some effects which can lead to cognitive biases in evaluation processes have been introduced. The model of homo oeconomicus has been replaced by the findings of behavioral economics, particularly the new expectations theory. It clarified that the image of a rational acting human being cannot be maintained. The cognitive skills of the people are too limited and the decisions that are made by using heuristics or working hypotheses, too vague.

The judgment and decision theory by using the two systems was characterized by Kahneman. These interacting systems show the workings of the human mind. Type 1, quick thinking, is therefore responsible for emotions and impressions. It works automatically and cannot be turned off. In addition, it produces a coherent story based on limited data and draws a hasty conclusion. Type 2, the voluntary willing system, which requires a certain effort, endorses or corrected the decisions and judgments that have been submitted by Type 1.

The heuristics, simplified procedures, lead often to inaccurate results. The availability heuristic checks the call - off lightness and moves the decision from this information. Whereas the re-cognitive heuristics is based on the recognition of one of two objects and this option then elected. The representativeness heuristic is applied especially in probability assessments and allocates an event of a category based on its representativeness. While at the affect heuristic decisions are made based on emotions.

These identified systems provide cognitive distortions that have been characterized as effects in many situations. If a characteristic of a product or a person is perceived earlyas positive or negative, all other characteristics are influenced positive or negative in this assessment. This halo effect occurs most in the context ofappealing and is therefore often used in the advertising and presentation of products.

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The Influence of Distribution Channel Mix to Customer Equity

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Abstract

On the 15th of July 2015 Amazon celebrated its 20th birthday with an event called Prime Day. For everybody who thought digital distribution is just another distribution channel, this event presented the real potential of a digital distribution channel. Amazon received 34 million sales that day and almost 400 orders per second. This outstanding and incontrovertible success leads to the question, how digital distribution channels are changing the traditional sales environment and furthermore how the distributions channel mix influence the customer equity of a company? Looking at the history of economic science the age of product based view has moved on to a customer centered perspective. Nowadays it's nearly indispensable to evaluate firm´s marketing strategies and to identify the main drivers of the firm´s customer equity. Facing the customer equity approach it´s necessary to investigate the customer equity (CE) model and the customer lifetime (CLV) model. Both are directly related and customer equity is the aggregation of a firms expected customers lifetime values considering existing and new attracted customers.High brand equity and high value equity may not be enough to hold customer to the firm. There has to be glue between customers and the firm. The definition of relationship equity is the willingness of a customer to stay with a brand and a firm. Therefore the right distribution channel mix can be identified as a major driver with a huge influence on a companies´ customer equity rate.

Keywords: distribution channel, channel mix, customer equity, marketing mix, 4P´s, Amazon, multi-channel distribution

1. INTRODUCTION

On the 15th of July 2015 Amazon celebrated its 20th birthday with an event called Prime Day. For everybody who thought digital distribution is just another distribution channel, this event presented the real potential of a digital distribution channel. Amazon received 34 million sales that day and almost 400 orders per second. This outstanding and incontrovertible success leads to the question, how digital distribution channels can change traditional sales environment and furthermore how the distribution channel mix influence the customer equity of a company? (Stoller, 2017, p. 20)The Financial Times titled "Consumers absolutely love Amazon - it makes their life more bearable". Moreover investors love companies like Amazon with their extremely high customer focus, too. But how can investors find such information about customers and their value in a balance sheet or how can they predict any future development from financial valuation models? (Ito, 2017, pp. 1-2)For example in traditional analysis the Return on Investment (ROI) is used to evaluate and compare the success of activities and investments. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 1) The Return on Investment is nothing less than the sum of provided resources and the resultant outcome. However this method might provide disadvantages, when it comes to measure a marketing strategy. Or even more to make a marketing strategy financially accountable. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 2)

Looking at the history of economic science the age of product based view has moved on to a customer centered perspective. Nowadays it's nearly indispensable to evaluate a firm´s marketing strategies and to identify the main drivers of the firm´s customer equity. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 5) Even more the customer equity framework gives firms a tool to calculate and rank their strategies on a mid and long-term perspective. Finally the customer equity approach makes the influence of distribution channel mix measurable and accountable. (Rust, Lemon, & Zeithalm, 2004, p. 109)

Therefore this paper will analyze the different distribution channels from a marketing perspective with regard to the 4-P model of Kotler to gain connections and identify its influence on the customer equity of a company.

2. 4P Analysis & Distribution Channel Mix

A traditional marketing approach to analyze a case like the Amazon Prime Day is to discuss the event through four dimensions. Through the four tactical levers product, place, promotion, price. (Ruskin-Brown, 2006, p.68)

- Product: Amazon offered over 253 million products in 2014 and many additional services

- Place: through its online Platform Amazon reached to be the giant with a huge market place. Amazon holds 46 percent of the online retail market and pursues warehouses with a total space of over 120 million square feet

- Promotion: through digital promotion an big data Amazon provides a large reach actual marketing expenses diver from 4,7-4,9%

- Price: the market capitalization gained by Amazon is about $448 billion

Amazon´s stock increased since 2012 by 300 percent and substitute 295.000 jobs since founding. (Stoller, 2017, p. 21) In general distribution channels can be differentiated in in-store, mail-order and electronic mediums. (Alptenkinoglu, & Tang, 2005, p.802) Moreover rudimental differentiation in to analog and digital distribution channel can be allocated.

Table 1: General differentiation in distribution channels

distribution channel	
digital	analog

3. Customer Equity

Facing the customer equity approach it´s necessary to investigate the customer equity (CE) model and the customer lifetime (CLV) model. Both are directly related and customer equity is the aggregation of a firms expected customers lifetime values considering existing and new attracted customers. (Hogan, Lehmann, Merino, & Srivastava, 2002, p. 30) Therefore customer equity can be defined as the future oriented contribution of the customers to the company value. (Blattberg, Getz, & Thomas, 2001, p. 17) A mathematical approach is given by following formula.

$$CE = CLV * market\ share * market\ size$$

Figure 1: The Customer Equity Formula

Where customer equity is the product of customer lifetime value, the relevant market share and the total market size. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 12) Where customer equity is the product of customer lifetime value, the relevant market share and the total market size. To operationalize the customer lifetime value (CLV) it has to be broken down in its several items.

$$CLV = \sum_{t=0}^{T} \frac{(p_t - c_t)r_t}{(1 + i)^t} - AC$$

Figure 2: The model representation

Where pt is the price paid by a consumer at time t, ct are the direct costs servicing the customer at time t, I is the discount rate or cost of capital for the firm, rt is the probability of customer repeat buying or being alive at time t, AC are the acquisition costs and T the time horizon for estimating the customer lifetime value. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 13)
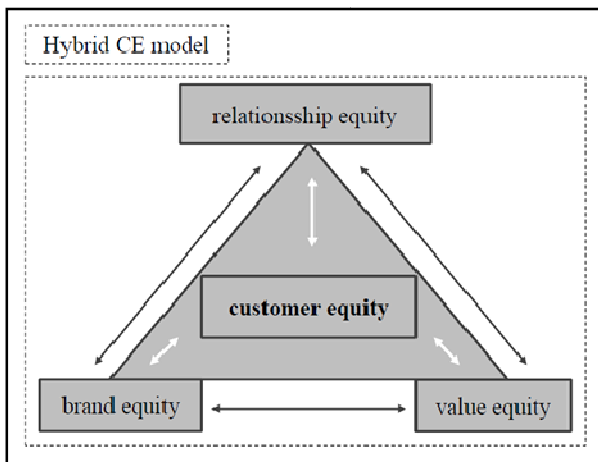

Figure 3: Hybrid Customer Equity model of RUST, LEMON& ZEITHALM

This hybrid customer equity model is based on three main drivers: value equity, brand equity and relationship equity. (Lemon, Rust, & Zeithalm, 2001, p. 22) To analyse the drivers for customer equity it's necessary to keep in mind that consumers are switching between brands. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 7)

First of all brand equity is based on image and meaning in the customers mind. The brand equity of a firm can attract new customers as well as work as a reminder to keep services and products in customers mind. Moreover brand equity can work as a connector to the firm and their products. (Lemon, Rust, & Zeithalm, 2001, p. 22) The importance of a brand is not new also the importance of brand equity was already mentioned in earlier days. But the connection and integration of brand equity in a customer equity model brings up the linking connection in a holistic approach. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 5) Additionally brand awareness as well as strong consumer attitudes through direct marketing is playing an important role in building or maximizing a firm's brand equity. (Lemon, Rust, & Zeithalm, 2001, p. 2)

Second value equity is the outcome of what is given up for what is received. If the brands promise meets the expectation of the firms customers. Moreover value equity reproduces the rational and objective part of the customers' decision making process. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 5) The ratio of a products´ price, quality and customer convenience is driving the firms´ value equity and in the end also the customer equity. (Lemon, Rust, & Zeithalm, 2001, p. 22)

Finally high brand equity and high value equity may not be enough to hold customer to the firm. There has to be glue between customers and the firm. The definition of relationship equity is the willingness of a customer to stay with a brand and a firm. (Lemon, Rust, & Zeithalm, 2001, pp. 22-23) Main issues on brand equity are the switching

costs of the customers. All relationship programs aim to increase those switching barriers. (Aravindakshan, Rust, Lemon, & Zeithalm, 2004, p. 7)

4. Conclusion

Therefore the right distribution channel mix can be identified as a major driver with a huge influence on a company's customer equity rate. Based on the results of this paper the following matrix should illustrate the conceptual framework for further research.

Table 2: Research framework combining customer equity and distribution channel

distribution channel			customer equity		
			brand equity	relationship equity	value equity
	digital	product	*test*	*test*	*test*
		place	*test*	*test*	*test*
		promotion	*test*	*test*	*test*
		price	*test*	*test*	*test*
	analog	product	*test*	*test*	*test*
		place	*test*	*test*	*test*
		promotion	*test*	*test*	*test*
		price	*test*	*test*	*test*

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Digital Strategic Decision Making – Analyzing a Questionnaire of Professionals

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Abstract

This paper will discuss the advantage of decision making optimized by a digital set up and give an overview of an empiric study regarding this topic. Decision making in organizations is a main task of managers since ever and a wide area in science, not only in management or economic research. Today the trend of digitalization supports this traditional management task to enable autonomous decisions by machines. The important progress of decision making toward automated decisions is a logical step for decision making in general, i.e. discussed from early economists to von Neumann/Morgenstern to reach maximum utility. A later influence of behavior on decision making, especially discussed as a part of decisions, researched from Simon, Selten or Tversky/Kahneman seems to lose importance in organizations by using machines for decisions. Now, digitalization changes the process of decision making and today's view on digital decisions is mainly focused on efficiency increase as discussed from the early researchers of decision theory. In the future completely new structures will be created based on these digital developments. To understand this retro-trend in decision making, an empiric analysis should be appropriate to test this view on decision making. The research method for the empiric part of this paper is a questionnaire. The author created a business case for a strategic decision in the supply chain area, within the theory of the SCOR model. Mainly focused on the distinction between a manual or digital process, the more detailed view on the decision type was also relevant, as a fully automated or decision support case. As a result it can be summarized, that some outcomes were expected but further findings have been quite interesting. From the authors view, pure focus on maximum utilities on decisions seems reachable by a higher level of automation.

Keywords: Digitalization, Decision making

1. INTRODUCTION

Nowadays the megatrend of digitalization creates new opportunities and challenges for all areas of life and especially for the entire business environment. These changing elements enforce organizations to reconsider their way of doing business, even to rethink their entire business model to gain new opportunities or simply to survive. Digitalization is today and will be in the future a key driver for change in organizations and the process how decisions will be made.

IT leadership, as one important function in an organization, should support this game changing trend, as digitalization of products and services is transforming traditional business models across industries. IT is no longer merely an internal corporate function that provides IT services for the organization, but IT services are becoming embedded into sellable products and services, too. (Collin J., 2015) As a result, digital processes, supported by IT department as an important stakeholder, will influence the entire organization and the future success of a company.

In chapter 2 "Theory of Digitalization & Decision Making" the discussion of digitalization and decision making will be given as the theoretical framework of this paper. In chapter 3 "Research Question & Hypothesis & Research Model" the key part of this paper links theory to the research question. The research question is asking for a relationship between an intelligent digital setup for decision making and the quality of the strategic decisions. The main hypothesis of this paper will analyze the dependency of the efficiency of strategic decisions and the digital set

up for decision making in organizations. As mentioned, a supply chain business chase (SCOR) should be analyzed on its dependency between the variables of "digital setup for strategic decision making in an organization" and "optimized efficiency of strategic decisions". The different values of the variables itself are quite interesting, but also the dependency of these variables. In chapter 4 "Empirical Design & Research Method" the above described supply chain case is in scope. Gaining data based on a questionnaire is a common tool to collect data for a statistical approach. This chapter will explain in detail the structure and the content of this research. Chapter 5 "Research Findings" analyze the data of the questionnaire and will prove the hypothesis, if there is a dependency of the efficiency of strategic decisions and the digital set up for decision making in organizations.

2. THEORY OF DIGITALIZATION & DECISION MAKING

2.1. Definition of Digitalization

"Digitalization refers to the practice of taking processes, content or objects that used to be primarily (or entirely) physical or analogue and transforming them to be primarily (or entirely) digital. The effect of digitizing processes, aside from potential efficiency gains, is to make processes more tailorable and malleable" (Fichman R., 2014). Not only based on data, moreover targeted on markets, organizations and processes digitalization will deploy its full value to businesses and industries. The new era of digitalization has started already and shows today a first step of a new business world with a change in division of work. In the early 20th century a "computer" was an employee calculating tables the whole day. In a first step, an automated computer (as we understand today) took over this task and increased quality and efficiency of this process. Since then, the automation of our world was ongoing and influenced by computers and machines. Important for the development was the definition of rules for computers, because computers are perfect in following algorithmic rules. (Brynjolfsson E. and McAfee A., 2014). Further actions took place to develop more feasibilities of machines, i.e. Apple iPhone is now with the software Siri able to understand and direct the user. This is a real quantum leap, because to automatize language and transfer this into instructions was a giant step change for the industry. Currently the speed of development is increasing, either the trend of "Industry 4.0" with full automation of the production flow (Zelinski P. 2016) or "artificial intelligence" that robots tend to make autonomous decisions and developed self-awareness and self-maintenance (Lee J. 2014) . Robots and machines are striving into our working environment and will stronger replace human work. The balance of division on work changed already but will change dramatically in the future, though traditional professions will disappear, but new professions will appear. To close the loop of digitalization and globalization means, that a global business process only can be managed successful, if a proper digital support is in place, e.g. automated warehousing or supply chain management.

Referring to the effects of digitalization, this trend will completely change the way of making business and making decisions. Flexibility and transformability are key attitudes of successful organizations in the future and drive them on the road of digitalization (Bauer W., 2015). Digitalization will have an effect on customer structure and behavior, increase the efficiency of operations including their supply chain and at the end may change the entire business model. (Westerman G., 2014)

Important to understand is the logic of digitalization and to realize the 4 levers of transformation. These 4 levers have to be in scope of the decision maker (BDI, 2015)

Digital data (big data)
Due to recording, processing and analysis of mass data, high-quality and more predictable forecasts and decisions are possible in organizations. The structure of big data is (Goes P., 2014):
- Volume: measured in Giga- or Terabyte
- Velocity: One time snapshot frequency streams
- Variety: structured, numeric, alpha, unstructured, text, voice / sound, image / video, genomics
- Veracity: Validation, noise level, deception, detection, relevance, ranking

Big data is a huge trend in digitalization, because the usage of data is important for an organization. As "the economist" wrote in 2010, "Data are becoming the new raw material of business." And data are increasing day by day. A strong increase of data traffic had happened and will further increase; in the future driven by digitalization,

e.g. machine to machine communication or the trend of mobile data from every user of the internet, this traffic will permanently increase.

As a result for future business, big data analytics will be a key success factor for organizations in a more competitive environment. Hence big data management will create new and more jobs for a robust business strategy, executed in a new environment.

Automation

The combination of traditional work and technology with artificial intelligence will enable autonomous work in self-organization systems with high quality and high efficiency. As an effect, production speed will increase and unit costs will drop. Automation has different aspects of realization. First, the work volumes between man and machine are changing. Second, the trend toward a higher automation is still ongoing, up to entire fully automated factories without human beings. A work flow from machine to machine without human interaction is today possible and works without variances. The third step, artificial intelligence, is a self-learning system, with a set of different reactions based on environmental conditions. (J. Kaplan, 2016)

As an example, one new technological process is rapid manufacturing, which means that traditional productions types will be replaced by new technology. This new technology uses directly digital data for production, without a tooling procedure. Cost intensive tools are replaced by new manufacturing applications. These procedures are very flexible on an acceptable cost level and permit small batches. 3D printers are today on a level beyond testing and started their usage in business. Different possibilities of 3D printing enable a wide range of applications. (Bopp F. 2010)

Integration

Through connection of the entire value chain by high quality broad band, this will enable synchronized supply chains with shorter production cycles and faster innovation cycles (mobile or fiber opic net).

An important integration in the era of digitalization is a deeper collaboration in the entire supply chain. Based on a more flexible consumption behavior a more agile supply chain has to deliver this flexibility. As a result a strong inter-company collaboration is a must, and online information has to be exchanged between the different entities in real time. The cross-linking of organizations and their IT systems are the requirement for an efficient supply chain. And today's technology enables this process, based on standard software tools and open interfaces for an optimal data exchange between them.

A fast changing world, with a drop in product life cycles, the integration between supplier and customer has to be on the level of a partnership, because an inter-company product development process needs to have speed in "time to market" on a cooperative relationship. (Wannenwetsch H. 2007)

RFID technology enables a permanent tracking of goods in the supply chain. Organizations have, based on this technology, full transparency of their inventory, also while transfer. And customers have a clear view on their incoming goods and planning material requirements.

Change in consumer behavior and a more fragmented market require a perfect tailored supply chain solution to manage these costs very efficient. As an example, Kreutzer and Land present in their book Digital Darwinism this fragmented market. Procter & Gamble reached with 3 TV spots 80% of the American women aged between 18 and 49. In 2012 97 TV spots were necessary to achieve the same goal. This fragmentation is on product and packaging level similar. Different features on products are installed for different consumer groups and packaging is based on either consumer groups or events.

Digital customer access

New competitors, new services and new transparency will increase competition and market position of companies and brands.

In the past year the competitor structure was new defined; not only traditional competition in the industry was a threat, now completely new entrants into the industry have to be in scope of strategic actions. Porter's "Five Forces"-model is still valid, but needs an extension, because forces have moved into different directions and it is important to manage these new developments from a company's perspective. A good description is a substitute threat, because completely new products or services are appearing on the market and only to react on these developments isn't a strategy. (Porter M. 2004) Furthermore, for your customer the next competitor is just one click away, hence a well thought out strategy is necessary to position against your competitor, no matter from which industry he's coming from. For the car manufacturer BMW the competitor isn't anymore only Audi or Daimler, now it's Tesla and Google, with their autonomous driving car. (Brynjolfsson E. & McAfee A., 2014)

The consumer and customer, is again back in the center of scope of organizations. In the recent years consumer behavior and hence customer activities changed dramatically toward a less loyal, more flexible and quick response relationship. Increased mobile services, e.g. via smart phone increased this trend, and Kreutzer/Land described the consumer buzzwords as follows: "me, all, immediately and everywhere"; which means:

Table 1 "Customer Expectation: Me, all, everywhere and immediately" (Kreutzer R. & Land KH. 2015)

Me	All	Everywhere	Immediately
Appreciation as must	Wide choice	Time independence	Instant contacting
(correct) Personalization	High quality	Location independence	Fast transactions
Tailored offers	Low prices	Independence of technologies, channels, devices	Short response time
Approach based on permissions	Good service		

The mentioned customer expectations are increasing, but in today's flexible world, this expectation is covered by competition, hence this has to be the mantra in an organization.

The trend of "smartization" is still ongoing and will further move on, making all devices via networks intelligent. Starting with mobile phones, developed to smart phones, now we see smart TVs and smart watches. Also housekeeping is going smart, with refrigerators or washing machines, even energy consumption is steered with smart technology. (Kreutzer R. & Land KH. 2015)

New Business Models

New business models are supported by digitalization trends, because every part of business is affected by these changes. Faster and more innovate organizations will outperform traditional businesses. For new businesses it's not a long lasting way of change, the start is immediately in the new environment with digital conditions. Therefore it seems easier for these organizations to adopt to the "new world". The big challenge is given for traditional organizations which have to move to the digital era.

From a competitive perspective these new business models, based on above mentioned digital elements of big data, automation, integration or digital customer access, will move the challenge for an entire industry. Well known examples, as Amazon, reinventing the entire retail business, is today in almost every industry given.

As a result for existing organizations, the challenge is, to adopt the current business model to the new world, either by reengineer the current model or the develop a completely new model in this industry. Ignoring the current changes, will destroy the known business model of this organization. A well known example is Quelle shop in Germany. The precursor of an online shop, distributed a physical catalogue to consumers and they ordered manually. The move toward a digital solution failed, because the organization was not prepared to move further to a digital business model. The more successful movement was done by Otto; with exactly the same business model in the past. But Otto group prepared the organization for the move toward a digital world. Today is the Otto online shop number two in Germany, behind Amazon.

2.2. Definition of Decision Making

Decision theory is a wide area in science, with a long tradition. The first idea of decision theory reaches back over hundreds of years and is still relevant in the presence. Rational models were discussed from the neoclassical economists (e.g. Adam Smith or Max Weber) with a view on rational behaviour of agents which maximize their utility – the homo oeconomicus. A more scientific approach of Pascal and de Fermat shows a calculation of probabilities and Bernoulli laid the foundation of risk science by examining random events. Further developed by von Neumann/Morgenstern economic behaviour in a strong rational and mathematical approach, decision making follows utility maximization. Today's view of decision theory as an interdisciplinary science (economics, psychology, sociology, philosophy, mathematics, computer science and statistics) with different approaches is generally accepted (Buchanan L. and O'Connell A., 2006). One of the most popular is still the theory of games and economic behaviour (von Neumann J. and Morgenstern O., 1944). The theory of von Neumann/Morgenstern explains a rational behaviour of market participants (either consumers or entrepreneurs). Consumers strive for a maximum utility or satisfaction and entrepreneurs strive for maximum profits. Meanwhile a wide area of mathematical approaches and models of rational theories were further developed on the foundation of von Neumann/Morgenstern theories. The opposite of the rational view, is a behavioural view on decisions. In the late 1940ies Simon discussed the theory of bounded reality, which means a certain influence of human attitudes with not pure rational decisions (Simon H.A., 1997). A deeper view in the psychology science shows that theories on behavioural economy are currently quite popular, because human behaviour is one part of organizational actions. In the 70ies Kahneman/Tversky developed the prospect theory. The idea of the prospect theory is a human approach in decision making. The theory of Kahneman/Tversky demonstrates that market participants don't act as rational as assumed, i.e. by von Neumann/Morgenstern. Depending on the used system of a human (system 1 or system 2) a choice is more emotional or more rational.

Rational View

In the classical field of the economical view on decision theory, a rational, mathematical founded approach is discussed. The process of pure calculating to find a maximum of utility or profit is a typical rational procedure. First of all an overview of the basic elements will enable a better view on the concept of a decision model. In figure 1 "Basic Elements of a Decision Model" the common structure of decision models is shown.
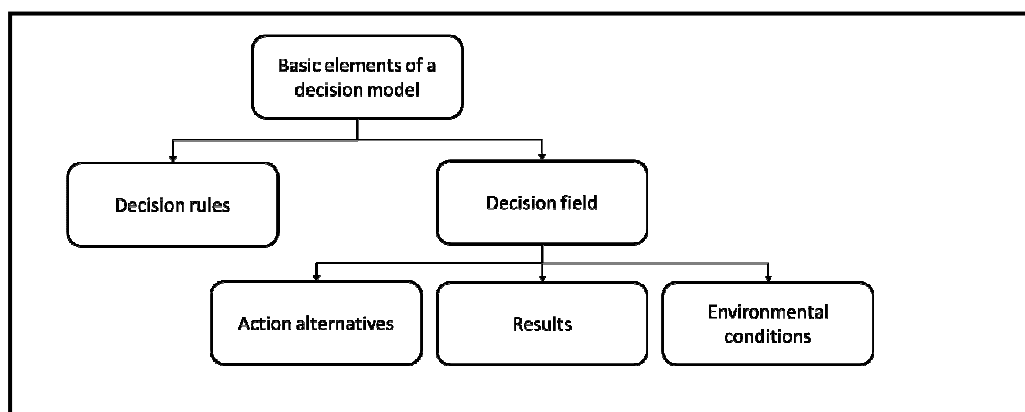

Fig. 1." Basic Elements of a Decision Model" (*based on Bamberg G., 2012)*

In the dimensions of decision fields the alternatives are very important to analyse. There is only a decision problem, if there are minimum two alternatives. Hence a determination of these alternatives must be reflected in the decision model. In the next step an evaluation of these alternatives must be done. These consequences will lead to a result of the alternatives into the decision model. Important figures of the decision maker are defined as targets, these values are the result. (Laux H., 2014). Key for a structured process the environmental conditions are very important. Measures are not manipulable by the decision maker, these measures are called decision relevant data. These data are no variables of the decision maker. These characteristics are decision relevant environmental conditions. The illustration of figure 2 "Structures of Environmental Conditions" (Laux H., 2014) shows different environmental situations and a possibility of designing decision conditions.
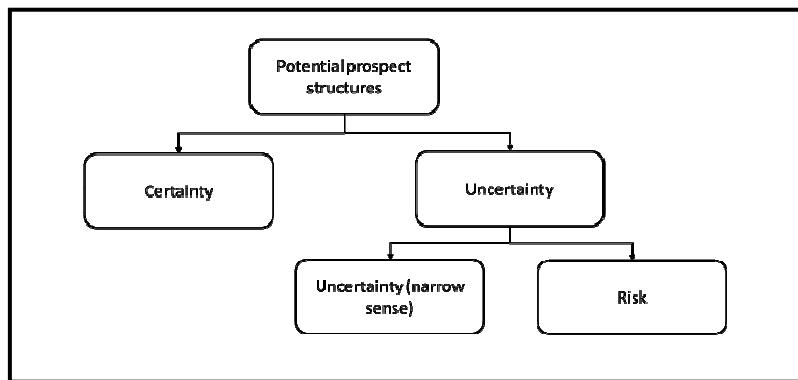
Fig. 2. Structures of Environmental Conditions (*based on Bamberg G., 2012)*

A decision structure under certainty means, that the decision maker has the real condition of the alternatives, hence all relevant information for the decision are given. Therefore the result is known and alternatives are certain. In reality quite often decision models are formed as models of decision under certainty, because the set up and the usage of this model type is easier to handle (Bamberg G., 2012).

A decision structure under uncertainty means, that the decision maker has minimum two possible alternatives, but not all relevant information for a decision are given. Therefore the result is not known and alternatives are uncertain. In the case of uncertainty there are two more possibilities. Either for the decision maker it's not possible to calculate a likelihood of conditions (uncertainty – narrow sense) or for the decision maker the probability of occurrence of a condition is computable (risk); (Laux H., 2014).

This differentiation of the environmental conditions is important to define; especially decision making in the context of globalization and digitalization. While globalization creates more complexity and uncertainty, a more sophisticated model for decision making is a need for an organization. In terms of digitalization a need for an algorithmic structures, computers need a mathematical logic to calculate a result for a decision process.

Human View

Important developments in decision theory took place over the recent decades, though a trend to a behavioural approach was supported by psychological science. An outstanding contribution to the development of behavioural economies was made by Kahneman and Tversky. A collection of their scientific contribution and analysis is made in the book "Thinking, Fast and Slow" (Kahneman D., 2011). Describing decision theory with a strong psychological view makes decision more emotional than rational. Depending on the activated system in the mind; Kahneman named it system 1 and system 2.

• "System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control" (Kahneman D., 2011) Examples: answer of 2 + 2 =?; Drive on an empty road, orient the source of a sudden sound.

• "System 2 allocates attention to the effortful mental activities that demand it, including complex computations. The operations of system 2 are often associated with the subjective experience of agency, choice, and concentration." (Kahneman D., 2011) Examples: tell someone your mobile number or fill out a form

• The human structure is based on usage of system 1, only if really necessary, system 2 is activated

This concept of system 1 and system 2 set the basis for a human behaviour of decision making, which absolutely defers from a rational decision view. Continuing this idea, the question what prevents a rational decision should be answered with Kahneman/Tversky's prospect theory. The fact that lot of decisions have both elements, a risk of loss and an opportunity of gain, effects a decision to gamble or to deny. Focussing on loss aversion (Kahnemann D. and Tversky A., 1974) means, people avoid losses while there is a huge opportunity to gain this particular option. As a result people deny this option and this is controversial to a rational choice, with a pure calculation of probability. On the other hand the "optimistic bias" means that chances for success are overestimated. Risks are undervalued or not in scope of the decision maker (Kahneman D., 2011).
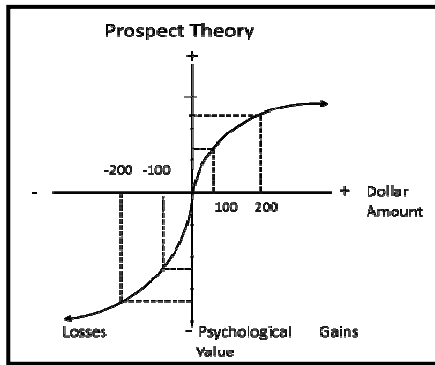
Fig. 3. Prospect Theory (*based on Kahneman D. and Tversky A., 1974*)

Figure 3 explains the loss aversion theory and as opposite to a rational decision it's not a straight line. The chance of losses is moving the decision and also the chance of gains is moving the line, with a peak to losses.

The graph is showing the following effects:

• The psychological value of gains and losses as carriers of values (as opposite Bernoulli stated wealth as carrier of value)

• Reduced sensitivity for gains and losses

• The slope of the function changes at the reference point

• The response to losses is stronger than the response to corresponding gains (loss aversion)

• The two curves of the S are not symmetrical

Prospect theory is only one topic raised in the context of behavioural decision making. Further effects were discussed from Kahneman/Tversky, e.g. adjustments, anchoring or frames, but will not discussed in this paper. Many ideas were based on these fundamental theories and contributed a lot to this scientific field.

Further questions will be raised in today's business world with an increase of a democratic leadership style, that for decisions committees are installed. The set up of a committee is quite important and all restrictions have to be taken into consideration, e.g. information asymmetries in different areas (Bamberg G., 2012).

This opposite view to a rational decision process raises the question how the decision process in organizations is really made. Are organizations as rational as expected or are there emotional driven which have effects on decisions. The behavioral influence in organizations has to be respected and the result is based on this set up (March J. & Simon H.A., 1993).

3. RESEARCH QUESTION & HYPOTHESIS & RESEARCH MODEL

Taking the described topic into scientific context, the research question is asking for a relationship between an intelligent digital setup for decision making and the quality of the strategic decisions. The intelligent digital setup means a well customized system for an organization which enables an efficient process, for the dedicated organization. The type of customizing has to respect the structure of the organization, e.g. the industry, customers and the organizational set up, because every single organization has its own perfect fit into a competitive environment. A digital setup means all organization's procedures are transferred into a digital context, either fully digital in machines or executed by a cyber physical system. The quality of the strategic decision has to be taken into context to the origin of the decision, in the analogue environment. A profit improvement is not necessarily an indicator for a quality increase of a strategic decision, because not all strategic decisions are directly linked to profit increase, because in a strategic context the long term scope is essential. The main hypothesis of this paper will analyse the dependency of the efficiency of strategic decisions and the digital set up for decision making in organizations (H0).
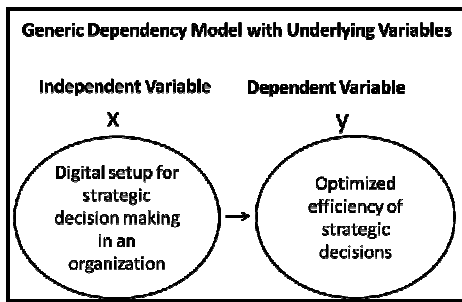
Fig. 3. Generic Model of Digital Setup for Optimized Decision Making (designed by the author)

The generic dependency model with the relevant variables is displayed in figure 3 as basic strucutre for the subsequent research model. Based on the generic model, which has to be seen as an open model for various business cases, a more detailed model will be designed in the part "Research Model". In the generic model the independent variable "x" is the mathematical representative for "digital set up for strategic decision making in an organization" and the dependent variable "y" is the mathematical representative for "optimized efficiency of strategic decisions". To set the variable into relation, the following expression will be proved on validity:

The more intelligent the digital setup for decision making of an organization, the better the quality of strategic decisions.

The more human (manual) procedures for decision making of an organization, the worse is the quality of strategic decisions.

The research model for this paper is based on the above mentioned generic model. As mentioned, a supply chain business chase will be analysed on its dependency between the variables of "digital setup for strategic decision making in an organization" and "optimized efficiency of strategic decisions". The different values of the variables itself are quite interesting, but also the dependency of the variables.
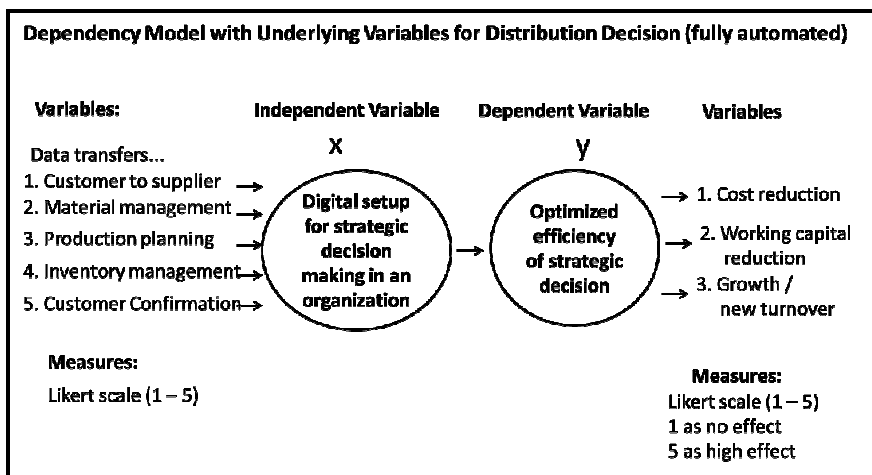

Fig. 4. Dependency Model with Underlying Variables for a Distribution Decision (designed by the author)

The definition for the independent variables are, as described in figure 4, the digital process of data transfer from customer to supplier, then into the material management, production planning and inventory management system. The last step of the analyzed process is the customer order confirmation. For the dependent variable the relevant values will be analyzed, from cost reduction over working capital reduction to turnover growth. For both variables the characteristics will be analysed in detail.

4. EMPIRICAL DESIGN & RESEARCH METHOD

For the empirical design and the research method, the above described supply chain case will be explained. The approach of gaining data with an appropriate volume and a high quality level, is a questionnaire. For researchers is it a common tool to collect data for a statistical model. The questionnaire structure is asking in the first part for personnel and organizational data of the interviewee. In the second part of the questionnaire the digital characteristics of the process and the type of data flow will be asked ("a-section"). The "b-section" questions will ask in general for the decision type, either if the decision is completely automated (autonomous by cyber systems) or a decision support process (digital preparation of a decision and final human decision making). "c-section" and "d-section" are more general and are asking for the questionnaire structure itself; space for remarks and the level of difficulty of the questions. In the third part of the questionnaire the goals and results of digital decisions has to be evaluated, to have the full picture of the research model and the achieved results.

This questionnaire will evaluate the digital characteristics of the supply chain process. Based on the SCOR model the selected process steps are customer forecasts and the subsequent activities until customer order confirmation. The SCOR model is a well known model in the supply chain area.(Bolsdorf P. & Rosenbaum R., 2007) Participants have to answer, if this process in their company is done digital or manual. After evaluation of the type of data processing, the goal for digitalization will be analysed. Key question for an organization in a strategic scope is a more cost or revenue driven approach. The SCOR model describes the type of interaction between suppliers and customers, as shown in the following chart. For this questionnaire only the planning and sourcing part will be analyzed. The process starts with forecasting of customer demand and availability of products, production opportunities and as the last analyzed step customer order confirmation.
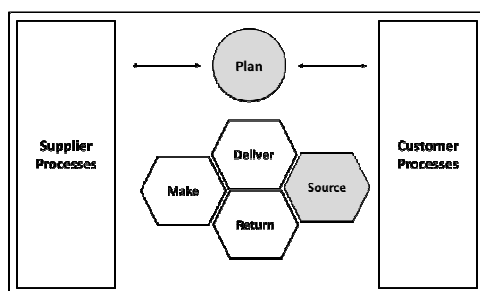

Fig. 5 SCOR Model (based on Bolstorff P. & Rosenbaum R. 2007)

The distinction between „Manual" and „Digital" has to be defined for the questionnaire. „Digital" means that data processing will be done automatically without manual or human interaction. „Manual" means, that manual or human interaction is necessary to process data further through the workflow. If the process consists of both parts, the interviewee has to estimate in the given categories, in a Likert scale from 1 to 5. "Decision support" means, a proposed result is automatically calculated, but a manual approval (human interaction) is requried to finalize the process step. „Decision automated" means that a decision is made by a machine without further human interaction.

In the following flow chart, the detailed process with all independent variables is defined. Starting from the customer forecast, as an external event the process will flow into the organization's environment and is becoming an internal process, which means a higher level of control for the next steps. The availability of the requested products will be checked, if they are on stock. If the product is not available, the production planning and the sourcing process of materials has to be steered, either manual or digital. To finalize this process, the customer order confirmation is the last step for this questionnaire. To focus on control opportunities, the process is moving from the internal organizations environment again external to the customer. In this questionnaire the relevance and the proportion of digital characteristics will be analyzed. All above mentioned process steps are manual or digital possible.
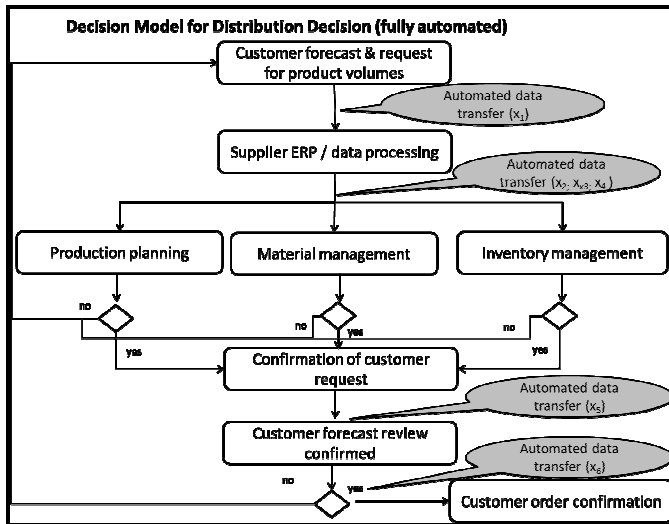
Fig. 6. Flow Model with Underlying Variables for a Distribution Decision (designed by the author)

5. RESEARCH FINDINGS

Analyzing the data from the above presented questionnaire will falsify the hypothesis, if there is a dependency of the optimized efficiency of strategic decisions and the digital set up for decision making in organizations. Based on 451 requests, feedback of 104 participants of the questionnaire was given, a return rate of 23%. The age of the participants were from 26 to 75, on an average of 44.5 years. Asking for the gender, a pattern with a male dominated structure in senior management positions is evident - in numbers, 82% of the answers were male, 18% were female. The allocation of company size is displayed in table 2 "Organization's Structure" by revenue and employees.

Table 2 "Organizations Strucutre" (designed by the author)

Revenue Distribution	Quantity	(%)	Employee Distribution	Quantity	(%)
0 € to 2 mio €	9	8,7%	1 to 20 employees	10	9,6%
over 2 mio € to 10 mio €	26	25,0%	21 to 100 employees	27	26,0%
over 10 mio € to 50 mio €	16	15,4%	101 to 300 employees	10	9,6%
over 50 mio € to 200 mio €	9	8,7%	301 to 1.000 employees	18	17,3%
over 200 mio € to 1.000 mio €	24	23,1%	1001 to 10.000 employees	16	15,4%
over 1.000 mio €	20	19,2%	over 10.000 employees	23	22,1%
Total	104	100,0%	Total	104	100,0%

As a general tool, to test, if asked questions are to complex, d-questions are in the questionnaire to understand the difficulty of the questions. Relevant is again the question set from 3 to 8. The finding, that most of the interviewees rated the questionnaire from very easy (1) to neutral (3), reflects the high quality of these answers, because people were understanding the questions and were able to respond on this high level.
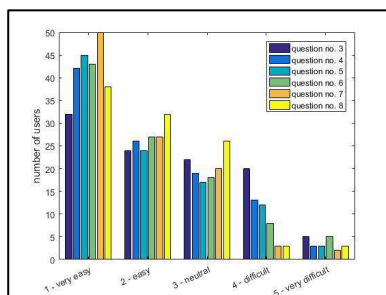

Fig. 7 "Difficulty of Questions"

The expectation of a high correlation between a-questions ("format of data") and b-questions ("automated decision/decision support") is given and shown in the following figures, based on a Spearman correlation:

- Question 3 "Customer forecast"   0.62
- Question 4 "Material management"   0.61
- Question 5 "Production management"   0.77
- Question 6 "Inventory management"   0.83
- Question 7 "Customer confirmation"   0.69

As a result of this high correlation means that a digital data format supports a digital decision base.

Referring to the main hypothesis of this paper, that a higher digitalization affects a optimized efficiency of decisions is shown in figure 8. A low correlation between the automation level of the different process steps and the automation goals moreover the achievements of the goals is shown. Based on Spearman correlation coefficient (a linear model) will not prove the hypothesis. As a result, "growth" has the strongest characteristics.
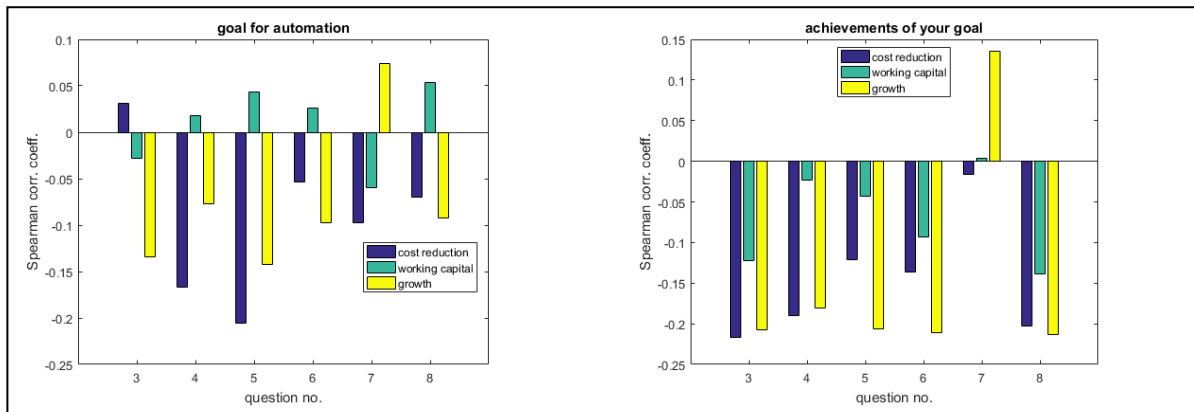

Fig. 8 "Correlation of Goals and Process Steps"

The overall evaluation of digitalization (question 11) is illustrated in figure 9. A strong correlation of the mean in questions 3, 4, 7 and 8 is given, despite a weak correlation of questions 5 and 6. As a result, similar to the above mentioned outcome, there is partly a correlation in the model between the independent and the dependent variable.
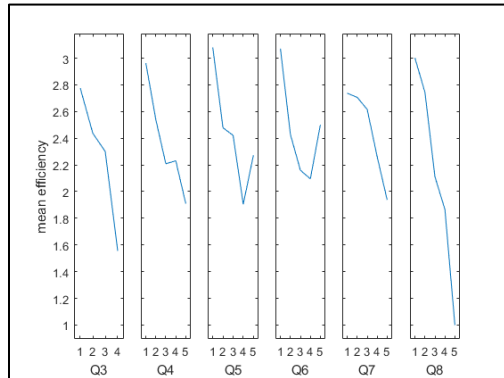
Figure 9 "Overall evaluation of digitalization"

Analyzing these results, an educated guess seems likely relevant, that the questionnaire type affects the results. A Likert scale from 1 to 5 is popular in scientific research, but having only 5 possibilities, the distance between the single values is huge. Using e.g. 100 values would cause a narrow distance between the values and support statistical models, but would confuse the interviewees. Analyzing the unsure subjects, is an amount of 12 is very good result.

6. CONCLUSION

The impact of digitalization on decision making is obvious, beginning from a theoretical view, the type of decision making varies from a rational to an emotional approach. Digitalization will move decision making by cyber systems from emotional to rational decisions, based on algorithmic models. The idea to reach maximum utility, based on discussions from early economists to von Neumann/Morgenstern, seems to be the first time realistic, in the era of automated decisions. Emotions and side effects, which influences decision making will be continuously eliminated by advanced digitalization.

Analyzing the questionnaire results for digital decision making in organizations, the SCOR model as a strategic business case for decisions is well known by managers. The importance of digitalization is given by high involvement of interviewees and high quality answers including the high interest of results. Digitalization is not a matter of size; all organizations are focused on this topic with a different pattern of progress. Depending on industries and customer approach, digitalization has a diverse status in organizations. Mainly driven by costs, working capital and additional revenue opportunities are the main motivators for these organizations. This survey contributes only a small piece of insights into the new era of digitalization, but fits into the pattern, that digitalization is on the agenda of every organization and will influence their next strategic movements.

An important result of the survey is the complexity of the topic, hence a clear answer structure is not evident and no strong correlations, only partly, are given in this context. A more advanced statistical model may support more clarity to this subject. Trends are obvious and in the analyzed data.

To analyze the massive effect of digitalization on organizations further research has to be done in different areas of science. This paper highlighted only one small piece, with expected results, that digitalization will support the strategic decision making of organizations

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Appendix A "Questionnaire"

1.   Interviewee
   - a.   Age:
   - b.   Gender:
   - c.   Job title:
2.   Interviewee Organization
   - a.   Industry:
   - b.   Company size by revenue:
   - c.   Company size by employees:

3.   Customer forecast data for the supply chain process (x1)
   - a.   How do you process your customer forecast data for the supply chain workflow?

Manual	More Manual	Balanced	More Digital	Digital
1	2	3	4	5

    b.   Is the processing of these customer forecast data for supply chain a completely automated decision or a decision support process?

Decision Support	More Decision Support	Balanced	More Automated Decision	Automated Decision
1	2	3	4	5

    c.   Any comments on data delivery on customer forecast?

---

    d.   How difficult was to answer the question "customer forecast data for supply chain"?

Easy	Partly Easy	Undecided	Partly Difficult	Difficult
1	2	3	4	5

4.   Data transfer into the material management system (x2)
   - a.   How do you transfer the customer data into your material management system?

Manual	More Manual	Balanced	More Digital	Digital
1	2	3	4	5

    b.   Is the processing in the material management system a completely automated decision or a decision support process?

Decision Support	More Decision Support	Balanced	More Automated Decision	Automated Decision

1	2	3	4	5

c. Any comments on data transferring into the material management system?

_____

d. How difficult was to answer the question "data transfer into material management system"?

Easy	Partly Easy	Undecided	Partly Difficult	Difficult
1	2	3	4	5

5. Data transfer into the production planning system (x3)
    a. How do you transfer the data into your production planning system?

Manual	More Manual	Balanced	More Digital	Digital
1	2	3	4	5

b. Is the processing in the production planning system a completely automated decision or a decision support process?

Decision Support	More Decision Support	Balanced	More Automated Decision	Automated Decision
1	2	3	4	5

c. Any comments on data transferring into the production planning system?

_____

d. How difficult was to answer the question "data transfer into production planning system"?

Easy	Partly Easy	Undecided	Partly Difficult	Difficult
1	2	3	4	5

6. Data transfer into the inventory management system (x4)
    a. How do you transfer the data into your inventory management system?

Manual	More Manual	Balanced	More Digital	Digital
1	2	3	4	5

b. Is the processing in the inventory management system a completely automated decision or a decision support process?

Decision Support	More Decision Support	Balanced	More Automated Decision	Automated Decision
1	2	3	4	5

c. Any comments on data transferring into the inventory management system?

_____

d. How difficult was to answer the question "data transfer into production planning system"?

Easy	Partly Easy	Undecided	Partly Difficult	Difficult
1	2	3	4	5

7. Data transfer for customer order confirmation (x5)
   a. How do you confirm the customer order?

Manual	More Manual	Balanced	More Digital	Digital
1	2	3	4	5

b. Is the process of customer order confirmation a completely automated decision or a decision support process?

Decision Support	More Decision Support	Balanced	More Automated Decision	Automated Decision
1	2	3	4	5

c. Any comments on customer order confirmation?

_____

d. How difficult was to answer the question "customer order confirmation"?

Easy	Partly Easy	Undecided	Partly Difficult	Difficult
1	2	3	4	5

8. Overall evaluation of the entire process (x6)
   a. How do you evaluate the digitalization of your entire supply chain process overall?

Manual	More Manual	Balanced	More Digital	Digital

1	2	3	4	5

b.   Is the entire supply chain process a completely automated decision or a decision support process?

Decision Support	More Decision Support	Balanced	More Automated Decision	Automated Decision
1	2	3	4	5

c.   Any comments on overall supply chain process?

_____

d.   How difficult was to answer the question "overall evaluation of the supply chain process"?

Easy	Partly Easy	Undecided	Partly Difficult	Difficult
1	2	3	4	5

9.   Please evaluate your goal for automation of the supply chain process? (y_i)

		Fully Agree	Agree	Undecided	Disagree	Fully Disagree
a.	Reduction of costs (y_1)	1	2	3	4	5
b.	Reduction of working capital (y_2)	1	2	3	4	5
c.	Growth of revenue (y_3)	1	2	3	4	5
d.	Others:	1	2	3	4	5

10.   Please evaluate the achievement of your goals in your supply chain process? (y_i)

		Fully Agree	Agree	Undecided	Disagree	Fully Disagree
a.	Reduction of costs (y_1)					

		Fully Agree	Agree	Undecided	Disagree	Fully Disagree
		1	2	3	4	5
b.	Reduction of working capital (y_2)	**Fully Agree**	**Agree**	**Undecided**	**Disagree**	**Fully Disagree**
		1	2	3	4	5
c.	Growth of revenue (y_3)	**Fully Agree**	**Agree**	**Undecided**	**Disagree**	**Fully Disagree**
		1	2	3	4	5
d.	Others:	**Fully Agree**	**Agree**	**Undecided**	**Disagree**	**Fully Disagree**
		1	2	3	4	5

11. Overall evaluation: have you reached by digitalization of your supply chain a more efficient decision process?

Fully Agree	Agree	Balanced	Disagree	Fully Disagree
1	2	3	4	5

12. What do you think, to what extend digitalization of decision making has relevance for your industry?

Industry:_____

Extreme Low	Low	Medium	High	Extreme High
1	2	3	4	5

Digital Organization Model: An abstract view on business reengineering, preliminary results

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Abstract

Today`s digital revolution is affecting everyone in private live. The launch of smartphones accelerated the development and use of daily use of digital devices tremendously. Never the less people not technology is the most important piece within the digital revolution we are into right now.

So, this fact leads to the circumstances that for today companies the ultimate challenge is to manage this change properly. The digital transformation impacts not only the IT area but also entire business model as disruptive change. This leads to a constant challenge for companies which want to become and stay as market leaders for the upcoming decades.

In summary, digital business transformation is moving steadily through the economy. Certain industries, like tourism, banking, entertainment, and retail have been on the vanguard of this change. Other industries, like transportation, insurance, and healthcare are not far behind. Eventually, all sectors of the economy will be transformed and digital will just become the 'new normal'. However, until that point, organizations will need to come to terms about what digital business transformation means to them, and take appropriate action.

Keywords: Digital Transformation, Digital Organization, Business Reengineering, Organization,

Main conference Topic: Multidisciplinary Academic conference on Management, Economics, Business and Marketing

1.Introduction

The versatility of today'sorganizations move to the center spot of company's strategic orientation because of the increasing reform pressure due to increasing cost pressure, global competition supporting by the digital transformation. Most companies today are affected by these facts and as result of the increasing competition, organizationsmust question and think critical with their factor of the own organization and their effectiveness to today's change of business. Digitalization becomes a critical factor within the organizations and for most of them is a totally new fact they must deal with. So, they do not know how to cover this and how to prepare their organization for today's challenges and their future defiance's. For most organizations, the digital organization is something completely new and there are no experiences with a digital skill set with certain roles in the organizational structures. So, the digital roles are mostly spread within the organizational structure. Some companies have set up a specific departments and organizational roles to cover the digitalization within the company structure. But most companies are lacking a set-upwhich makes them competitive towards the global competition.

The aim of this work is to bring forward the future profitability of organizations and finding solutions of going a higher effectiveness of service provision to achieve a long-term enhancement of the company's results

dependent on what kind of digital organization the company has in place. Is a proper digital organization evident to gain the profitability with higher effectiveness of service provision.

2. Literature Research

2.1 Essentials of an organization

If professionals to deal with the economic situation of companies necessarily they must address inevitable the organization itself. The reason for this is that problems within the company are mostly organed by the organizational structure itself and therefore the organization has an important role. It's irrelevant if it is the market strategy, customer focus or the employee motivation. To redesign the organization for the operation structures and processes is evident for today's leadership level as a major success factor to ensure an ongoing profitable organization

Within the last years, the topic of reorganization, because of the economic pressure become more and more important. This fact is the main reason of a phase of cycle leading to continuous restructuring ambitions.

Cause by the Land Production and Lean Management Wave in the early nineties caused by a weak economy with the consequences in the many companies had to radical reorganize their companies from the very bottom which was never seen before. (Risch 1995)

Almost 20 years later companies are facing an even more dramatic situation. The establishment of Profit & Lost structures, the downsizing of hierarchy levels and processes oriented restructuring. In former times, Japan was known as the role model of process oriented production and organizations. This cause to gain significant market share all over the world. Other concepts of organizational methods followed like business reengineering and total quality management. They promised broad enhancements and advanced cost reductions. Latest publications indeed dispute the conclusions as they did not fulfil the expectations.

Empiric researcher still show how important organizational change is for companies, especially in today's fast changing environment. A questionnaire done with more than 1.800 leaders in small and medium sized companies in USA, Japan, Germany, Great Britain, Canada shows that the main task within the next years is to adjust the "soft facts" into the existing parameters.

One questions is: Which actions are most important to increase productivity? 93% of all were answering that enhancing communication is most important. 91% said to reinvent the business processes. Followed by renewing the organization with urgent need for action. (Vahs 1997)

2.2 Definition of organization

With the creation of large units like the Government, Church and Military a solution was needed in an early stage which was suitable to manage those units. With the industrial revolution in the 18th and 19th century by creating companies and firms the owners took over the organizational principles of those early organizations into the economy and they became a backbone of today's economy.

"Every targeted collaboration from parts of a whole is based on an order. Without order chaos takes place, which means in translation confusion or mess. Within the chaos is not possible to solve goal-driven complex duties. Because of this it is essential to have an organization. Whereas an organization is meant to be an outline of rules and regulations which are giving a system to an organization."(Vahs 1997, 7)

The term organization describes on the one hand occupation but on the other hand a form of organization meaning Structure or condition (nation, church, army, company). The task of an organization has been to organize the relationships between humans and material resources based on principles to reach the objectives in given time. (Hauser 1997)

Kosiol understands organization as "goal oriented integrative structuring of wholeness or framework methods"(Kosiol 1976) whereby he underlines the sustainability.

Kieser and Kbuicek provide in their definition of organization "social structures which permanently try to aim a goal by having a formal structure which helps members to align themselves towards the goal."(Kieser and Kubicek 1983)

2.3The pioneers of reengineering

Is the business reengineering a new management or organizational concept or is just old wine in new skins? This questions cannot be answered easily with yes or no.

To asses this element an examination of the core elements and principles of other management and organizational concepts is necessary. For instance, the TQM and lean management approach with the organizational theory. This is evident to discover similarities and differences.

This is the challenge itself. To gain this comparison it is crucial to identify explicit definitions of each management concept to delimit from each other. With reengineering, it's like TQM or lean management if there are only formal and relatively open definitions are given. Formal definitions like the business reengineering from Hammer/Champy make it complicate to draw a comparison with other management and organizational concepts. This causes to difficulties in a clear delamination and leading to diverging views what can be understood under the term of reengineering. (Hammer and Champy 1994)

Because of the blurry definition, besides the scientific view most consultancy agencies develop methods of reengineering by their own along their belief how this must work.

With a closer look on the definition of reengineering and the containing key phrases, many already know concepts from the TQM concept are familiar.

Radical

To enforce radical changes two steps are necessary. Firstly, it needs to be determined what needs to be changed, secondly how this change needs to be done. The two-step approach corresponds the methodical approach of the quality function deployment (GFD), which is an essential part of the TQM.

Assumption

Reconsider and revising are terms which not only express the new way of thinking from Hammer/Champy but since Deming under the new expression "new approach of thinking". (Hammer and Champy 1994)

Radicalism and Improvements of Scale

In those two key words are contained the man differences between TQM and reengineering. Reengineering tries to use no superficial changes but profound changes by questioning the status quo and request for quantum leaps for change. TQM however uses established circumstance and strives for steady performance improvement

Business process

Both concepts are based on process optimization and assume that predominant control of process will automatically lead to a competitive advantage and the process performance is steered by the customer's advantage. (Group 1993)

By considering additional comparisons between the approaches of business reengineering, lean management and TQM worked out that science and practical application having additional coincidences like the following examples will show:

All three methods are holistic approaches for business concepts because not only subsections were developed.(Bullinger, Leitvortrag 1993)

The Boston Consulting Group mentions that TQM and reengineering are combinable, whereas they should not be considering to be used at the same time for logical reasons.(Bonarius 1994)

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Bullinger states that all core elements of the three concepts covering the customers focus, a new and comprehensive understanding of quality understanding, process orientation and the usage of latest information technologies, employee orientation and teamwork. (Bullinger 1994)

The joint objectives of single corporate concept towards a new organizational structure, flat hierarchies, high quality, trough put times with less costs and better service are almost identical.

Summarizing it can be said that the core elements of all three concepts are identical. Whereas this does not mean, that those three concepts are congruent. The discrepancies are with intentions, method respectively strategies for gaining individual goals.

While the Japanese model of lead management aims for a lead company with flat hierarchies and short decision paths by continuous improvement (Kaizen).

Whereas the reengineering of the American environment defines as:

"an episodic process that achieves racial learning and change in work processes employee skills through clean state, break through projects". (Brown and Watts 1992)

The leads to the focus of a radical change and reorganization of companies, even though it is not expedient and possible. There is also the use of potential information technology for the reengineering for restructuring the business processes by achieving higher competitiveness.

TQM with same goal setting as reengineered by using the same elements like customer, process-, employee-orientation is focusing totally on the quality itself.

In contrast to reengineering TQM is aiming a corporate reorganization most likely the lean management. So, TQM is focusing by continuous optimization of existing systems (Kaizen) to achieve their goals and not through quantum leaps projects.

By comparing the reengineering approach with the operational structure of the organization theory one will continually recognize a series of well-known design elements, but less determinant innovations respectively enhancing certain perspectives.

Since the development of those three holistic management concepts (TQM, business reengineering and lean management) the process is being promoted as the NEW organizational design element although neither the discover of the organizational design element nor the work with process analysis methods was new for the scientific organizational theories. The analysis of process goes back to Nordsiek (1972) and was most recently developed towards process management by Gaitanides (1983) and Striening (1988). The fact that the potential of the information- and communication technology was helping to develop and discover new and efficient business processes is well known by the academic. (Picot and Frank 1995)

Besides that, (Picot & Frank, 1995) mentioning that two contributions from management consulting are propagated in the business reengineering literature.(Picot and Frank 1995, 24)

The first contribution is to tailor the processes strict to the customer needs. In the German literature, it is not strictly mentioned when it comes to the operational structure. Processes tailored to the customer needs which contain the facts of quality, costs and flexibility are transferable into customer value.

The operational organization is part of entrepreneurial behavior as the customer is now in the center point of the company's strategy development. (Picot and Frank 1995).

The second contribution which differentiate reengineering from the traditional organizational theories lies in the fact of a strong branch of process boundaries set by the company itself.(Group 1993)

Time and again it is said "extended enterprise concepts" or "more networked view of processes". With the view of the business reengineering that the process optimizations are indeed a companywide organizational issue should drive companies to create more attention to the collaboration with their suppliers. It differs conscious from the traditional organizational theory which focuses more on the cooperation within firms.

3. Research Design

The research will focus on the main questions which kind of organization (type and form) will be the most successful,in order to master the challenges of digital transformation in today's companies. The focus will be on the European companies which are in the so called KMU sector. Large companies are not part of the research.

To gain new insights and valid information about that topic research is needed in the field of change management, disruptive business and adaptable theoretical models of the science of cultural change. Are the well-known models adaptable to that kind of change or are changes indispensable to cover that new field of culture and organizational change.

This will be done by an extensive literature review by analyzing the main applicable theories according to the topic which fits most. Are the market/country specific characteristics adaptable to the transformation model.

As an addition, empirical study, for instance based on questionnaires, interviews or monitoring. The methods of research need to be a combination of analyses of existing literature, data and new outcomes due to new surveys.

The regressions analysis is one of the most flexible and most used analyses method. This analysis method analysis the correlation of dependent and independent variables.

The usage of this method is possible if dependent and independent variables do have a metric scale. Means the figures have quantitative variables.

Hypothesis:

$Y = f(X1,X2,X3,X4,X5)$

Y = Influencing factors for a digital organization in companies belonging to the KMU sector in Europe.

f (x) = Implemented organization models within the company already taking place in the "digital transformation

f(x1) = … by organization model I

f(x2) = … by organization model II

f(x3) = … by organization model III

f(x4) = … by organization model IV

f(x5) = … monetary success on "Revenue"

Design of the statistical regression analyses:

1. Formulating the model

2. Estimation of the regression model

3. Examination of the regression function

4. Examination of the regressions coefficient

5. Audit of the model premises

4. Conclusion

Business engineering is not a totally new management and organizational concept as it does not discern textual from organizational behavior and the concepts of lean management and TQM.

The most important aspect is that reengineering embodies a new way of thinking (philosophy) for companies. This new way of thinking is made for companies to think critical about their way of working. Today's increasing competitive pressure and the continuous changing competitive conditions leading companies to gain new strategies of "the way of working" to stay successful today and in future. In contrast of the many individual management methods which are causing only incremental optimizations, the business reengineering regards itself as a holistic corporate concept which combines proven methods of organizational methods as well as management methods like customer orientation, process management, benchmarking, job enrichment, time based management.

Fast changing competitive environment forces companies to be more flexible, faster a highly innovation in their way of working or with redesigning their organizational structures.

Traditional organizational structures are obsolete. They do not tackle the todays requirements which is transferred to companies by increasing competition. The competition enforces flat hierarchies, flexible and lean organizational structures and models. This is for being flexible to change fast and individual for changing customer requirements.

The roots of the corporate concept are from organizational behavior (Process management) and the information- and communication technology. Within the 80ies two holistic management concepts have been developed (TQM and Lean Management) on which the business reengineering concept is based on.

Business reengineering is holistic management- and organizational concept which uses consequently uses the process- and customer orientation to restructure the entire organization in a radical way. It also enlightens a growing and changing organization towards the competitive environment. Means having a steady change within the organization.

Integral part of the business reengineering concept are eight core principals.

Process oriented thinking, customer focus, quantitative and measurable goals, radical reorganization, learning organization, process management, reengineering organization and change management. Those are all meant to be implemented in organization.

The use of business reengineering usually goes with a project separated in three phases. (preparation phase, redesign phase, implementation phase)

The preparation phase covers the aim identification the of the reorganization, choice of the relevant business areas and information of the involved people and employees. Within the redesign phase the restructuring of business processes is meant. The final phase is then the implementation of the new designed processes within the organization.

With the three phases the project is not finished yet. It is absolute necessary that after the implementation a continuous optimization process must be established. This process also covers the aim of the company and should be agile enough to move along the changing environment. A so-called learning organization is created.

Business reengineering also leads to change the company culture itself. Meaning that teamwork supported by a flat hierarchy becomes an essential part of the process oriented organization. New requirements are set towards the management.

Reengineering is not a new management- and organization concept. Large differences cannot be discovered between TQM, lean management and organizational behavior. The main difference is the radical way of the change towards a complete restructuring.

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Leadership Stylesin Different Contexts

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Abstract

Purpose: The purpose of this study is to discuss different leadership styles, it highlighted the theoretical basis of leadership, emphasized each leadership style definition, traits and overall impact on the organizations.

Design/Type of Research: This research is a descriptive research based on analysis of previous studies.

Limitations/Implications: There are no limitations for this research. This paper highlighted common and non common leadership styles.

Findings:
- The use of leadership style depends on work situation, traits and personality of the leader, employee's response to their leader style as well as the organization's philosophy.
- There is no best way to lead; same leader may use several leadership styles to adapt several situations.
- Due to recent environmental dynamic nature that required innovation, transformational, charismatic and democratic leadership styles have become the most recommended leadership styles.

Keywords: Leadership, leadership style.

1. Introduction

Leadership is defined as the social influence whereby one person seeks the voluntary participation of subordinates in an effort to reach organizational goals in given situations (Bhatti, et al., 2012).

There are several leadership theoretical basis. Initially, it has been thought that leaders have been born not made, but new studies viewed leaders as a product of times and situations .

Leadership theoretical basis can be summarized as below:

- Great man theory: assumed that leaders are born not made.
- Trait theory: the same of great man theory but assumed that people inherit certain qualities and traits that make them better suited to leadership.
- Contingency theory: focused on particular variables related to the environment that might determine which particular style of leadership is best suited for the situation.
- Situational theory: proposed that leaders choose the best course of action based upon situational variables.

- Behavioral theory: as an opposite of great man theory, this theory assumed that great leaders are made, not born.
- Participative theory: suggested that the ideal leadership style is one that takes the input of others into account.
- Management or transactional theory: this theory applied a system of rewards and punishments
- Relationship theory: the leaders following this theory motivate and inspire people by helping subordinates realize the importance and higher good of the task.

Robert J. Allio highlighted five big ideas about the leadership, he agreed with the behavioral theory which states that leaders are made; he also asserted that there is no best way to lead, moreover he emphasized that leaders should be collaborative, adaptable and have a good character (Allio, 2009), since the character is involved to overcome the external challenges.

Effective leadership simplifies the complications and doubts by making actions compelling and successful (Shekari and Nikooparvar, 2012).

Some studies that tried to distinguish between leadership and management asserted that leaders must be able to develop vision, strategies and plans through stimulating motivating and encouraging others while managers focus on a short view using authority or power (Allio, 2013).

Leadership styles have been thoroughly discussed by many researchers, revealing that "The correct style of leadership depends on: nature of the job; preference of the followers; the leader's attitude and the situation at a point in time" (Kurfi, 2009).

This paper provides insights on different leadership styles.

2. Literature review

This section will address common and non common leadership styles, their definitions, traits, and in which situations they are fit best.

2.1. Common leadership styles

2.1.1. Charismatic leadership style

Charismatic leadership has been defined in terms of the transformational effects charismatic leaders have on followers. Previous studies show that charismatic leadership is positively correlated with followers' mindset of empowerment and organizational commitment (Chung et al. 2011).

The main traits of charismatic leader is that he/she inspires subordinates to have self-confidence, a level of firmness and a sense of purpose and vision to increase the team efficacy and attaining the organizational goals

and objectives, furthermore charismatic leaders encourage intellectual stimulation which is a strong predictor of technical quality in research projects aimed at producing radical innovation behaviors.

Charismatic leadership is positively related to organizational commitment and employee job performance and satisfaction. By using advanced charismatic leadership capabilities of organizations' managers not only augment the subordinates' performance and satisfaction but will integrate followers' efforts towards achieving the common organizational goals (Ismail et al., 2011).

Charismatic leadership is more likely to fit best in environments that are uncertain and stressful for the group and the organization (Paulsen et al., 2009).

2.1.2. Laissez-faire leadership style

Laissez-faire is a French term, it means "leave it be" it is used to describe a leader with a "handoff style" who leaves his or her subordinates to get their work done (Yaseen, 2010); laissez-faire is basically the absence of leadership.

Laissez-faire is characterized by lack of concern for subordinates, it represents supervisors who avoid their managerial responsibilities, reluctant to take action, generally avoid taking decisions, and are not always there when needed (Doucet et al., 2009), additionally it affects performance negatively, this effect can be moderated by work team heterogeneity, teams which are not led face considerable difficulties, they have to compensate for the missing leadership to be able to reach goals (Rowold, 2011).

Although Laissez-faire involves non-interference policy, allows full freedom to all workers (Bhatti et al., 2012) on the other hand it is associated with subordinates' dissatisfaction, ineffectiveness and unproductiveness, it is therefore the least used style (Limsila and Ogunlana, 2010).

Laissez-faire leadership works for teams where individuals are very experienced, skilled and self-starters, it can be effective if the leader monitors achievements and communicates what was done back to the team regularly (Yaseen, 2010).

2.1.3. Servant leadership style

In 1970 Robert Greenleaf defined servant leadership as philosophy in which an individual interacts with others -either in a management or fellow employee capacity - with the aim of achieving authority rather than power (Greenlead, 1970).
Joseph and Winston identified the main traits that distinguish this leadership style as follows (Joseph and Winston, 2005).

1. Listening: leader effectively listen to what is being said by subordinates.
2. Empathy: leader makes his/her best to understand subordinates' feelings.

3. Awareness: leader believes in the importance of awareness of work environment.

4. Persuasion: leader tends to use persuasion rather than positional authority in making decisions within the organization.

5. Conceptualization: leader seeks to improve his/her abilities by dreaming.

6. Foresight: leader has the ability to forecast the future outcomes from current situations.

7. Stewardship: leaders' first priority is to serve other people.

8. Commitment to the subordinates' growth: leader is deeply committed to the personal, professional, and spiritual growth of each individual within the organization.

9. Building community: leader identifies means of building community among those who work within a given organization.

Servant leadership has positive impact on employee satisfaction and loyalty (Ding et al.,2012), unpacking of the complexity of cross-cultural leadership (Mittal and Dorfman, 2012). It also correlates positively with both leader trust and organizational trust (Joseph and Winston, 2005).

Nevertheless, leader's main focus is attaining results from subordinates rather than achieving organizations' owners' goals (Andersen, 2009).

2.1.4. Transactional leadership style

Transactional leadership is the style that builds relationships between leaders and followers by clarifying responsibilities, specifying expectations, negotiating contracts and providing rewards and recognition in order to achieve the expected performance (Liu et al. 2011).

The main traits of transactional style that the leader attempts to satisfy the current needs of his/her followers by focusing on contingent reward behavior and exchanges; furthermore paying close attention to mistakes, deviations, and irregularities besides taking actions to make corrections (Liu et al., 2011).

Transactional style is prevalent in most organizational situations, because it contains a mechanism of "exchange relations" where there is no outstanding sense of "impending threat" or anxiety (Popper and Zakkai, 1994).

Subordinates are not expected to go beyond their leaders' initial expectations, nor are they motivated to try out creative solutions to change the status quo (Liu et al., 2011).

Transactional leadership is not a destructive or a fostering power for innovation; its effectiveness depends mostly on the context it works in (Liu et al., 2011).

2.1.5. Transformational leadership style

Transformational leadership can be defined as the process in which an individual joins and creates a connection with others that elevates the level of ethics and motivation in the leader and the follower (Tabbasi

and Abu Bakar, 2010), it is also referred to as "the style of leadership that heightens consciousness by the organization's members of a collective interest and helps them to achieve it" (Garcı́a-Morales, 2008).

Transformational leader acts with idealized influence, individualized consideration, inspirational motivation and intellectual stimulation as well as raising the consciousness of subordinates (Sarros and Santora 2001). Subordinates exhibit the highest organizational commitment when their leaders articulate the vision, promote group goals (Joo et al. 2012).

In addition to the fact that this style is positively related to creativity, innovative behavior and to a wide variety of outcomes including performance, job satisfaction and empowerment (Joo et al. 2012, Cheung and Wong, 2011).

Consequently transformational leadership results in high performance that goes well beyond what could be expected, when encouraging rules of behavior it has the power to shape the performance of the individuals and groups in the organization and thereby to differentiate it from other organizations, furthermore; it tends to create a shared culture that favors innovative value thus generating an organizational mental model which protects the organization against new challenges (Garcı́a-Morales, 2008).

This style is generally expected to suit all organizational situations (Humphrey and Einstein, 2003).

2.1.6. Behavioral leadership styles (Task and people oriented)

2.1.6.1. Task leadership style

Task oriented leadership is multifaceted which includes pressuring subordinates to work hard while maintaining quality standards by creating rules and regulations, setting deadlines and emphasizing on goal accomplishment . The purpose of this style is to get the maximum profit to organization at least cost irrespective to workers high efforts (Keith, 2010).

Task oriented leaders are more concerned about planning, scheduling, and monitoring activities (Randeree and Ninan, 2011). Thus the main tasks of this style's leader are:

1- Informing the staff with plans and tasks.
2- Determining accurate and clear timeline for performing the works.
3- Being fully aware of work devices and equipments available to the staff.
4- Instructing and directing the staff and expect them to report their work progress (Nazari and Emami, 2013).

2.1.6.2. People (relationship) oriented leadership style

This style of leadership is the opposite of task-oriented leadership: A participative style, it tends to lead to good teamwork and creative collaboration. However, taken to extremes, it can lead to failure to achieve the team's goals. In practice, most leaders use both task-oriented and people-oriented styles of leadership.

The main traits of this style are:

- Allowing maximum participation in decision-making, and avoids detail supervision.
- Organizing, supporting and developing the people in the leader's team.
- Using unconditional reinforcement, by recognizing subordinates worth independent of task performance and goal attainment.
- Focusing on employees' satisfaction and building of relationships (K. Wee, H. Wee, 2006).
- Leaders following this style take into consideration the welfare of their subordinates through: (Nazari and Emami, 2013)

  1- Improving the working facilities of the staff.
  2- Encouraging staff to communicate and dealing with their personal problems.
  3- Providing trust and support to the staff by showing interests in their future work.
  4- Recognizing their good performance.

People-Oriented Leadership consists of showing mutual trust and respect for subordinates and looking out for their needs which lead to high job satisfaction with lower absentees and turnover rates, while task-oriented leadership forces employees to have high job performance capacity usually accompanied with lower job satisfaction and higher absentees and turnover rates (K. Wee, 2006).

Many researchers found that a mix of these two styles will lead to achieve organisation objectives by applying both styles effectively. Task-Oriented leadership was a favored approach in the past, but current research and practices seems to favor its use as a mean of strengthening and improving is the people oriented style (K. Wee, 2006).

2.1.7. Democratic leadership style

Al-Khasawneh and Futa defined this style as "a leadership style that involves people in decision-making process while the execution of the decision may be from the leader after facilitating consensus in the group" (Al-Khasawneh and Futa, 2012, p4).

In democratic leadership style subordinates are highly motivated to accomplish and fulfill the organizations' goals not just for the financial reward but also for the essence of self control of their own destiny (Bhatti, 2012). Moreover subordinates in this style have an intellectual relationship among each other within the organization (Ferguson and Dreikurs, 2011). Leader focuses on the role of subordinates who will conceptualize problems and

implement innovative and effective solutions therefore criticism is allowed from subordinates side (Raelin, 2012).

Democratic leadership style works best in situations which needs the existence of leader-subordinate trust relationship, moreover when subordinates are more likely self-controlled of their work in a way that technical performance is hard to attain and

control (Rustin and Armstrong, 2012). Also it is effective when quality of work is more crucial and essential than the productivity. Nevertheless, this style may make the work process slower but with better results (Bhatti, 2012).

In democratic leadership the job satisfaction is effectively increased since the subordinates have the right to exchange their view and participate in decision making process (Bhatti, 2012).

2.1.8. Autocratic leadership style

Awan and Mahmood defined autocratic leadership as where subordinates are dominated by their leader using unilateralism to accomplish a particular goal (Awan and Mahmood, 2010).

In autocratic leadership style the leader uses his/her authority to be dominant and forces his/her decision within the organization, while subordinates do not afford trust, dedication or loyalty towards their leader (De Cremer, David, 2007). This will have a major impact on the performance, stability and effectiveness of work (Van Vugt, Jepson, Hart, De Cremer, 2004).

Some researchers conducted across different countries discussed that subordinates prefer autocratic leadership style in particular situations when the focus on productivity is a major concern and the role of decision making is less preferable (Limsila and Ogunlana, 2007), while other researchers showed that autocratic style has a negative impact on the subordinates behavior therefore less job satisfaction and less productivity (De Cremer and David, 2007).

Autocratic style works best in situations that need rigors and it will lead to high response from subordinates (Hoogh and Hartog, 2008).

2.1.9. Bureaucratic leadership style

Is a leadership style known as "playing by the rules", in this leadership style the leader performs on the basis of specific procedures or policies that are either established by the leader himself or by following the procedures or policies that are decided from the next level of hierarchy above meaning that the leaders in this type act as a police officer more than a leader by enforcing regulations in the workplace and observing employee's performance and how well they are following the rules. (Wickramasinghe, Hopper and Rathnasiri , 2004).

Since this leadership style depends on how well everyone is following the rules then its impact on the organization is accompanied with high quality and safe work conditions nevertheless this style also have some limitations concerning innovation, creativity and satisfaction in the workplace.

Consequently, this leadership works best in the following situations:

- When the work is performed in a routine, repetitive way.
- When there are new employees who don't understand or are not following the rules.

- When the employees are dealing with sensitive and delicate equipment.
- Especially with employees who are responsible for handling the cash.
- In training programs that are related to safety and security.

2.2. Non-Common leadership styles

The following leadership styles are still not commonly used in organizations:

2.2.1. Awakened leadership style

This type of leadership is known to be multifaceted in which places the human element as a center in decision making in addition to including flexibility, integrity, supportiveness, consciousness, authenticity, devotion and a high degree of relationship orientation. This style involves many elements that are previously mentioned in this research from different leadership styles such as autocratic leadership, laissez-faire leadership, democratic leadership, and servant leadership. Therefore the situations that apply in each leadership style are also applied on the awakened leadership (Marques , 2008) .

According to Marques (2008) awakened leadership is" the all encompassing leadership approach involving 1- The leader's awareness to incorporate the appropriate style given the followers and the situation; 2- the leader's capacity to sharpen the skills necessary for guiding the self, the followers, and the organization toward advancement; and 3- the leader's ability to remain emotionally attuned to the self, the stakeholders, and the environment, thereby maintaining the highest level of authenticity possible" (Marques. 2008, p.816).

The best traits that support this type of leadership are as follows: (Marques, 2008)
1. Having high level of consciousness.
2. Driving force and motivation for the employees and the leader himself.
3. Being honest
4. Fully knowledgeable about the work or business field.

Thus, these previous traits have a great impact on the organization if administered properly such as increasing the flexibility of work conditions, encouraging creative thinking and innovation, and also encouraging team work and collaborative work relationships.

2.2.2. Authentic leadership style

The leader in this style is known to have faith in his values and beliefs in addition to being confident, builds trust with others, honest, modest always seeking changes and improvements (Gardner, Cogliser, Davis, Dickens, 2011), furthermore this type of leadership style tends to encourage the concept of being unique in achieving the company or organization's goals and objectives.

The impact of this type of leadership on the organization is that it encourages workers to be honest, humble, and to have faith in what they are working on therefore leading to a healthy work environment that fosters creativity and innovation (Gardner, Cogliser, Davis, Dickens, 2011).

The best situations in which this type of leadership can be applied are as follows:

- Having an honest, genuine, trust worthy work environment.
- When an organization takes under consideration its core values as the most important factor in doing business.
- When an organization is providing a competitive advantage that no other organization can achieve.

3. Conclusion

The result of this paper states that there is no best way to lead due to the fact that it differs depending upon the situation in which the leader is facing in addition to the leader's personality, values and knowledge with regards to staff responses and organizations philosophy.

Moreover many leaders can use more than one style in order to achieve organizational goals and objectives. Although the styles that are described in this paper are the most popular but not all of them are recommended.

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Data analysis in health communication and its implications for physicians and hospitals

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Abstract

Who is the trusted online expert on health in Austria today? Online content increasingly complements the interaction with experts. In particular, medical and health portals are gaining in popularity. Online information and communication is changing the doctor-patient relationship sustainably and lift it on a new level. Many patients already present - thanks to Dr. Google - their own diagnosis to the doctor. But in Austria most of the hospitals and physicians refrain from providing information and their know-how via online channels, leaving few online portals to the entire interpretive authority on the topics of medicine and health. In addition, opportunities for improved market positioning and increased reputation are missed. Reputation is a significant immaterial success potential, which can be translated into real advantages for physicians and hospitals.

New studies in this paper show that most of the Austrian hospitals and physicians do not actively use their online presence for any health information or communication activities. In exploratory interviews, there were indications for the explanation of this attitude: on the one hand, the clinics´ communication specialists are afraid of critical comments; on the other hand, there are concerns about delivering content on a regular basis. Additionally there is still little knowledge about the specific requirements for digital communication. To counteract this development, this paper shows how physicians and hospitals can better position themselves in competition through the evaluation of publicly accessible data. Data analysis via tools like the Austrian Web analysis (oewa.at) or Google AdWords support efficiently with an exact target group analysis and better media planning. Our studies show for example that the most common demand for online health information in Austria in the year 2015/16 is on the subject hemorrhoids, followed by the diseases borreliosis, shingles and scarlet. And the most active users for online health information in Austria are women around the age of 40.

Keywords: AdWords analysis, health communication, reputation, hospitals, Dr. Google

1. INTRODUCTION

Reputation of service providers and companies is now more important than ever. The reasons for this are manifold: corporate strategies change, the trend goes away from product to a reputational competition. Products and services as well as messages and corporate images are becoming increasingly interchangeable and comparable. In addition, the loyalty of customers, employees, and suppliers is declining (Buß 2007a, p.77; 2007b, pp. 230 f.). Furthermore today the value of communication does not consist of information any longer but of attention (see Franck, 1998). And the social and moral standards on which companies are measured have also changed considerably in recent years.

The advancing digitization has just redefined the physician-patient relationship in health communication. Health information portals are enormously popular and strengthen patient sovereignty. Doctors and hospitals have lost their once-a-time agenda setting and gatekeeper domination in the medical field. Communication pressure is rising, not only due to the growing importance of electronic World-of-Mouth recommendations. This paper links up here, examines in particular the aspect of reputation, presents unpublished studies and shows ways for a modern health communication of doctors and hospitals.

2. Reputation through communication

The overall goal of corporate communication activities must be added value - both in the strategic and in the operational area. Thus, communication management must aim at recognizing and implementing communicative differentiation and positioning potentials of a company and for implementing elaborate evaluation and management concepts. "This insight is important, since the branch discussion is mostly about new trends in communication tools and campaign strategies, but the corresponding know-how is neither company-specific nor specific to the individual, and can be easily copied, if necessary" (Zerfaß, 2014, p.60).

Intangible capital can be distinguished in three areas (Brönn, 2008, p. 282): Companies have, on the one hand, human capital, this means they can access the know-how and the skills of the employees. The relationship capital, on the other hand, refers to the external and internal relations of the company to its stakeholder groups. And the third intangible area is the structure capital, which consists, for example, of rights and patents.

The quality of the relationship capital determines the reputation of a company (Fahrenbach, 2011, p. 10). The currency of the relationship capital is communication. This in turn represents an intangible asset (Fahrenbach, 2011; Brönn, 2008). Thus, the intangible capital, whose effects on stakeholders promise long-term competitive advantages, is called reputation. Reputation serves to secure both the economic success and the socio-political recognition of an organization (Peters & Liehr-Gobbers, 2015; Srivoravilai et al. 2011, p.257).

"Reputation is the standing a person, organization or institution enjoys for their specific contribution to the realization of collectively shared goals and values in the public sphere. Positive reputation arises when actors permanently meet the expectations of important reference groups, and when information differs the expectation conformity in processes of public communication "(Eisenegger, 2015, p. 450). Peters & Liehr-Gobbers (2015, p. 921) see two contact points for the formation of a reputation, a direct and an indirect one. Reputation is generated by the direct personal contact with an organization. On the other hand, reputation is generated by images, experiences, impressions other actors through interpersonal communication and mass media.

Studies show that a high reputation among service providers, such as hospitals or physicians, is a major factor influencing customer selection decisions (Dijs-Elsinga et al., 2010; Schulz et al., 2011). Customers prefer to buy from organizations and companies with a high reputation (see Fombrun / Wiedmann, 2001, Fahrenbach, 2011). In addition, good reputation leads to greater customer loyalty, improves the communicative chances in the case of a crisis and has a positive effect on the attractiveness of a company on the labor market - keyword: War for Talents (Prauschke, 2007, Fahrenbach, 2011; Helm, 2007). The Reputation Institute demonstrates the relationship between stakeholder support and company reputation with empirical figures. Companies with a low reputation score therefore have massive disadvantages against better-rated companies on subjects such as recommendation, employer attraction, trust and acceptance (reputationinstitute.com, 2017).

Reputation differs from the term image, although both terms are often used synonymously in the literature. Reputation has a "higher-quality and far-reaching claim as well as a higher liability" compared to the image (Rademacher, 2006, p. 48). According to Eisenegger (2015) one of the essential characteristics of reputation is a possible rank order, this means a hospital with the best reputation, followed by the second-best hospital and so on. This is not only a distinguishing feature of image, but in turn influences the reputation of a company. In other words, a published good reputation assessment contributes positively to an even better reputation (see Barnett & Leih, 2016).

Reputation is not an absolute term. Rather, it is a dynamic entity that must be controlled and accompanied by a professional corporate communication process. "Even with professional communication, you can only give a company the reputation it deserves. On the other hand, not every company deserves the reputation it has. "(Foster, 1991, p. 144). Reputation is based on the opinion of third parties, which can decisively influence risk accounting. "Reputation is especially needed where the risk-bearing capacity of the trust can not be overlooked by the trust object alone, trustworthiness is not directly given, and the pressure to act is not allowed to leave the action if the trustworthiness is lacking" (Hubig, 2014, p. 355).

Reputation and image are also closely linked to the term of trust. The brace, which holds all these concepts together and ultimately also measures their quality, is communication. Trust is always a "risky advance" (Luhmann, 1989, p. 23f.) into an expected benefit. Trustworthiness is preceded by trust. "If we consider a person to be trustworthy, then a certain attitude arises against the other, there is trust. This trust can manifest itself (...) in a particular action or describe a particular situation or a kind of feeling or attitude. "(Reinmuth, 2006, p. 30). In this context, Hubig (2014,

p. 359) points out the mutuality of trust and communication: "Without trust no real communication (…), without communication no trust (...)). Trust is thus not only a prerequisite for personal interaction but also an interaction product. (...) A chicken and egg problem appears here (...). "

What reputational indicators can now be processed by hospitals and physicians? Kotler et al. (2011, p. 708) provide ten quality indicators for services: accessibility, trust, knowledge, reliability, security, competence, communication, courtesy, approach to the customer and environment.

In addition, the 7 Ps for service providers can supplement these ten indicators. The classical 4 Ps of marketing (product, place, price, promotion) complement three other factors: the person who performs the performance ("people"), the environment and ambience ("physical evidence") and the process of service provision ("process") (see Kotler et al., 2011, p. 705). These indicators or dimensions are partly superimposed, but can be filled with life by active (corporate) communication activities. They provide a good framework to which service providers can orient themselves in a communicative manner and which can make a valuable contribution to the increase in reputation.

3. About the current status of health communication in Austria

Digitization in health communication has brought about fundamental changes for the classical agenda setters and gatekeepers such as doctors, hospitals or clinics. The clear division of roles between communicator (physician) and recipient (patient) has been resolved. In digital channels, especially in the social web, the actors continually change their roles. Customers and employees demand greater transparency in the decision-making processes of companies, and want to participate in communication processes. In addition, our society, our life as a whole, is accelerating, which not only poses new challenges for PR and marketing experts (see Rosa, 2013, pp. 20 ff, Schneckenleitner, 2016b). Classic media in hospital communication, such as the printed employee magazine or patient magazines, increasingly compete with and are partially replaced by barely controllable, digital, interactive communication channels. Online health information site and social media in particular have brought increasing communication pressure for doctors and hospitals in recent years. And the development and differentiation of different media channels will continue to intensify in the future (Schneckenleitner, 2015).

According to a study, 70% of US hospitals already use social media channels like Facebook, Twitter and YouTube (Richter, 2014). In the German-speaking world, the classical (static and non-dialogic) online presence in form of hospital websites is still of great importance. In a survey conducted by the Münster University Hospital, 68% of patients and 48% of referring physicians indicated that the hospital website was the primary source of information (Schulz, 2011, cited by Schulz et al., 2011, p. 365). A further study (Bitkom Research, 2017) also demonstrates the importance of online communication for hospitals: over 55 % of the patients gather information about health topics on the Internet. General health portals (51 per cent) are used as information sources, but also Internet sites of hospitals (31 per cent) and physicians (26 per cent). Research on the Internet before a hospital or doctor's visit has two consequences for patients: firstly, they have a more confident attitude towards the doctor, and secondly, they increase the chances of mutual understanding during the conversation.

Reputation management plays a subordinate role for German hospital managers (Cyriax, November 2013). A survey compared seven topics of the company strategy (increase in revenues (inpatient and outpatient), increase in quality and efficiency, improvement of the overall strategy, reorientation / focus of the service portfolio, improvement of the reputation). The reputation management was clearly ranked last. When asking for the most important reputation characteristics the "quality of medical services (95%)" was mentioned first. Closely followed by "patient orientation" and "quality of nursing staff". Factors such as ambience, accessibility or communication are considered to be subordinated.

In Austria, the communication landscape in hospitals shows a mixed picture. A recent study (Schneckenleitner, 2016a) examines the communication structures and activities of public hospitals, as a control group acted private institutions. The data of the 13 hospitals were collected both via online questionnaires and by a telephone survey of the communication managers. The results show a similar picture in the external communication of both groups:
The most important stakeholder group for Austrian hospitals is "the public". Over 70% of hospital communicators named terms such as citizens, the public or the population. Such diffuse terms are hardly suitable for a tailor-made communication strategy. More than 60 per cent mentioned "patients" and "referring physicians" as important stakeholder groups too. This is followed by "media" (38%), "relatives / visitors" (30%), "potential employees" and 23% "politicians". External company communication is mainly provided through traditional one-way communication

channels. For the Austrian hospitals, homepage, flyers and events are the communication tools of the first choice. A surprising result was the question about the importance of social media channels: 62 percent of the hospitals consider these communication channels to be "not important". A subsequent online research on 27 Austrian hospitals confirms this statement: Only 22 per cent of the examined hospitals have a presence on Facebook or Twitter. In exploratory interviews, there were indications for the explanation of this attitude: on the one hand, the clinics´ communication specialists are afraid of critical comments; on the other hand, there are concerns about delivering content on a regular basis. However, potential opportunities in the use of social media channels are partly recognized: as an efficient communication tool in crisis and as a tool for employer branding or as a dialogue platform. When specifically asked about the topics covered in external communication, medical innovations, personal issues, structural changes, patient events and sustainability topics were mentioned. Asked about important topics in five years, the hospital communicators called data protection, employer branding, physicians' shortage, demographic change and digitization. The greatest challenges in communication work are seen in finding the right target groups. Organizational, the Austrian hospital communication is slender: Ten of the 13 clinics employ a single communication officer.

A further study (Fuchs, 2017) examined eleven websites of the largest Austrian hospitals according to quality parameters such as usability, technology, content or interaction. The above-mentioned trend is confirmed, although social media channels like Facebook, Twitter and YouTube are given more attention in the big houses. 45 per cent of the websites refer to their own social media presence. Social media activities are therefore coupled with the size of a clinic: the larger a hospital, the more social media channels are used. Other communication channels, such as weblogs, podcasts, or the classic newsletters are hardly used by the hospitals with 9 per cent. Only two hospitals offered barrier-free online access for disabled people.

The studies show: In many cases there is still little knowledge about the specific requirements of digital communication channels. Difficulties also arise in agenda setting and an exact stakeholder analysis. "(...) social media can benefit hospitals in a variety of ways, including messaging, communicating with the public and recruiting staff. (…) In fact I believe that social media provides the most powerful community engagement tool that we have ever seen. "(Hino, 2014, p. 461). However the importance of digital communication channels, especially of social media, cannot be uniformly confirmed for Austrian hospitals. It may be questioned whether the clinics are able to escape this trend in the long term.

4. Increasing communication pressure in the area of health

Hospitals show how the communicative requirements have changed over the course of time. Up to now, a competition positioning of hospitals was rather unusual for several reasons (Salfeld, 2009, p.129): full waiting rooms made a serious reflection on communication and marketing activities unnecessary. And the competition for patients is regarded as rude among doctors. Hospitals understood themselves as a part of a holistic health care system than as a competitor. A study showed that the hospitals´ communication directors understand themselves as a part of a big family and do not see any need to differentiate (Waeraas & Sataoen, 2013). In recent years, however, this has changed. "In some regions, a regular competition for patients has begun - which has already resulted in considerable shifts in the treatment services between the individual hospitals. Anyone who does not actively participate in the changes is at risk of losing patients to competitors whose market and competition efforts are more convincing. "(Salfeld, 2009, p. 130). Professional corporate communication and a strategic reputation management can contribute to the positioning of a clinic. And that this is more necessary than ever is confirmed by current data: in Germany almost every tenth hospital is threatened with insolvency. Too many small clinics, a too high hospital density and thus high competition and too little specialization are the main reasons for this (hospital ratingreport, 2017).

In particular online channels play a paramount role for trust, credibility and reputation of a company. Today customers trust product and service evaluations on the Internet and these evaluations play a large role before the use of a service. The so-called "electronic word-of-mouth (eWOM)" describes any positive or negative statement about a product or service provided to a large number of persons via the Internet (Hennig-Thurau et al., 2004, p. 39). The decisive factor here is that the recipient considers the published opinion to be independent. The opinion givers can express themselves through platforms such as blogs, social media channels or evaluation portals.

In this process the general characteristics of online communication pertain: Unlike conventional oral propaganda, clinic ratings can be permanently stored and archived, the sender often remains anonymous and the comments are available around the clock. Through eWOM, information search and the buyer decision process can be shortened.

However, the anonymity of the commentators makes the readers question whether or not they should believe a posted comment, since ratings can also easily be manipulated by the evaluated companies themselves or by competitors (Dellarocas, 2006). For example, studies show that negative customer evaluations are generally more credible, are more widespread, and have a stronger impact than positive ones (Park & Lee, 2009; Sen & Lerman, 2007, Hoffjann & Pleil, 2015, p. 158).

But why is the influence of eWOM so great today? Services are becoming increasingly complex and need more explanation. And the numerous technical innovations, such as review sites, social media channels or Internet forums, lead to a rapid growth of a decentralized information offer (see Dubravka & Posselt, 2009). Moreover, it has never been so easy to share and comment opinions. This development is not unexpected, according to at least web specialist David Weinberger: "Since its origin, since the first emails, since Usenet, the Internet is a recommendation machine, with which we point out interesting things. This was even the reason for its development. "(Stöcker, 2008).

Who is the trusted online expert on health in Austria today? Online content increasingly complements the interaction with experts (Kammerer & Gerjets, 2014, p. 177). In particular, medical and health portals are gaining in popularity. "Patients change their behavior, and the pressure on doctors is increasing. Their professional authority is questioned, after all, you want to be treated by the best possible doctors and in renowned hospitals. "(Kapeller, 2016, p. 20). And here, the circle closes again because the best possible doctor is searched by Google. Numerous medical online guides, such as netdoktor.at or gesund.at, lift the doctor-patient relationship on a new level. Many patients already present - thanks to Dr. Google - their own diagnosis to the doctor. A two-edged sword: On the one side, patients can now inform themselves quickly and free of charge online about their symptoms. On the other side, it is difficult for the patient to recognize the correct diagnosis from the multitude of diagnoses and to correctly understand the presented information. In addition, it is difficult for non-physicians to check the text quality.

5. The impact of Dr. Google

Numerous online tools now provide the opportunity to learn more about the users of websites and online offers. Many of these data are free and publicly available. An example is the portal of the Austrian web analytics oewa.at. Visitors can enter user criteria, such as gender, age, income or state, of the most frequently visited Austrian websites. From this, first conclusions can be drawn about the user structure of our analyzed subject, health portals such as netdoktor.at, gesund.at or docfinder.at. General user data such as unique users, page impressions or mobile / desktop access are also available. For media planning the following findings are important:

1. Is there need for online information on topics such as health and medicine?
2. Does the demand increase or decrease?
3. Where is the information sought?
4. What is the sociodemographic structure of the users?

In the first quarter of 2017, an average of 939,000 unique users per month visited netdoktor.at, Austria's largest health portal. Especially women often use these offers. The ÖWA reveals almost 65 percent female visitors for netdoktor.at in the first quarter of 2017. In addition, this page is often used by people aged between 14 and 40 years (oewa plus media analysis, 1st quarter 2017). Regional differences can also be identified by data. Over proportionally often persons from Eastern Austria access this portal, in front of all Viennese looking for health information online. In terms of household net income, most visitors are between 2,000 and 3,000 Euro (27 percent), followed by the category of 1,000 to 2,000 Euro (22 percent) and 3,000 to 4,000 Euro (20 percent). For a Viennese physician who focuses on a target group among women between the ages of 20 and 40, PR activities at netdoktor.at were worth considering.

In the health sector, not only the sociodemographic data is important, but also the topics that are searched online. The Edelman Trust Barometer (2017, p.10f.) shows that the trust of the recipients in online sources is growing steadily. In particular search engine results are given much trust here.
An easy way how to find out the most frequently searched topics in health and medicine are to check popular health websites. Netdoktor.at, for example, shows on its homepage the "Most frequently searched diseases" category. The topics of hemorrhoids, food poisoning, itching in the anus, skin fungus and abdominal pain in women are listed (as of September 11, 2017). This results in valuable implications for doctors and hospitals (see chapter 6).

Another approach, which is however more complex, is an AdWords analysis. The AdWords KeyWords tool is a free

program that provides keyword search terms in campaign planning. It helps companies determine the relevancy of a search term. You can compare search term trends and check the search volume. In addition to the search volume per month, billing estimates are provided for use in AdWords as a marketing tool. With the aid of previous statistical data, new KeyWord ideas and forecasts on search terms can be obtained. Data collection is carried out at the search term level. With the aid of predefined clusters, the user can gain an overview of search terms. The search terms are determined in exact spelling and very close variants.

A Google KeyWord Tool Analysis carried out by Kufstein University of Applied Sciences named 700 health-related search terms and the defined subtopics doctor, symptoms, therapy, causes, diet, prevention and disease. Since the research project (Schneckenleitner, 2017) relates specifically to Google's analysis of the search terms concerning the health of the Austrians, irrelevant search terms were removed from the results. Irrelevant, for example, were concepts on the subject of medicinal products, alternative medicine, home remedies, body parts without direct illness, pregnancy and medical treatment. After removal of the non-targets, around 200 relevant search terms remained. The ranking of the relevant search terms was by Google and was not changed.

Tab. 1: Top 5 of the most frequently searched online health topics in Austria in 2016/2017 (Searches per Month, Analysis by Google AdWords
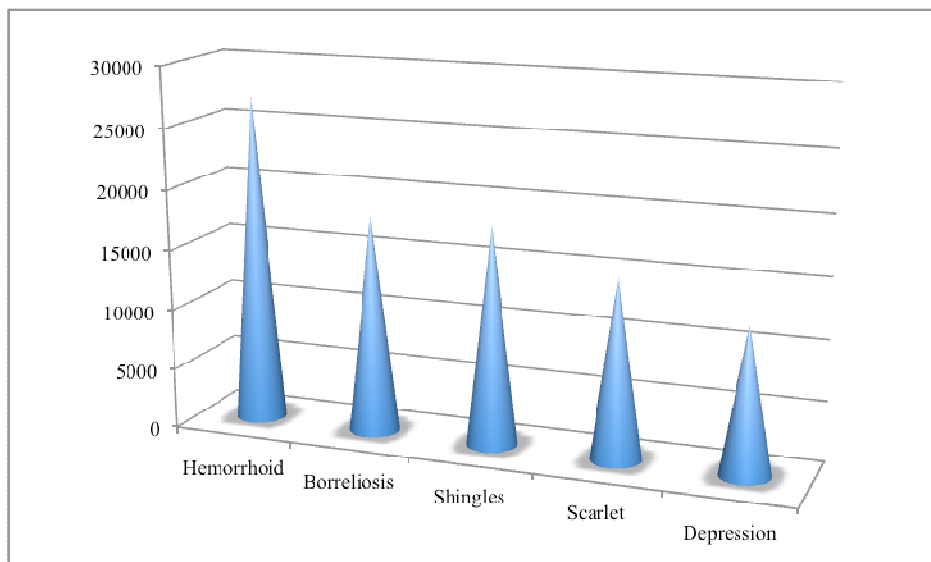
The table shows that the most common demand in Austria is for information on the subject hemorrhoids, followed by the diseases borreliosis, shingles and scarlet. It is interesting to note that there is only one equal topic (hemorrhoids) compared with the most popular terms at netdoktor.at.

6. Implications

The data show that all information about health and medicine is very popular. Our figures confirm a massive demand. The need to do so, however, covers almost exclusively pure online health portals. As our studies presented here show, hospitals and / or physicians usually refrain from providing information and their know-how via online channels, leaving few online portals to the entire interpretive authority on the topics of medicine and health. In addition, opportunities for improved market positioning and increased reputation are missed. Reputation is a

significant immaterial success potential, which can be translated into real advantages for physicians and hospitals. Therefore, a high reputation can lead to higher prices, more customers (patients), or better-qualified personnel. The main reason for the non-commitment in the digital field is the uncertainty in the handling of digital media or putting it in a nutshell: lacking media literacy. But the trend towards the digitization of all areas in the health sector is irreversible and will continue to accelerate in the future. The doctor-patient relationship will change sustainably, as will the answer to the question "What makes a good doctor?". The magazine The Economist (economist.com, April 8, 2017) sees the future of hospitals in a mix of modern airport, comfortable hotel and a self-service kiosk. The smartphone in the chest pocket replaces the stethoscope, Virtual Reality will play a dominant role in the health care system, and modern communication tools will show patients in real-time their health status and provide tips to speed up the healing process. The place of treatment will also change and at the same time make further demands on the communication performance of a hospital. "We have reached the peak of bringing patients to the healing centers - our hospitals. We are on the brink of bringing the healing to patients. "

Despite all the changes - for hospitals and doctors, there is enormous potential in today's communications activities:

- It has never been so easy to analyze customer segments efficiently.
- It has never been so easy to get accurate knowledge about the most frequently asked topics in the health care sector.
- It has never been so simple and cost-effective to position as a public health expert.

The collected data provide first approaches for a strategic digital communication management of hospitals and doctors. Although further research may be needed, the following findings may be gained:

• The competition among physicians and hospitals is especially growing in conurbations, which means that the communication pressure on the players will also increase most strongly in these regions.
• Women around the age of 40 are the most common users of health portals.
• If there is a medical specialization of the doctor / hospital to one or more top Google terms, it makes sense to consider an active agenda setting in the online area, such as a microsite, topic videos or similar. Position yourself as a digital health expert or medical professional.
• An AdWords analysis about its own status quo (physicians as a person, medical practices, hospitals, clinics, etc.) can provide useful information for more efficient communication planning.
• If a hospital or a physician wants to become more popular, it can make sense to think about active content input for the most popular health websites with Marketing or PR activities. The advertising regulations for the medical sector must be considered.
• Increase your reputation by sharing your know-how. Doctors and hospitals have largely refrained from online communication on the topics of medicine and health. The reasons for this should be questioned internally and discussed.
• Occupying medical topics on the Internet would be particularly worthwhile for Austrian hospitals. The competition is still manageable and there are good opportunities for increasing the reputation.
• Online monitoring is inevitable, in particular the most important review sites with possible patient feedback.
• Your own online channels do not have to be dialogic. But websites with dialogical elements can help to channel and bundle feedback (blogs, Facebook page, online guestbook etc.).
• Communication and information on the subject of health and medicine has shifted strongly into the online area. The digital competency of communication managers is a prerequisite for success in this area.
• For larger organizations, it is recommended to have their own Internet and social web strategy, which also creates a practical guideline for the employees (keyword: "How to...").

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Tourist Destinations And Environmental Ethics

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Abstract

Since ancient Greek philosophers to today ethics has been defined and divided into various aspects as part of philosophy. By all means, briefly summarized and simply stated that ethics is a system of moral principles or a code of behavior of social, religious or civil groups, which clarifies the good of evil and the choice of the individual to do what is good. Ethics is not a new topic for discussion it has been discussed, debated over thousands of years in all cultures, countries, states, communities and regions of the world.

The ethics term we face everywhere, such as professional ethics, media ethics, business ethics, which is about the rules, principles and standards that guide the behavior and actions of business organizations. But the core of all these areas is the ethical responsibility and the way you adhere to it, combined with social responsibility.

The purpose of this paper is to address ethical issues related to the environment, tourist destinations and environment, marketing and competitive destination strategies.

The analysis is not comprehensive, as the issue itself is quite wide, but we have only dealt with a few more important points.

We have tried to present an analysis of tourism destinations and the environment as well as environmental ethics as an indispensable element for good organization, the fruits of which are transmitted to society from a normative point of view.

Keywords: Tourizem, Travel, Marketing, Destinacion, Services

1. INTRODUCTION

Destinations do not present a sector of tourism industry in the narrow sense of the word, but they include in a single area many tourist activities and many industry sectors. In many destinations are seen the influences of the tourist industry, so they are covered by the positive economic and social effects and at the same time become localized for many negative environmental, economic, socio-cultural factors of this industry.

Marketing of a destination is a complex system of relationships between public authorities and private entities, aiming to manage the supply of each area, which is made up of a number of tangible and intangible territorial elements.

The Criteria of Global Sustainable Tourism are an effort to explain the nature of tourism in an understandable way, and are the minimum that a tourism business has to aspire to meet.

But does "ethical tourism" really mean?

The Global Sustainable Tourism Criteria (TGB) are organized into four main themes: Efficient planning of sustainability, increased social and economic benefits for the local community, improvement of cultural heritage and reduction of adverse environmental impacts.

Although the criteria are originally conceived to be implemented by the hotel and travel industry, they can be widely used by the entire tourism industry. Criteria are part of the tourism community's response to global challenges.

The attractiveness of foreign tourists will influence the country's use of tourism capacities to guarantee a maximum benefit from the introduction of foreign currency and will affect the functioning of the tourism sector with the same principles that the tourism industry operates around the world. Criteria indicate objectives, but not the way they are achieved or the final results. This role is met by performance indicators, additional educational materials, access to the tools needed to implement the Global Sustainable Tourism Criteria

TOURIST DESTINATIONS AND ENVIRONMENTAL ETHICS

"We can not win the battle to save the beings and the nature if we do not create an emotional bond between us and nature and if we do not save what we do not want"

Stephen Jay Gould (Orr, 1994)

Understanding and promoting common ethical values of man and attitudes of tolerance and respect for religious, philosophical and moral beliefs are the foundation and result of responsible tourism. Participants in tourism development should be familiar with the traditions of socio-cultural practices of all peoples, including small communities, of course, and their values. Tourism activities should be developed in accordance with the customs of the regions and the home countries on the one hand and in accordance with the best laws and practices on the other. The community that welcomes tourists as well as local tourism authorities should be good to distinguish and respect tourists to inform about their lifestyle, tastes and expectations, the level of education, etc., in order to contribute to the warm reception and professional those tourists. The task of local authorities to guarantee the safety of tourists and their personal property, they should be careful special care for foreign tourists can be more sensitive, and to provide easy access to information, prevention, security and assistance in case of need. Any attack, aggression, kidnapping and blackmail of tourists or professionals in tourism, as well as deliberate destruction of tourist facilities or of cultural and natural heritage elements, must be punishable by force and punishable under the law.

The destination or resort term is a complex link between geography (with all the human and natural resources it provides) and tourism (with all the activities and services that tourists take during their stay)[1] .

The destinations are also of great importance in tourism because they are the ones and their images that attract tourists and by that they act as a catalyst for many sectors and tourism industry as shown in Figure 1.1.

In terms of systematic theory, the tourist destination can be simplified as a system of stakeholder subsystems or stakeholder groups that are constantly interacting with the natural, economic, social and political system

Fig. 1.1. Content of tourist destination Ray Youell (1998)
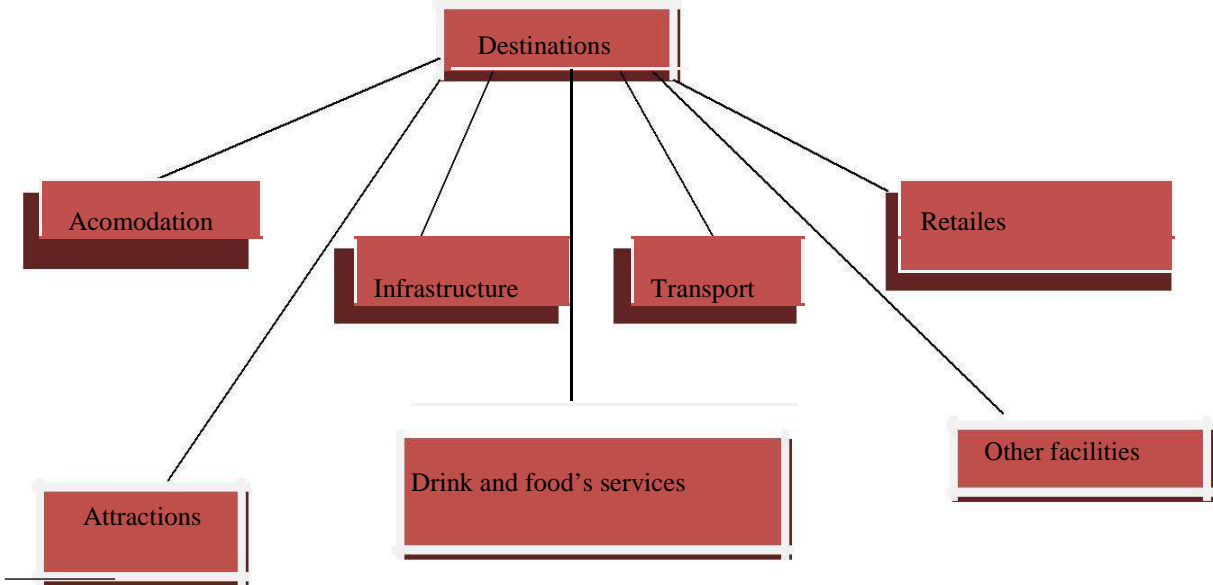
[1]Ray Youell (1998) -Tourism an introduction

The perception of which or what environmental space creates a certain tourist destination can be subjective in nature, depending on the distance travel, in order to pursue the cultural background and the visitor alike.

The concept of destination does not accept political or geographical boundaries, but the destination is often perceived and labeled as a destination for some tourists. To ensure competitiveness, each tourist destination should exhibit their differences over those of the competition. Climate, population and historical heritage are very important elements perceiving the character of a certain tourist destination.

Photo 2: Definition of tourist destination with distance travel
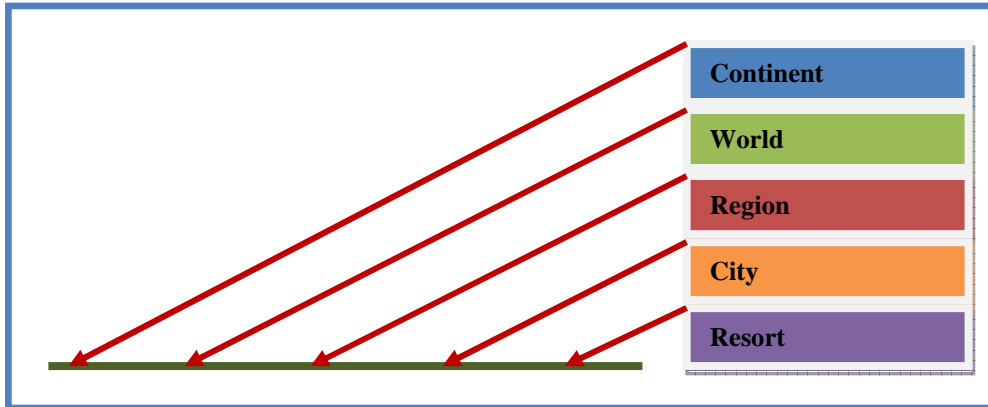
In this regard, economic science, the tourist destination, divides the fundamental aspects of a virtual enterprise. This destination includes more "independent companies" operating together, a common business model to ensure long-term competitiveness. Due to this, tourist destinations can be considered as "competitive" tourism units.

To become a tourist destination, any place (or location) or region should contain certain elements that determine the tourist destination. Therefore, there are some determinants of the tourist destination:

- ✓ Tourist attractions (natural and anthropogenic values of destination)
- ✓ Access to tourist destinations,
- ✓ Tourist services
- ✓ Product – Tourism package
- ✓ Other activities that can be carried out during the stay of visitors.

This figure shows that a destination can be considered as an "umbrella" below which the various sectors of the tourism industry work in co-operation to provide facilities and services for leisure and business travelers.

Figure1.2. Components needed for developing a destination
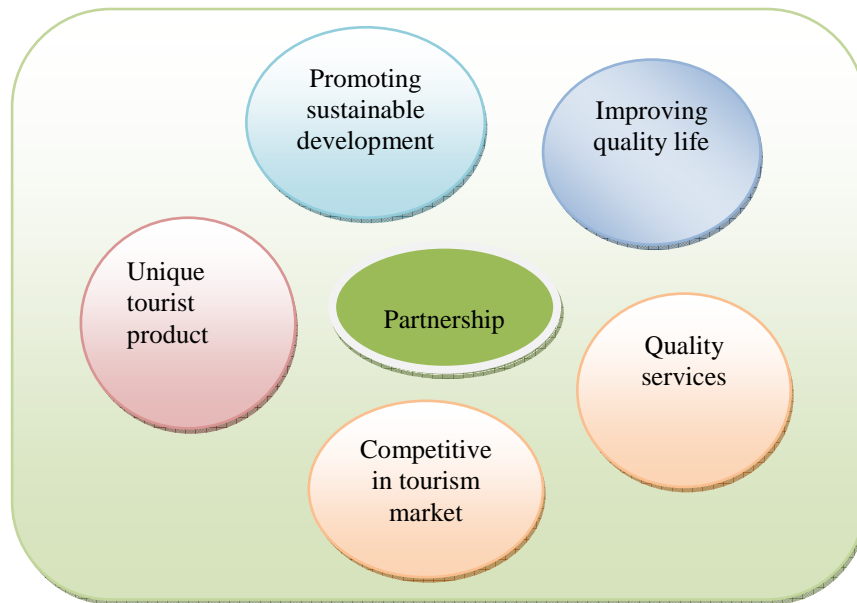
A typical tourist destination will have an organized non-commercial tourist organized variety that operates alongside public sector bodies in infrastructure construction, territory planning and adjustment, tourist information services, and destination promotion. Private operators supply visitors with facilities such as accommodation, food and drinks and attractions. The destinations represent a number of important features in the interest of tourism planners and operators. These are illustrated in the following examples:

➤ **Destinations exist in a variety of geographical degrees.**

A destination may be a continent, a separate state, a region within a nation, a major city, a small town, a village, a deserted area. A single attraction may be sufficient to determine a place for destination.

➤ **Destinations include a variety of products.**

Tourist destinations include a variety of products, services, facilities, trying to satisfy the needs of visitors. They may be part of the superstructure of the area, such as tourist buildings, accommodation and attractions or parts of infrastructure such as the "skeleton" of the transport service, the communication channels around which tourist facilities have been developed.

➤ **Destinations exhibit a variety of properties.**

Tourism products and services are provided by a wide range of public, private and non-profit organizations which have their own management objectives and styles. Each organization has its own marketing activities, while general marketing responsibility for public marketing is the responsibility of the public agencies.

➤ **Destinyions serve the needs of a variety of treasures.**

Many destinations serve a wide range of business and vacation tourists each with their own requirements in terms of mix product and standard services. Under such conditions, destina- tion indicators should attach different messages and images to specific market segment requirements and improve current facilities.

➤ **Popularity**

Another element that needs to be addressed in destina- tion is popularity, so the frequencies are the destinations.

Many destinations that provide high quality of tourist attractions, accommodation, food and drink services and numerous promotional activities today have a good attendance.

Marketing of a destination

Marketing is defined as the process of planning and implementing the creation of ideas, products and services at special prices that are distributed and promoted so that during the exchange that meets individual and organizational goals. Marketing Concept is a business philosophy and a process that aims to find ways of attracting and retaining clients, such as creating profits.

The most important element of these definitions is the role of the consumer and his relationship and attitude towards the product (if the product is good, service or idea). Tourism and Hospitality Sector, like other service sectors, includes a combination of tangible and non-vulnerable products. The hotel is a mix of products (beds, food, telephone and other communication equipment) that are connected to a wide range of services (reception, maintenance, room service, and so on).

Tourist attractions such as the National Park are a combination of buildings (hotels, shops and shopping centers) located within a physical attraction (mountains, forests, rivers, etc.), which provides various services (guides, training and education , and so on). All the tangible and non-vulnerable products package is accepted by tourists in the form of experience, and together they constitute the nucleus of the tourist product

There is always a strategic marketing plan in the global market where the supply is higher than the demand.
The general marketing tasks of the destination can be summarized as follows:

1. Services that can satisfy current potential customers.
2. Marketing is a complex system that involves a number of interdependent functions aimed at satisfying customer expectations.
3. Marketing creates a link between firms and the context referred to.
4. Marketing can manage information from and around firms and establish links between firms and interest groups.

Ethics and marketing of tourist destinations

Marketing ethics are largely matched by media ethics, because the media is used for marketing purposes. However, media ethics is a much larger topic and goes beyond the scope of business ethics.
Marketing's ethics has to do with:

➢ Setting a price: fixing prices, price discrimination, price masking,
➢ Anti-competition, it is involved in the price down but moving further and covers ethical problems like manipulation of loyalty and supply,
➢ Content of ads: subliminal messages, products labeled as immoral or harmful,
➢ Children and marketing: marketing in schools,
➢ Grey and Black Markets.

Marketing of destination can also refer to marketing affiliates because it is based on a complex system of relationships:

➢ among the products, services and intangible components
➢ between providers and buyers
➢ between providers and all other entities in the area

The development of destination marketing as a separate marketing area is based on scientific research of many fields (destination, image, destination planning, tourist offers, tourist requirements, promotion effects, marketing competition between destinations and their competitive advantages, protection natural etc.). The public sector is involved in the marketing of destination through national tourism organizations, regional boards and local authorities.

The main task of marketing the destinations is to influence the demand for tourism products and services. Here we need to understand demand carriers, clients, we need to increase the number of tour transactions (realized transactions, number of tourists), the value of these transactions (high levels of capacity utilization, average price for holidays, etc.) .

To accomplish these goals, marketing managers should include:

1. Research and Analysis: customer needs and requirements, competition activities
2. Planning marketing strategies: serving and satisfying clients, revenue and profit, introducing new products and services to the market
3. Implementing marketing strategies: designing, developing and launching new product concepts, setting standards for labeling, creating and implementing marketing communication campaigns.
4. Monitoring and controlling the marketing campaign: Ensuring that marketing objectives are accomplished during the campaign, Ensuring that marketing activities are carried out within the approved budget, Understanding the reasons why they are not the same major difference between the target and of current performance, Authorization of marketing research to evaluate marketing performance.
5. Impact on other departments focus on the consumer: the operational needs to make or buy what the customer wants to experience, the need for human resources to recruit additional staff that will enhance customer interaction.

Since tourism is considered a dynamic issue, it is important to be flexible and "open mind" in the application of marketing and asset management in the development of tourist destinations.

Conclusions

As a result of the existence of many tourist destinations with a variety of different nature of tourist potentials, attention is increasingly focused on the development of plans. For the development of competitive destinations and sustainable tourism, attention should be paid to the participation of all interested groups in the development of tourism, historical and cultural dimensions, preservation of the environment and tourist resources, educational goals, tourism management etc.

Marketinguinjëdestinacioniështënjësistemkompleksimarrëdhenievendërmjetautoritetevepublikedhesubjekteve private, duke patursiqëllimtëmenaxhojëofertën e çdo zone, e cilaështë e përbërëprejnjënumrielementësh territorial tëprekshëm e tëpaprekshëm.

In everyday life, we encounter a phenomenon, which is a symbol of human existence and action. This phenomenon and symbol is morality, it is subject to particular philosophical thought, practical philosophy, or ethics. Creators of the notion of ethos are the Hellenic, while the morals are the Latin. Disciplined thought on morality, ethics, in systematic form appears with Aristotle, though the systematic and scientific interpretation had warned from earlier Socrates. For Aristotle, ethics, politics and economics make up the practical philosophy; it has its subject mostly principles according to which practical ways are defined ways and objectives. Some representatives of contemporary thought include the need to rehabilitate the opinion of Plato's critique critics on the idea of good, as the supreme principle of Plato's metaphysical ethics. Alternatively, according to Aristotle, ethics is a theory of principles of man's behavior and action.

As to the definition of ethics as a notion, we have presented some authors opinions, where we can say that ethics is a set of norms that make ideals, value in everyday practice, and values are collectively accepted principles that direct our judgment toward what is right and wrong. The importance of environmental ethics in tourism is explained by Robinson and Phipps, who are the sign of reconciliation between tourist experiences on a personal journey, where, according to them, understanding culture is how to understand tourism and to understand tourism should be given at least a brief presentation of the man. Whereas, Arnocky, Stroink and DeCicco, emphasize that people with the most tendency to protect nature were those who considered themselves as part of nature.

Finally, due to the large number of tourist destinations and tourist potentials, there is always focus on developing marketing plans and strategies for developing these countries, and that these developments should find and seek participation and involvement all interested subjects in terms of historical and cultural dimensions, environmental protection and. tourist resources, training and professional education of staff and general management of tourist destinations.

Recommendations

In addition to this document we will try to present some recommendations regarding the development of tourist destinations:

1. The success of developing a competitive and sustainable tourism destination is the development of activities involving the community and the reduction of the power of local government in decision-making processes.
2. Awareness of host communities regarding the importance of their participation in building strategies, plans, and tourism development programs.
3. Increase training for local government representatives to tell about the forms, ways and techniques that should be used to ensure a broader community participation in local development processes.
4. Increased cooperation between local and regional operators.
5. Realization of successful cooperation between local government, communities and private operators in building, realization of strategies, plans and programs for tourism development.
6. Cross-country territorial plans, tourist planning and local and national marketing plans.
7. Quantitative multiplication and qualitative improvement of tourism products
8. Creating a logo for each rural tourist destination.
9. To create entertainment facilities not only for tourists but also for the host community.
10. Rebuild the artisan work centers.
11. Increase investment in infrastructure in tourist areas.
12. Maintain and invest in natural, cultural and archaeological monuments.
13. Promote areas of interest.
14. Provide opportunities for investors to receive low interest loans.
15. Eliminate the effect of deforestation and regenerate forests.

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Marketing strategies for exporting Macedonian wines to the Czech wine market

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Abstract

The Republic of Macedonia has all the necessary prerequisites for production of high quality wines and has great export potential, but Macedonian wines are almost unknown on the world wine market. Another problem is that most of the exported quantity is bulk wine, although in recent years the ratio between bulk and bottled wine started to change positively in terms of bottled wine.This paper gives an overview of the strengths and weaknesses of the Macedonian wine industry and defines criterions for selecting target markets in the European Union.

The wine market in the EU is the most important export destination for Macedonian wines. Given the specificities of the wine market of individual EU member states, this paper helps selecting the countries in which the largest export of wine can be achieved. For the targeted wine market in the Czech Republic, concrete export strategies are proposed for each element of the marketing mix.

Keywords: Macedonia, Macedonian wines, European Union, strategies, Czech Republic

1. INTRODUCTION

As a wine country, Macedonia is at the same time very old and very new. Although wine has been produced in Macedonia for centuries, the wine industry has been making its flourishing in the last 15-20 years after proclaiming the country's independence. Despite the great significance and export potential of the wine as a product, no strategic effort is being made to increase the export of this product to the existing markets or to conquer new markets. Competition on a global scale is constantly increasing, and the main obstacle that Macedonian wines are facing on international markets is the unrecognizability and lack of the image of the country, as well as the lack of cooperation between the Government institutions and wineries in defining strategies for exporting Macedonian wines.

Studies that analyze the decision-making process by consumers when purchasing wine constantly indicate that in the wide range of brands on the shelf, the origin of the brand plays the role of qualitative differentiation. For this reason, it is of crucial importance for Macedonia to focus on strengthening the image of the country and increasing the export of high quality wines in the premium segment. Hence, the possibility of increasing exports

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depends primarily on the success of positioning and strengthening not only the image of the country, but also the brand "Wines of Macedonia".

The wine as a product is inextricably linked with tourism and national cuisine, and the existence and functioning under the common brand "Wines of Macedonia" can contribute to wider recognition and appreciation of various offers of Macedonia as a country that can attract foreign investors, tourists, passengers and representatives of the business community.

Due to the close connection between the image of the country and the image of Macedonian wines, it should be clear that by promoting the diversity and uniqueness of the country and its beauties, culture, traditional cuisine and people, it indirectly stimulates the promotion of Macedonian wines. And vice versa, by promoting the Macedonian wines as an important export product of this country, Macedonia is indirectly represented in the best light.

The subject of this paper is an analysis of the current state of the wine market in the Republic of Macedonia, as well as determining the opportunities and threats that the Macedonian wineries face when placing their wines on international markets.Special emphasis is put on targeting wine markets within the European Union where it is expected that Macedonian wineries need to focus their export markets. Czech Republic is defined as a target market for export of Macedonian wines according to 7 criteria.

The main goal of this paper is to define the elements of the marketing mix for the Czech wine market and define the product, promotional, price and distribution strategy according to market information.

2. STATE OF THE MACEDONIAN WINE MARKET

Wine is one of the symbols of Macedonia. The secret to the taste of Macedonian wines comes from the sun, which affects the taste of the grapes itself. Wine is not something new in this region, since wine is being made here from Ancient times. Vines have been cultivated 4,000 years ago and this is confirmed by a large number of artifacts found on ancient sites (Winesof Macedonia, 2015).

During the time of Philip II and Alexander the Great, members of the Macedonian royal dynasty were known as great wine lovers. This tradition continued in the time of the Roman Empire, when Macedonia was one of the most important wine regions in the empire. The great importance of wine was also attributed to the rise of Christianity, when the wine became a tradition and was part of almost all Orthodox Christian ceremonies performed in the churches (Popova Kula, 2010).

The today's winery "Tikves" is the first winery in modern times was founded in 1885 and today it is the largest winery in Southeast Europe. Here, the wines were bottled before the XX century, and since then the winery had a semi-automatic bottling machine. In 1912, the first wine was labeled "Tikves". But due to the unfavorable political and economic conditions at that time, as well as the appearance of the phylloxera in the period 1908-1914, the vineyards began to perish until 1920. Despite these conditions, growers united in order to revive vines by bringing American varieties that were resistant to the phylloxera (Tikves, 2011).

During the Second World War, viticulture and wine production stagnated. After the end of the war, significant efforts were made to improve viticulture because of its exceptional economic importance. During the 60s and 70s of the XX century, the vineyard area in the central region along the Vardar River was estimated at 14,000 hectares. Macedonia, which was part of Yugoslavia at the time, significantly increased vineyards and in 1981 the largest areas with vineyards of 39,000 hectares were registered. After achieving this culmination, there was a reduction of the surfaces which came as a result of the society transformation. Private sector was leading the development and modernization of viticulture and wine production in this region. While Macedonia was part of the SFRY, it produced two thirds of the entire Yugoslav wine production. After independence, former state-owned wineries were privatized and a number of small family wineries took a swing. By the end of the 1990s, the Macedonian wine industry started a new decade of intensive development of viticulture and wine production, opening new wineries, restructuring the existing and determination of the leading producers to become part of the world wine map. This resulted in a commitment to quality and endeavor to offer unique wines worldwide, as well as continuously improving and strengthening the image of Macedonian wines (Beleski, 2014).

2.1. Marketing macro environment on the wine market in the Republic of Macedonia

Grapes is a traditional and important agricultural cropfor Macedonia. In rural areas, the cultivation of grapes engages the local population and is of particular importance for the production of wine. Viticulture is probably the most important and strategic industry in the field of crop production (Economic chamber of Macedonia, 2005).

In the period 2010-2016, the areas under vineyards are constant and range around 25,000 hectares, which is 0.4% of the world area with vineyards. Most of them are owned by individuals (80%), and the remaining 20% were privatized in the early 1990s. These individual vineyards range between 0.5 and 1 hectare. The most dominant black varieties are Vranec and Kratosija, which are also local varieties with a long tradition on the territory of Macedonia. The most dominant black varieties are Vranec and Kratosija, which are also local varieties with a long tradition on the territory of Macedonia. Vranec is the most common black variety, while Smederevka is most used white variety, but is unfortunately primarily used for the production of white wines of lower quality and distillation for brandy production (Association "Wines of Macedonia", 2015, p.8). In Macedonia, 28 grape varieties are grown, and the presence of white and black varieties is equal to 50% (Association "Wines of Macedonia", 2017a).

According to climatic conditions, Macedonia is classified as one geographical area. It is considered a region for producing regional wine that is suitable for the entire territory of the country. Furthermore, this region is divided into 16 wine districts for production of quality wine. Each of them is characterized by different conditions and production capacity (Beleski, 2014).

In 2016, in Macedonia 75 wineries were registered (Association "Wines from Macedonia", 2017a). The industry purchases from "250 to 300 thousand tons of grapes per year depending on the harvest and produces 95-120 million liters, which directly affects the development of the country's agriculture. Grape and wine exports account for 17-20% of the GDP in Macedonia and wine is the second most important export agricultural product, after tobacco, while wine exports contribute with foreign exchange inflows of 50 million euros a year" (Association "Wines of Macedonia", 2017a, p.12).

Macedonian wineries have a total production capacity of 2.1 million hl, but use only half of it. The total bottling capacity, however, is about 650,000 hl per year, which is insufficient to cover the entire wine production in the country. Although insufficient capacity, bottling capacity remain unused because most of the wine is sold as a bulk (Ministry of Agriculture Forestry and Water Economy, 2010).

Almost 74% of the produced wine in Macedonia in 2016 was intended for export. The key export destination in 2016 was the European Union, which accounts for 57% of total exports in volume and 44% in value, followed by the Balkan countries with a share of 38% in volume and 45% in value (Association "Wines of Macedonia", 2017b).

Since 2013, the ratio between bulk and bottled wine has begun to change in favor of exporting bottled wine. For the Macedonian wine industry, the structure of the exported wine is especially important, given that bottled wine is more profitable and although the quantities of bottled wine are smaller, they provide almost 50% of the value of the exportof wine. Wineries thatexport bottled wine to the EU by 2014 faced the problem of high tariffs for the amount exceeding the approved quotas for import of bulk wine, and in 2015 and 2016 the same thing happened with bottled wine (Association "Wines of Macedonia", 2017a).

In order to analyze the macro-environment in which Macedonian wineries operate, it is necessary to analyze the political, economic, social and technological factors that influence the wine industry in the Republic of Macedonia.

The most prominent political factoris the stabilization of the political situation in the country in 2017 after long confrontations between political parties, since it is ultimately expected that it will positively affect the functioning of the entire economy, including the wine sector. Another factor is the permanent delay of the Euro-Atlantic integration of the country, mostly due to the name dispute between Greece and the Republic of Macedonia. This also affects the process for the protection of geographical indications for wine in the Republic of Macedonia. The state through the competent institutions has a great influence in determining the price for the purchase of grapes during the harvest period. The goal is protection of winegrowers, and this measure is used in daily political campaigns.

The signed Protocol for export of Macedonian wine to the EU under the Stabilization and Association Agreement with the EU since 2004 is an economic factor of great importance. It enables the export of large quantities of wine to the EU without customs duties, which makes Macedonian wine competitive on the EU market. Other economic factors include: 1) Determining viticulture and wine production as a strategic branch of the Republic of Macedonia, which opens up opportunities for growers and wineries to use the funds from the IPARD Program for Support of Agriculture and Rural Development, 2) The Government additionally provides financial support for wine exporters primarily through support of marketing and promotional activities, 3) The time limit for the purchase of alcohol in supermarkets and retail shops contributes to reducing the consumption of high-quality bottled wine, 4) Domestic production of wine is still significant, especially in the smaller towns along Vardar river, 5) Protection of domestic wine producers with a customs rate for importing wine, which contributes to very limited distribution of foreign wines on the domestic market; and 6) There isn't excise duty for the wine as an alcoholic beverage.

Social factors affecting the wine industry are the low purchasing power of the population which limits consumption of high quality wine only on special occasions. In Macedonia, the wine culture is still at a very low level and continues the tradition of production and consumption of domestic poor quality wine, especially outside Skopje. The emigration of young educated people from the country is increasing and this group of people is leading the trend of consumption of high quality wine. Another factor is the change in the structure of the available labor during the harvest period, primarily due to the opening of the "Dräxlmaier" factory in Kavadarci where a large number of workers were employed and the wineries started to face the problem of providing the necessary workforce in the period the harvest.

From the technological aspect, the significance of large investments in modernization of production capacities and introduction of the latest technologies in wine production should be emphasized. The part of the management of the vineyards has been improved by introducing new techniques for growing grapes and reducing the yield, in order to increase the quality of the grapes and thus the final product. No less important are the increased investments in marketing of products by Macedonian wineries, as well as following new trends in packaging, bottle closure and labeling. Another change that is more recent is the increase in the awareness of the wineries for specialized wine educations of their employees in order to improve the skills in all segments of operations.

Through consideration of these factors, we get a perception of how the Macedonian wine industry works, as well as the factors that can appear as an opportunity or threat for all involved parties in the wine business.

3. STATE OF THE EU WINE MARKET

For decades, the European Union produced more wine than it was needed until the mid-2000s. For those growers who couldn't sell their harvest, the state paid for the unsold grapes through the program of "emergency distillation" that was carried out in order to process the excess grape production into industrial ethyl alcohol. But such a program, which used non-market support mechanisms, influenced the reduction of the prices of successful farmers and caused a huge increase in supply. After several years of negotiations, in 2007, the European Union introduced the controversial CommunalRegulation (CMO), which ended the "emergency distillation" by 2012. A new program was introduced to pay the European growers to uproot economically unsustainable vineyards and those of lower quality. In order to get a clear perspective, what was taken out of grape production was equivalent to 87% of all vineyards in California(McMillan, 2016).

According to Comité européen des entreprises vins (2016), the European Union in 2015 participated with 45% in the world's vineyard areas. Spain has the largest area with vineyards in the EU, but in the period 2001-2015 it decreased by 17%, France by 12% and Italy by 21% (European Commission, 2016).

These three countries are the largest wine producers in the EU and account for 81% of total production, followed by Germany, Portugal, Romania, Greece, Hungary and Austria (Bettini, 2015). The total wine production of the EU-28 for 2016-2017 is estimated at 16.6 billion liters, down 4.3% compared to 2015-2016 or a decrease of 1% compared to the average production for the previous 5 years. Italy is the largest producer in the European Union, and globally (European Commission, 2017a).

By 2014, wine consumption in the European Union was declining, and this downward trend is expected to continue in the future. Wine consumption per capita has declined for decades, especially in southern European countries where demand has been affected by changing consumer tastes and lifestyle, anti-alcohol campaigns for drivers, and also health issues. On the other hand, consumption in the northern EU member states is stable or slightly increasing, but is focused on branded wines or on certain varieties. Another significant change is the increase in demand for bulk wine as a result of low transport costs (Bettini, 2015).

Although in the EU wine consumption per capita is declining, it is growing globally. However, the average consumption in Europe is still 26 liters per capita which is far more than the consumption in other parts of the world. Decline of consumption is mostly result to altered consumer habits in Mediterranean countries, where table wines that are consumed daily during lunch are replaced by high-quality premium wines for special occasions (Duren, 2015).

The European Union accounted for 51% of the world's total wine consumption in 2015. In the period 2013-2015, the United States is at the top of the list of wine-consuming countries in the world and accounts for 13.43% of the total world consumption, but it's almost 4 times less than total EU consumption (Wine Institute,2017).

According to the European Commission (2017b), in 2016 the European Union achieved exports of 2.23 billion liters in volume, an increase of 1.6% versus 2015 or 5.1% compared to the average of the export realized in the period 2013-2015. The major export markets are the United States, China, Russia, Canada and Switzerland. In value, exports reached EUR 10.12 billion, which is 3.2% more than in 2015, i.e. growth of 9.2% compared to the

2013-2015 average. Most of the EU exports (73%) are bottled wines, followed by sparkling wines (23%), while the lowest value is the export of bulk wines (3%). The most important exporters are France, Italy, Spain, Germany and the United Kingdom, which account for 92% of the Union's exports in value. The five most important export destinations outside the EU are the United States, China, Switzerland, Canada and Japan. This refers to exports to countries outside the EU Member States, and the EU additionally exported 4.67 billion liters between Member States.

The average export price per liter of wine increased in the period 2013-2016. In 2016 it amounted to 4.53 EUR/liter and was 3.9% higher than the average price achieved in the period 2013-2015. Sparkling wines reached the highest average price in 2015 at 8.46 EUR/liter, and bulk wine had the lowest price with 0.91 EUR/liter (European Commission, 2017b).

In 2016, the EU imported wine worth EUR 2.63 billion euro or 1.42 billion liters in volume. The figures show that wine imports have been stable in volume and it has a slight increase of 0.8% compared to the average import in the period 2013-2015. On the other hand, the increase in value was higher in the same period and amounted to 3.2%. The most important suppliers of the EU by value are: Chile (23%), USA (17%), Australia (17%), South Africa (14%) and New Zealand (14%). The average import price per liter of wine was 1.86 EUR/liter, which is almost 2.5 times less than the average export price of EU countries (European Commission, 2017b).

The European Union is a net exporter, given that exports within and outside the Union are significantly higher than the realized wine imports in 2016. Another notable trend is several times smaller exports to countries outside the Union, which is in favor of the previous conclusions that most of the wine produced is re-export in the Union (European Commission, 2017b).

4. TARGETING MARKETS FOR EXPORT OF MACEDONIAN WINES TO THE EU

The most important competitors of the Macedonian wine are the countries of Southeast Europe and the countries that are newcomers on the global wine market. Macedonian wines are relatively well positioned on regional markets and enjoy good reputation. However, Vranec/Vranac of Montenegro and increased domestic production of high quality wines in Serbia, Croatia, Slovenia and Bulgaria, as well as the increased presence of imported wines in the Balkans, createsvery competitive environment in the region as well. The primary competitors of Macedonian wines are Moldova, Georgia, Slovenia, Croatia, Bulgaria, Greece and Romania (Association "Wines of Macedonia", 2015).

Macedonia has several unique selling propositionswhich can use for differentiation from other competitors. First is that it is a new country from the Old World or more precisely a country from the Old World with a new vision. As a wine country, Macedonia is at the same time very young and very old. Wine was common commodity hundreds of years BC. Besides this advantage, Macedonia has a favorable microclimate and rich soil for growing grapes. No less significant are local varieties, due to the high concentration of "resveratrol" in the red wines and "caftaric acid" in the white wines. Macedonian wineries have modern wine processing facilities and they are oriented towards varietal labeling. Last but not least,Macedonian wines continuously win awards and recognitions at international wine competitions (Association "Wines of Macedonia", 2015).

Based on these seven criteria (detailed data and tables are attached in Appendix A), within the European Union two markets should be targeted by the Macedonian wine industry:

1. Export of bulk wine from Macedonia to EU-28 (2016)
2. Export of bottled wine from Macedonia to EU-28 (2016)
3. Per capita wine consumption in EU-28 (2014)
4. Wine production in the EU-28 (2015)
5. Import of bulk wine in EU-28 (2016)
6. Import of bottled wine in EU-28 (2016)
7. Import of bottled wine in EU-28 from Southeast Europe (2016)

All EU-28 Member States are given points for each criterion in order to obtain the total number of points per country. Less importance is given to the bulk wine compared to the bottled, because the goal is export of bottled wine. Therefore, criteria 1 and 5 are given less importance and scoring is done on a scale from 1 to 5, and on the other criteria from 6 to 10 points.

The first two criteria include data on export of Macedonian wine in 2016 and show the most important export markets in the EU. This criteria show the perspective of Macedonian wine in certain markets, as well as the importance of the markets especially for exporting bottled wine. That's why the highest points are given to the countries where Macedonia exports the most wine.

The third selection criteria reveal the most attractive markets in terms of wine per capita consumption. Therefore, high points are given to countries with relatively high per capita consumption, assuming that these countries have the capacity for bigger wine imports in order to meet the needs of consumers on the domestic market.

On the other hand, country production volumes helps us to determinate the most difficult market to penetrate. Those are countries where production of wine highly exceeds (2-3 times) the domestic wine consumption, meaning that the industries of these countries are highly developed, producing all type of wine and able fully satisfy the domestic demand. Such markets are serious hurdle for foreign competition and should be avoided. That's why countries that have lower production are given more points, and vice versa.

Criteria 5 and 6 relate to total wine imports (bulk and bottled) in the countries of the European in 2016. In addition, the last criterion refers to the import of bottled wine into the EU from the countries of Southeastern Europe. The goal is to see the openness of EU countries to import wine from this group of countries, which includes Macedonia.

In the process of selection of target markets, the opinion of the Macedonian export managers is taken into consideration, given that they have the greatest knowledge about the difficulties in entering certain markets and the obstacles they face. Additional 10 points are given to the markets selected by the export managers(in table 5). They are most familiar with the conditions each market, demand, competition, importers, expected future growth, the possibility of penetration, as well as the desire of consumers to try new wines. Although certain markets have significant wine imports, they are really difficult to enter for countries that are new to the world wine marketsuch as Macedonia.

According to the previously mentioned criteria, four countries have the highest score - Germany, United Kingdom, Poland and Czech Republic. Germany has the highest number of points and is the largest export market for Macedonian wines, but the process of changing the perception of German importers for the quality of Macedonian wines and encouraging the export of bottled wines in this country will last longer. UK has not been considered further as a target market considering the Brexit.Therefore, recommendation for Macedonian wineries is to target wine markets in the Czech Republic and Poland. This paper focuses on the Czech wine market and proposes marketing strategies for exporting Macedonian wines in the Czech Republic.

5. MARKETING STRATEGIES FOR EXPORTING MACEDONIAN WINES TO THE CZECH WINE MARKET

5.1. Product strategy of Macedonian wines for the Czech wine market

Although the Czech Republic has the highest consumption of beer per capita in the world (150 liters annually), wine is gaining popularity. During communism, wine was rarely encountered in the Czech Republic due to the closed borders of the main European wine producers. But after the dissolution of the Soviet Union and the entry of the Czech Republic into the EU in 2004, wine gained significance. The demand for wine has increased as a result of trips in the developed wine countries, as well as the impact of westernization in the way of living. In this country, young urban professionals are driving the increased consumption of wine. This consumer group has a contemporary lifestyle and associateswine with social events and wellness. That's why drinking wine has turned into a fashionable trend. In the long term it is expected that the wine will become popular among other consumer groups (CBI Market Intelligence, 2016a).

Czech consumers prefer red wines, but in 2016 growth was recorded in the consumption of still rosé wine and prosecco, whose sales are particularly increasing during the summer months, given that they are perceived as refreshing drinks. Czech consumers are increasingly oriented towards high-quality wines, and they are also interested in local wines. Unfortunately, wine production in the Czech Republic only satisfies 1/3 of the country's consumption. Increased demand for domestic wines has forced Czech winegrowers to ask permission for new planting under EU rules (Euromonitor International, 2017).

Draught wine remains popular. This type of wine is used in restaurants, bars and wine shops. Wine shops in the Czech Republic have a wide range of draught wines and offer good price/quality ratio. Such specialized stores have at their disposal domestic wines or imported from Hungary, Slovakia and Moldova. These wines are considered environmentally sustainable because they reduce the packaging, and the kegscan be reused or recycled. On the other hand, bulk wine is also economical because it reduces the transport costs of imported wines (CBI Market Intelligence, 2016a).

There is a time lag between development in the Czech Republic and West-European countries. Therefore, fashion trends such as aromatic wines and wine cocktails are not expected to become significant in the near future. Time lag and small size of the market prevent rapid acceptance of new products. For these reasons, wines in cans or

PET bottles are not present on the market. Until now, only bag-in-box wines have some success, but only in the on trade. Screwed caps are not widely accepted, contrary to other European countries. Czech consumers still associate these caps with cheap alcoholic beverages (for example, vodka). It is expected that in the next few years traditional wines with cork will remain the most present on the market, and in the long run, screw caps are expected to enter this market (Viniportugal, 2016).

Organic wine is a relatively new concept on the Czech market dating back to 1990. Consumers can find organic wine in supermarkets, specialized organic food stores or wine shops, but the market is still small and has slow growth. Generally, this is due to the low awareness of the population about organic food, but also because the fact that organic products are expensive and can only be afforded by consumers with high purchasing power. Czech consumers spent approximately 68 million euros on organic products in 2015, but still organic food consumption per capita is very low compared to the EU average (Hrdlickova, 2016).

Czech consumers show great interest in high-quality wines, especially after tragic incidents of toxic alcohol that killed nearly 50 people in 2012 and 2013. The Czech Grape and Wine Producers Association warned that there is a lot of illegal alcohol in this market. In 2014, this association announced that one-fifth of the wine sold in the Czech Republic is not licensed or possibly adulterated. Because of this, the Ministry of Agriculture wants to increase the control of the entire domestic and imported wine. At the same time, the Ministry is preparing stricter penalties and better cooperation between customs and State Agricultural and Food Inspection Authority (CBI Market Intelligence, 2016a).

Most of the Macedonian wine exported in the Czech Republic (89%) in 2016 was bulk. Another disadvantage is the decrease of total export by 24% compared to 2015 (both bulk and bottled wine). Also, the average export price per liter of bottled wine decreased by 14% (Association "Wines of Macedonia", 2017c).

There are many opportunitieson the Czech wine market for the Macedonian wines:

• The demand for red wines is almost fully meet from imports/ Modern wine production process

The Czech market almost fully meets the demand for red wines from imports, since domestic production is focused on white wines. Macedonian wineries can produce excellent white and red wines because of the modern equipment and capacities and the extremely favorable climatic conditions for growing grapes

• High awareness for Macedonia/ Long tradition

Czech consumers are familiar with Macedonia, which can facilitate the import of Macedonian wines. Macedonia have a long tradition in wine production.

• Negative experiences with toxic alcohol/opportunity for exporting high-quality wines

Due to the negative experience of Czech authorities with toxic alcohol, there is possibility of entering the segment of high quality wines

Restrictions on the Czech market, which represent a weakness for Macedonian wines are:

• Czech Republic mostly imports wines from traditional countries/ export structure of Macedonian wines

Czechs after their entry into EU, they import most of the wine from EU member states that are traditional wine producers. On the other hand, the structure of the wine export in this market in the last years was extremely unfavorable and most of it was bulk wine.

Macedonian wineries should use the strategy of repositioning i.e. changing the perception of consumers for Macedonian wines. Although the share of bottled wine is very small, in the next period, the focus should be on increasing the export of bottled wine, primarily from local varieties (such as temjanika and vranec) which are new for the consumers in this market and using glass packaging and cork. Examine the possibility of exporting the bag in box wines, given the increased popularity of draught wine.

## 5.2. Price strategy of Macedonian wines for the Czech wine market

The financial crisis in 2008 had a negative impact on the wine market due to the reduced purchasing power of consumers. During economic instability, demand for luxury products (including wine) has decreased. But after recovering from this crisis, wine sales began to increase. The annual rate of GDP had a small growth in 2013 after a long recession. In 2016, the Czech economy was the fastest growing in EU. Business Monitor International predicted that household incomes will increase by 28% during the period 2014-2018. This will increase consumer purchasing power and will affect the demand for wine. It is also expected that the population will increase by 0.3% annually in the same 5-year period. For all these reasons, in the coming years, wine sales are expected to grow by 1% per year. There is a great potential for development of the wine market because wine demand is not fully met (CBI Market Intelligence, 2016a).

Compared to other European countries, the government of the Czech Republic does little to discourage alcohol consumption through taxation. For example, excise taxes on sparkling wine are 85.08 euros per hectoliter. Low

excise taxes allow lower wine prices in supermarkets, which can contribute to increasing wine demand (CBI Market Intelligence, 2016a).

In the high-end market, buyers are less price-sensitive, and most often look for wine with unique features. Here the competition is based on certain qualities of the wine, such as the use of ripe grapes, rich and full taste, as well as a good balance between tannins and acids (CBI Market Intelligence, 2016b).

Low quality wines (both bulk and bottled) are most often sold in hypermarkets and supermarkets (70%), as well as in small shops (13%) at an average price of 3 euros per bottle. The price of wines in specialized wine shops and in on trade is higher, as only high-quality wines are sold there. Thus, 10% of wine sales take place in on tradeat an average price of 18 euros per bottle, and 7% of sales are in specialized stores at an average price of 8 euros per bottle (CBI Market Intelligence, 2016c).
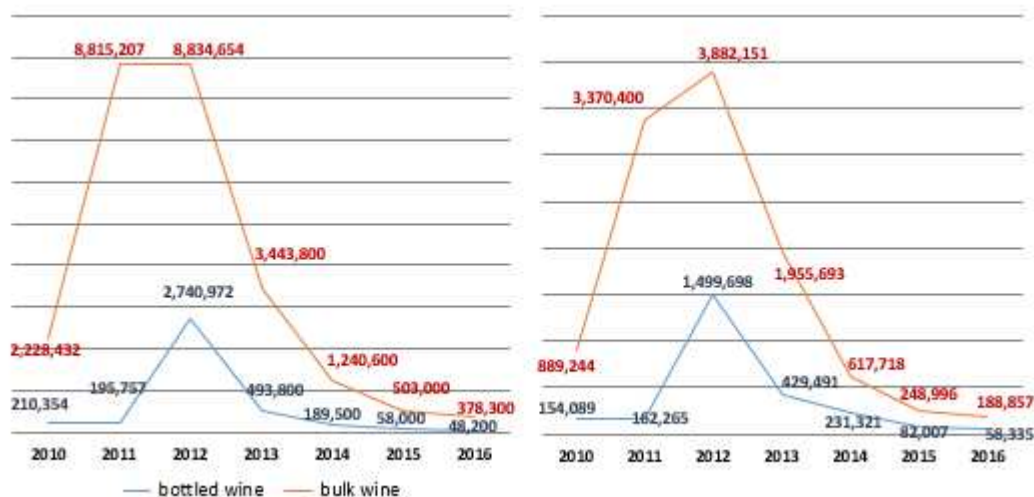
G

raph. 1. (a) Export of Macedonian wines in the Czech Republic (liters); (b) Annual income (euros)

In Graph 1, it can be noted that in the period 2012-2016 there has been anenormousdecrease in exports of both bottled and bottled wine in the Czech Republic. The value of export for bulk winec has dropped 20 times, and for bottle wines 25 times (Association "Wines of Macedonia", 2017d).
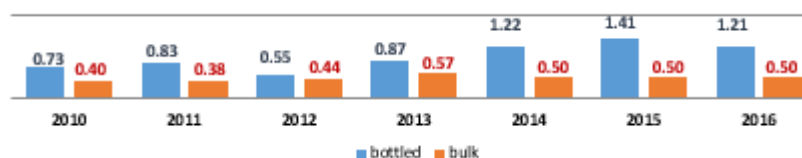
Graph. 2. Average export price of Macedonian wines in the Czech Republic (EUR/LIT)

The average export price for the last 3 years (2014-2016) is stable, while the price of bottled wine has increased by 66% compared to 2010, see Graph 2 (Association "Wines of Macedonia", 2017d).

In order to continue exporting in this country and taking into account the lower purchasing power of Czech consumers, chances for increasing the prices on this market are relatively small. But, there is an opportunity to influence the price of bottled wines, given the fact that there are low excise taxes for wines. Therefore, it is best to use value based pricing. This means that for relatively low prices, Czech consumers can get high quality product and good customer service. In this strategy, the price of blame would not be the lowest or the highest in terms of competitors in the corresponding price segment.

5.3. Promotion strategy of Macedonian wines for the Czech wine market

Although the promotion of alcohol is strictly regulated in some EU countries, there are minimal restrictions in the Czech Republic, and the promotion and advertising of alcoholic beverages is permitted in all types of media. Wine is most often promoted through special tastings or press, and these activities are concentrated in Prague where

most wine is consumed. Tourists visiting this city (5 million annually) also stimulate wine consumption, and some of them bring their wine drinking culture (CBI Market Intelligence, 2016a).

The lack of a strong wine culture compared to other European countries reduces entry barriers for new players from non-traditional wine countries. However, the most commonly consumed is domestic wine and imported wine from the EU. Czech consumers are not familiar with wine from new countries and this creates more opportunities for traditional wine-producing countries. For the Czechs it is easier to travel across Europe and visit vineyards and wineries in France, Italy and Germany, which further stimulates the consumption of wine from these regions (CBI Market Intelligence, 2016b).

Half of the Czechs prefer to drink beer, third wine and 4% distilled drinks. But for now, wine is the fastest growing market. The popularity of imported spirits brands such as "cider" is also increasing - a fermented alcoholic juice drink from apple juice. In contrast, there was a decrease in sales of beers with different flavours. In any case, beer is the biggest competitor of the wine, as the Czechs have the highest consumption of beer per capita and produce some of the world's most famous beers. Although the wine is gaining popularity as a result of the influence of the westernization of lifestyle, it is unlikely that it will reach the same popularity as the beer in this country(CBI Market Intelligence, 2016b).

Half of the imported wine in the Czech Republic in 2016 was from Spain and Italy (European Commission, 2017b). However, there is a significant import from Central and Eastern Europe due to the historical connection with these counties. The largest suppliers from Eastern Europe are: Slovakia, Hungary, Moldova, Bulgaria and Macedonia (CBI Market Intelligence, 2016a). From the New World countries, the largest volume of wine in 2016 was imported from Chile and South Africa, but their share is still small in the total imports of the Czech Republic (European Commission, 2017b).

Domestic production amountsto 4-6 million hectolitersannually and uses mostly local grape varieties, although the production of international wine varieties such as Cabernet Sauvignon has recently increased. Southern Moravia is the most important wine region for wine production in the Czech Republic, which covers 96% of the country's vineyards. Leading domestic producers are "Bohemian Sekt" with a market share of 10%, followed by "Vinium", "Znovín Znojmo" and "Moravské vinarské Bzenec". Since this is a growing market, there is still room for new suppliers (CBI Market Intelligence, 2016b).

Former communist countries Bulgaria and Hungary dominated the supply to the Czech market until the end of the communist era. But since entry of the Czech Republic in EU, suppliers from France, Italy, Chile, United States and Spain had the greatest benefit as a result of the internationalization of the Czech wine market. This was at the cost of former suppliers from Hungary and Bulgaria (CBI Market Intelligence, 2016b).

Since there are no restrictions for promotion of wine on the Czech market, ATL advertising can be used in specialized wine media with targeted audiences. In addition, it is recommended to organize tastings on wine events and festivals, as well as active PR, which will highlight the uniqueness of the region for production of high quality wines, master classes for education of wine enthusiasts about local Macedonian varieties and attracting Czech tourists to visit Macedonian wineries.

5.4. *Distribution strategy of Macedonian wines for the Czech wine market*

Access to the Czech market can be really difficult for new entrants from developing countries. One of the reasons is limited shelf space available for new origins in supermarkets, hypermarkets and other retail chains. Merchants focus on economic efficiency because they have high price competition and is more costly to provide wines with low turnover rate. An exception to this are table wines of mixed origin(CBI Market Intelligence, 2016b).

Most of the sales (90%) in the Czech Republic go through off trade channel, primarily through hypermarkets and discounts that account for over 70% of sales. Most of the grocery retailers are owned by foreign parent companiessuch as REWE Group (Germany), Schwarz (Germany), Globus Hypermarket Holding (Germany), Ahold (The Netherlands) and Tesco (UK). This gives opportunity to enter the Czech market through the parent companies in Germany, Netherlands and UK. Most of the sales in supermarkets occur during promotions. During that time winewith regular price of 4.5 euros is sold at a promotional price of 3.5 euros (CBI Market Intelligence, 2016c).

It is really expensive to place your wines in supermarkets and hypermarkets, because it has high listing fees. They can cost as much as 1,500-2,000 euros per product, and some markets also require a percentage of sales in the first 2-6 months (5-10%) or additional fees for placement. But even if a company has a big budget for placing its products in the supermarkets, it is still necessary to take into account the forecasts and calculations for return on investment. Supermarkets in the Czech Republic are quick to quit wines if they have a low turnover rate (CBI Market Intelligence, 2016b).

On trade segment is composed of very small players who usually does not import directly, but mostly from importers with good reputation in this segment. Czech importers need certainty that developing country producers have the budget and quantity needed to enter the Czech market before they start any collaboration with them. Moreover, importers focus on the wine turnover rate. On the other hand, off trade sales are increasing due to the fact that after the economic crisis in 2008 most consumers choose to drink wine at home (CBI Market Intelligence, 2016c).

Wines with private labels do not have such a big success in the Czech Republic, as it isin UK or Netherlands. For the time being, only the international supermarket chains Tesco and Spar has this practice, but this trend is not yet followed by other traders (CBI Market Intelligence, 2016b).

There are about 1,000 specialized wine shops and their number continues to grow. These shops are commonly found in large shopping centres, they often offer food, and they also have a wide range of draught wines that are particularly popular. These small specialized shops and online retailers are the main channels of sale for small wine importers in the Czech Republic. According to "Ecommerce Europe", the information sector in the Czech Republic has the fastest growing compared to other traditional sectors and is expected to be the driving force of the economy in the coming years, which could mean an increase in online sales CBI Market Intelligence, 2016c).

Macedonia's export of wine to the Czech Republic should focus on both segments:

• "off trade" for bulk wine –there should be focus on this channel taking into account the lower purchasing power of Czech consumers, but indirectly through importers in order to minimize the risk and exploit their experience.

• "on trade" for bottled wine - with a focus on specialized shops that sell premium wines and where best price/quality ratio can be achieved. Bag in box wines are also an option, because of the opportunity to offer wine on a glass.

It would be smart decision to choose importers who have online stores because of the growth of online sales in the Czech Republic and they offer space to provide product information, such as a story about Macedonian wines.

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Appendix A. Criteria for selection of targeted markets in the European Union

Table 1. Export of Macedonian bulkand bottled wine to the EU-28 in 2016

Country	Volume (bulk wine) (liters)	Value (bulk wine) (euros)	Share in the total export of bulk wine in volume (in %)	Scoring according to the importance of the country (1-5)	Volume (bottled wine) (liters)	Value (bottled wine) (euros)	Share in the total export of bottled wine in volume (in %)	Scoring according to the importance of the country (6-10)
Austria	/	/	/	/	3,300	8,462	0.01%	6
Belgium	/	/	/	/	13,500	35,310	0.11%	6
Bulgaria	11,400	4,786	0.05%	1	491,100	499,557	4.14%	6
Croatia	5,532,600	3,838,198	24.66%	3	6,939,700	5,150,436	58.51%	9
Cyprus	/	/		/	2,900	2,064	0.02%	6
Czech Republic	503,000	248,996	2.24%	1	58,000	82,007	0.49%	6
Denmark	1,000	7,959	0.00%	1	17,900	133,995	0.15%	6
Estonia	/	/	/	/	/	/	/	/
Finland	/	/	/	/	/	/	/	/
France	/	/	/	/	2,500	9,609	0	6
Germany	15,523,100	6,540,681	69.18%	5	589,000	804,330	4.97%	6
Greece	/	/	/	/	/	/	/	/
Hungary	/	/	/	/	1,300	9,978	0.01%	6
Ireland	/	/	/	/	/	/	/	/
Italy	/	/	/	/	38,900	94,457	0.33%	6
Slovakia	/	/	/	/	12,400	33,892	0.10%	6
Slovenia	588,500	336,619	2.62%	1	3,334,000	1,965,224	28.11%	8
Lithuania	5,500	4,801	0.02%	1	16,500	27,214	0.14%	6
Latvia	/	/	/	/	71,300	88,754	0.60%	6
Luxembourg	/	/	/	/	/	/	/	/
Netherlands	300	890	0.00%	1	62,000	146,456	0.52%	6
Poland	175,000	71,772	0.78%	1	134,000	106,499	1.13%	6
Portugal	/	/	/	/	/	/	/	/
Romania	98,700	46,679	0.44%	1	/	/	/	/
Spain	/	/	/	/	/	/	/	/
Sweden	/	/	/	/	21,800	58,050	0.18%	6
Malta	/	/	/	/	/	/	/	/
United Kingdom	/	/	/	/	51,500	92,506	0.43%	6
TOTAL: EU-28	22,439,100	11,101,381	100.00%		11,861,600	9,348,800	100.00%	

Source:Association "Wines of Macedonia", (2017c)

Scoring for bulk wine is done on a scale from 1-5 and for bottled wine on a scale from 6-10, because export of bulk wine is considered less relevant than export of bottled wines and it brings fewer points in the final selection. The points are given in the following way:**Criterion 1** – Export of bulk wine from Macedonia to EU-28: 0-10% = 1 point; 10-20% = 2 points; 20-40% = 3 points; 40-60% = 4 points; 60-100% = 5 points; **Criterion 2** – Export of bulk wine from Macedonia to EU-28: 0-10% = 6 points; 10-20% = 7 points; 20-40% = 8 points; 40-60% = 9 points; 60-100% = 10 points

Table 2. Wine consumption per capita and wine production in the EU-28

Country	Wine consumption per capita in 2014 (litres)	Scoring according to the importance of the country (6-10)	Wine production in 2015 (in million litres)	Scoring according to the importance of the country (6-10)
Austria	30.66	8	234.5	10
Belgium	23.07	8	/	/
Bulgaria	20.60	8	191.3	10
Croatia	44.20	10	168	10
Cyprus	14.94	7	10.8	10
Czech Republic	19.65	7	45	10
Denmark	14.05	7	/	10
Estonia	2.79	6	/	10
Finland	4.45	6	/	10
France	42.51	10	4,670.10	6
Germany	24.84	8	849.3	9
Greece	27.86	8	334.3	10
Hungary	24.10	8	294.4	10
Ireland	5.46	6	/	10
Italy	33.30	9	4,473.90	6
Slovakia	15.50	7	37.3	10
Slovenia	44.07	10	75	10
Lithuania	1.11	6	/	10
Latvia	3.19	6	/	10
Luxembourg	9.82	6	10.1	10
Netherlands	18.33	7	/	10
Poland	0.42	6	/	10
Portugal	41.74	10	623.8	9
Romania	24.26	8	511.3	9
Spain	21.26	8	3,820.40	6
Sweden	26.00	8	/	10
Malta	23.18	8	2.2	10
United Kingdom	21.99	8	/	10

Source: Wine Institute, (2015; 2017)

Criterion 3 - Per capita wine consumption in EU-28: High points are given to countries with relatively high per capita consumption, assuming that these countries have the capacity for bigger wine imports in order to meet the needs of consumers on the domestic market.
The points are given in the following way:0-10 litres = 6 points; 10.1-20 litres = 7 points; 20.1-30 litres = 8 points; 30.1-40 litres = 9 points; 40.1-50 litres = 10points.
Criterion 4 - Wine production in the EU-28: Scoring is done on a scale from 6-10. Counties with high wine production are more difficult for penetration. That's why high points are given to the countries with lower wine production.
In million litres: 0-500 = 10 points; 501-1.500 = 9 points; 1.501-2.500 = 8 points; 2.501-3.500 = 7 points; > 3.500 = 6 points

Table 3. Import of bulk and bottledwine in EU-28 in 2016

Country	Import of bulk wine in 2016 (value in '000 euros)	Import of bulk wine in 2016 (volume in '000 litres)	Scoring according to the importance of the country (1-5)	Import of bottled wine in 2016 (value in '000 euros)	Import of bottled wine in 2016 (volume in '000 litres)	Scoring according to the importance of the country (6-10)
Austria	15,858	25,641	1	120,203	39,969	6
Belgium	97,838	84,110	1	576,768	172,447	7
Bulgaria	1,905	3,697	1	11,009	3,259	6
Croatia	10,210	18,335	1	13,992	11,363	6
Cyprus	771	954	1	16,164	6,782	6
Czech Republic	51,097	98,410	1	109,645	64,581	6
Denmark	94,786	77,690	1	423,039	89,729	6
Estonia	11,046	7,304	1	38,099	12,385	6
Finland	38,527	30,020	1	125,397	38,702	6
France	252,383	622,754	5	411,213	120,788	7
Germany	488,372	851,849	5	1,581,641	546,306	9
Greece	3,519	7,407	1	12,067	7,262	6
Hungary	6,001	14,398	1	7,489	3,846	6
Ireland	4,708	1,558	1	244,749	112,744	7
Italy	91,522	137,349	2	61,613	22,627	6
Slovakia	12,950	31,697	1	33,721	30,130	6
Slovenia	2,974	0	1	7,124	6,538	6
Lithuania	9,475	19,232	1	129,739	57,715	6
Latvia	1,968	1,512	1	45,443	20,388	6
Luxembourg	5,674	8,616	1	65,413	18,082	6
Netherlands	55,457	60,421	1	816,325	305,819	8
Poland	12,691	20,947	1	191,787	83,761	6
Portugal	51,997	127,479	2	30,391	40,309	6
Romania	14,617	35,459	1	19,911	10,996	6
Spain	13,709	25,213	1	69,095	22,667	6
Sweden	172,281	72,291	1	361,294	58,934	6
Malta	484	979	1	14,171	5,588	6
United Kingdom	485,314	482,107	4	2,395,177	799,431	10

Source: Trademap, (2017)

Criterion 5 – Import of bulk wine in EU-28: Scoring is done on a scale from 1 to 5, because this criterion is considered less relevant than import of bottled wines and it brings fewer points in the final selection.The points are given in the following way:0-100.000 ('000 litres) = 1 point; 100.000-200.000 litres = 2 points; 200.000-400.000 litres = 3 points; 400.000-600.000 litres = 4 points; 600.000-1.000.000 litres = 5 points

Criterion 6 – Import of bottled wine in EU-28: Scoring is done on a scale from 6 to 10, because this criterion is considered more relevant than import of bulk wine.The points are given in the following way:
0-100.000 ('000 litres) = 6 points; 100.000-200.000 litres = 7 points; 200.000-400.000 litres = 8 points; 400.000-600.000 litres = 9 points; 600.000-1.000.000 litres = 10 points

Table 4. Import of bottled wine in EU-28 from Southeast Europe in 2016

Country	Import of wine from Southeast Europe in 2016 (value in '000 euros)	Import of wine from Southeast Europe in 2016 (volume in '000 litres)	Average price of imported wine from Southeast Europe (EUR/LIT)	Scoring according to the importance of the country (6-10)
Austria	1,957	817	2.40	6
Belgium	3,331	1,346	2.47	6
Bulgaria	275	119	2.31	6
Croatia	8,359	9,519	0.88	9
Cyprus	5,326	1,826	2.92	6
Czech Republic	16,940	13,215	1.28	10
Denmark	600	149	4.03	6
Estonia	2,702	1,074	2.52	6
Finland	480	152	3.16	6
France	1,531	549	2.79	6
Germany	26,741	12,591	2.12	10
Greece	186	156	1.19	6
Hungary	477	218	2.19	6
Ireland	506	244	2.07	6
Italy	3,050	1,143	2.67	6
Slovakia	11,617	17,485	0.66	10
Slovenia	2,727	4,062	0.67	8
Lithuania	2,967	1,438	2.06	6
Latvia	4,409	1,971	2.24	6
Luxembourg	92	39	2.36	6
Netherlands	3,673	1,671	2.20	6
Poland	27,003	16,380	1.65	10
Portugal	17	8	2.13	6
Romania	7,146	5,902	1.21	8
Spain	1,636	335	4.88	6
Sweden	1,236	379	3.26	6
Malta	4	2	0.00	6
United Kingdom	22,627	12,624	1.79	10

Source: Trademap, (2017)

Criterion 7 - Import of bottled wine in EU-28 from Southeast Europe in 2016: This criterion focuses on the import of bottled wine in EU from the countries of Southeast Europe: the Republic of Macedonia, Croatia, Bulgaria, Montenegro, Albania, Serbia, Slovenia, Bosnia and Herzegovina, Greece, Romania, Hungary, Moldova, Georgia and Armenia.
Scoring is done on a scale from 6 to 10. The points are given in the following way:
0-2.000 ('000 litres) = 6 points; 2.000-4.000 litres = 7 points; 4.000-6.000 litres = 8 points; 6.000-10.000 litres= 9 points; 10.000-20.000 litres = 10 points

Table 5. Overall evaluation of target markets for the Macedonian wines in EU

Country	Criterion							Points from the criteria	Opinion of Macedonian export managers	Total score
	1	2	3	4	5	6	7			
Austria	1	6	8	10	1	6	6	38		38
Belgium	1	6	8	10	1	7	6	39		39
Bulgaria	1	6	8	10	1	6	6	38		38
Croatia	3	10	10	10	1	6	9	49		49
Cyprus	1	6	7	10	1	6	6	37		37
Czech Republic	**1**	**6**	**7**	**10**	**1**	**6**	**10**	**41**	**10**	**51**
Denmark	1	6	7	10	1	6	6	37	10	47
Estonia	1	6	6	10	1	6	6	36		36
Finland	1	6	6	10	1	6	6	36		36
France	1	6	10	6	5	7	6	41		41
Germany	**5**	**6**	**8**	**9**	**5**	**9**	**10**	**52**	**10**	**62**
Greece	1	6	8	10	1	6	6	38		38
Hungary	1	6	8	10	1	6	6	38		38
Ireland	1	6	6	10	1	7	6	37		37
Italy	1	6	9	6	2	6	6	36		36
Slovakia	1	6	7	10	1	6	10	41		41
Slovenia	1	8	10	10	1	6	8	44		44
Lithuania	1	6	6	10	1	6	6	36		36
Latvia	1	6	6	10	1	6	6	36		36
Luxembourg	1	6	6	10	1	6	6	36		36
Netherlands	1	6	7	10	1	8	6	39	10	49
Poland	**1**	**6**	**6**	**10**	**1**	**6**	**10**	**40**	**10**	**50**
Portugal	1	6	10	9	2	6	6	40		40
Romania	1	6	8	10	1	6	8	40		40
Spain	1	6	8	6	1	6	6	34		34
Sweden	1	6	8	10	1	6	6	38		38
Malta	1	6	8	10	1	6	6	38		38
United Kingdom	**1**	**6**	**8**	**10**	**4**	**10**	**10**	**49**	**10**	**59**

Study on the need of young labor force in Romania

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Abstract

The paper presents a statistical analysis of the employability in Romania, especially for the young population. They are presented some of the current problems of employability of the young population in Romania, as well as the expectations of young people from employers and vice versa

Keywords: young people, labor,employability, education

1. INTRODUCTION

In any economy, the labor market depends on correlating initial education and training offers with labor market requirements. The reforms launched in Romania in 1990 aim essentially at creating an economy with a competitive, efficient and sustainable market, in which the labor market has a leading role. It has come to the conclusion that this market is so important and revealing that it must be considered the barometer of the achievement of the competitive economy.

Lately, the Romanian market has found that there is a rupture between the education system and the labor market. In this respect, it is advisable to rethink the education policy, taking into account the changes in the economic and social environment, so that there is a correlation between the requirements imposed by the evolution of the labor market and the types of qualification provided by the education system.

Increasing the relevance of initial education and training to labor market needs must be a major objective pursued in the development of educational policies and the activities of education providers. The youth unemployment rate raises the question of the relevance of education to the labor market. In this context, a series of measures should be taken to adapt initial vocational education and training to labor market needs: improving strategic planning of vocational and technical education and training, providing professional guidance services and providing key competencies.

One of the factors limiting the correlation of initial education and training with the labor market refers to insufficient data and studies on the long-term needs of the labor market.

2. The current situation on the labor market in Romania

According to the Romanian National Institute of Statistics, in 2016 the occupancy rate of the working-age population (15-64 years) was 61.6%, up by 0.2 percentage points as compared to the previous year. In 2016, the occupancy rate of the 20-64 year-old population was 66.3%, at a distance of 3.7 percentage points from the national target of 70%.

In 2016 Romania's active population was 8979 thousand people, of which 8449 thousand were employed and 530 thousand were unemployed.

As in previous years, the employment rate was higher in males (69.7%, compared to 53.3% for women). By residence area, the employment rate was higher in urban areas (62.6%, compared to 60.2% in rural areas).

The employment rate of young people (15-24 years old) was 22.3% and that of the elderly (55-64 years) of 42.8%. The highest employment rate for the elderly was registered among the graduates of higher education (86.2%).

In 2016, 65.2% of people with medium education were employed and only 41.0% of those with low education. The number of employees, increasing compared to the previous year (+139 thousand persons), held the highest share (73.4%) in the total employed population. In 2016, self-employed workers and unpaid family workers accounted for 25.6% of the employed population.

Qualified workers in agriculture, forestry and fishing accounted for 19.4% of the total occupied population. Significant weights in the total employed population were also the skilled workers (16.6%), the specialists in various fields of activity (15.2%) and the workers in the field of services (14.9%).

Of the total employed, 23.1% worked in the agricultural sector, 29.9% in industry or construction and 47.0% in services. 6497 thousand persons were employed in non-agricultural activities, with significant shares of them being in manufacturing (24.6%), trade (18.1%) and construction (10.4%).

Compared with 2015, the number of persons who worked in agriculture, forestry and fishing (-232 thousand persons), as well as those who worked in education (-9 thousand people), public administration and defense (- 8 thousand people), mining, information and communications and real estate transactions (all decreasing by 4 thousand persons over the previous year). The most significant increases compared to the previous year were registered in manufacturing (+46 thousand persons), construction (+42 thousand persons), trade (+28 thousand persons) and hotels and restaurants (+19 thousand persons).

In 2016, the average effective working week for the main activity was 38.8 hours per week; 130 thousand people also carried out secondary activities, working on average 12.9 hours per week.

The unemployment rate was 5.9%, down from the previous year (6.8% in 2015).

By gender, the difference between the two unemployment rates was 1.6 percentage points (6.6% for men versus 5.0% for women), and for residence areas by 0.7 percentage points (6.3 % in rural versus 5.6% in urban areas).

The unemployment rate was the highest (20.6%) among young people (15-24 years).

Unemployment affected the graduates of low and medium education, whose unemployment rate was 7.6% and 6.2%, respectively. The unemployment rate was only 3.1% for people with higher education.

The long-term unemployment rate (one-and-a-year unemployment) was 3.0%, and the incidence of long-term unemployment (the percentage of unemployed people over one year and over in total unemployed) was 50.0% .

For young people (15-24 years), the long-term unemployment rate (six months and over) was 13.0%, and the long-term youth unemployment rate was 63.1%.

3. Situation of vacancies

In 2016, the average annual job vacancy rate was 1.28%, up 0.16 percentage points on the previous year and the annual average rates of vacancies with the highest values were registered in the public administration (3.73%), respectively in health and social assistance (2.68%). More than 25% of the total number of job vacancies (15.8 thousand vacancies) concentrated in manufacturing, and the average annual value was 1.37%. At the opposite end, the lowest values in both the rate and the average annual number of vacancies were registered in mining and quarrying activities (0.19% and 0.1 thousand vacancies respectively).

The budget sector accounted for over one third of total vacancies, most of them in public administration (9.7 thousand vacancies), followed by health and social assistance (8.5 thousand vacancies), respectively education (2,5 thousand vacancies).

Compared with the previous year, increases in the rate and average annual number of vacancies were recorded in most economic activities. The most relevant increases in the annual average rate of vacancies were recorded in health and social assistance (+0.55 percentage points) and in the public administration (+0.50 percentage points),

and slight decreases in the indicator, recorded only in other services (-0.08 percentage points), agriculture, forestry and fishing (-0.07 percentage points), respectively water distribution; waste management, decontamination activities (-0.05 percentage points).

With the slightest availability of the demand for wages, there were occupations of skilled workers in agriculture, forestry and fishing, respectively by members of the legislative body, of the executive, high officials of the public administration, leaders and officials.

In territorial terms, in 2016, the highest annual average rates of vacancies were registered in the West (1.84%) and Bucharest-Ilfov (1.57%) respectively.

Regarding the average annual number of vacancies, employers showed the most significant labor force demand in the Bucharest-Ilfov region (16.0 thousand vacancies), which accounted for slightly more than one fourth of the number of places job vacancies across the country. The Northwest (8.6 thousand vacancies) and the West (8.9 thousand vacancies) accounted for almost 30% of the total number of vacancies.

On the opposite side, both in terms of the rate and the average annual number of vacancies, the South-West Oltenia region (0.51% and 1.9 thousand vacancies respectively) knew the lowest values, followed by the South-East region (0.94% and 4.5 thousand vacancies respectively), which together account for about 10% of total vacancies.

4. Employability among young people

According to ANOFM data, Romania is in an unfavorable position when it comes to youth unemployment. Thus, the unemployment rate among young people under the age of 25 is 24% in Romania, above the European average of 22.2%. Following studies conducted by the National Employment Agency (ANOFM), in Romania, the number of unemployed under the age of 25 increased by more than 10,000 in June 2016 and almost 38,000 young people have been living for more than six months in unemployment.

For graduates, regardless of the level of education graduated, a longer period of time is needed to adapt to the job requirements, unlike those with professional experience. This situation is directly influenced by the inadequate correlation between initial and initial vocational training offerings with labor market needs. The lowest correlations are specific to intermediate qualification levels.

One of the factors explaining this situation is that the vocational and technical education system was designed for career development. Qualifications obtained allow graduates of vocational and technical education to practice more occupations. Thus, to be able to practice and adapt to the requirements of a particular job / occupation, graduates must be included in transition from school to work.

Concerning youth employment, there is no correlation of labor market requirements with education programs, and it is therefore necessary to consider adapting academic and school education standards to employers' needs.

Junior Achievement with IBM's financial support has made a study on the compatibility of graduate education with the requirements of the Romanian labor market.

Preliminary conclusions of the IT study revealed that the level of skills required in the labor market in the school is between 2% and 43%. The lowest level of coverage is given to project management, e-commerce, internet research, application development (Enterprise), and on a higher level are those related to word processing, databases, operating systems.

The study reveals the age of course content and the small rate of change relative to market and IT dynamics, the aging of facilities in schools (hardware and software), insufficient coverage of taught courses with specialized staff, lack of content for soft skills education ", the lack of harmonization with internal entry-level training of companies, and the inadequacy of the content accessed in the school with the desire of young people's career.

5. Current problems of employability of the young population in Romania

Young people share equal values and ambitions, but they are also faced with the same difficulties. These young people are a transformed group characterized by: delayed access to a job and the late founding of a family, commuting between work and study, but especially individual routes much different than in the past.

School or university, workplace and social environment no longer play the same integrating role as before. The personal status of autonomy is gaining in later life. Some young people say they do not always find their concerns reflected in public policies designed for and by their older peers. However, young people have an important say because they are first affected by economic developments, demographic imbalances, globalization or cultural diversity. They are just being asked to create other forms of social relations, other ways of expressing solidarity, confronting differences and fulfilling at the same time with the emergence of new uncertainties.

Despite an increasingly complex social and economic context, young people show great adaptability. Various community actions directly targeting young people have already been initiated in the field of education, but also in employment and vocational training or in access to information technologies.

The involvement of employers and relevant social partners is limited in the planning of university education. The links between universities and industry / employers are very weak, unlike the practice of vocational and technical education.

From the perspective of the relevance of higher education to the requirements of the labor market, the following difficulties can be mentioned:

- The system is not linked to the needs of a dynamic labor market;

- Absence of clear equivalence between university education and criteria (formal and skills-based) in the labor market;

- Absence of systematic studies and analyzes on the correlation between the offer of university education and the labor market requirements, both in quantitative terms (schooling number is not based on an analysis of labor demand evolution) and structural (by fields and levels of qualification); · The use of narrow educational packages (more than 270 specializations) has led to many parallels, not optimal use of financial resources;

- Difficulties in adequately defining the didactic norms and hindering the adequate insertion of graduates into the labor market;

- Inconsistencies in the development of a strategy to strengthen the partnership with the economic and social environment. Partnerships with the business community are underdeveloped.

The biggest problem faced by graduates of higher education is related to "lack of experience". Companies begin, however, to give up this condition and offer jobs as long as young people go through more internships during their college years. Given that the skills of the Romanian education are not very correlated with the requirements of the business environment, it is difficult for a young person who has not had any work experience during the studies to find a job upon their termination.

In order to support young people in their training needs for the current labor market conditions, efforts are needed from stakeholders, universities and companies, to help them get practical experience and career guidance. Universities can do this by extending their period of practice and collaborating with the business community in developing joint research programs. On the other hand, companies can help future employees by developing internship or training programs, career and career centers, high schools and universities.

The development of a continuous vocational training system that responds to the needs of the labor market and a knowledge-based economy requires relevant information on the evolution of professions and occupations, trends in the evolution of the labor market, the skills and qualifications of companies, the degree of correlation between demand and labor supply and identification of shortages, the provision of training providers' programs and their suitability to the needs of applicants.

The Romanian economy has led to significant changes in the country's occupational structure: new occupations appeared and, on the other hand, the contents of others have changed. In some branches of activity, some occupations have taken precedence, others have become obsolete and have disappeared.

The following are the main changes to the content and relationship of some occupations:

-"Dominant occupations": Formalized, crystallized occupations with a certain "tradition" in the structure of the Romanian economy's occupational field, which comprise significant shares of the total number of occupied persons and which by their disappearance endanger the existence of other occupations situated in the upstream and downstream sectors;

- "Occupations that have significantly changed their content": occupations whose content has been severely affected, mainly due to restructuring in the Romanian economy. They are mainly found in those industrial sectors, heavily affected by technological or organizational changes, but also in services where the nature of the activities has changed a lot, being much more customer / beneficiary oriented;

- "Breakthroughs": new occupations, which mainly appear in new sectors with high added value and with increased potential for evolution.

Most occupations have experienced changes in work content. The factors that cause change in the content of the activities are: adapting to customer needs, increasing competition and upgrading.

There has been an increase in the employed population in some sectors of activity / economic activities / occupations. The main competencies associated with changes in the content of work are: computer and information technology, problem solving, resource management and communication.

The trend of evolution is towards flexible, high quality employment, especially to the service area, because:

- Breakthroughs are developing in new areas (market niches) with high demands on the level and quality of skills required;

- Breakthroughs tend to be practiced with part-time or fixed-term employment contracts;

-The higher the added value of the economic activity, the more flexible the motivation of the employees through the flexible hours or the possibilities of reconciling the family life with the work.

On the other hand, there may be shortages of skilled labor in new business / new occupations, inconsistencies between supply and demand for labor and uncompetitive workforce.

The need for training emerges - the need to upgrade the skills of the workforce through continuous training. There is a risk of exclusion from the labor market of people who are not financially able to keep up with the change and of the elderly, with the most lacking / lack of skills / skills phenomenon. The most frequent technological changes that have occurred in recent years are presented by employers in transport, storage and communications, manufacturing and construction.In order to combat the lack of qualified staff, some interventions on school curricula are needed.

6. Conclusions

In conclusion, some measures should be introduced in the European Community and adapted to the reality in Romania. The Community and the Member States shall implement measures which take into account the diversity of national practices and the need to maintain the competitiveness of the Community economy.

The Community action seeks:

- develop the European dimension of education and, in particular, through the learning and dissemination of the languages of the Member States;

- promote student and teacher mobility, including by encouraging academic recognition of degrees and periods of study;

-to promote cooperation between educational institutions

-to develop exchange of information and experience on common issues;

- encourage the development of youth exchanges and socio-educational exchanges;

- encourage the development of distance education.

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Application of the theory of changes in the development of anti-fraud schemes

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Abstract

In this article we have provided the results of a study on measures to prevent fraud in different countries. The article shows that the level of fraud in Russia is quite high. This is due to the low culture of doing business and the high bureaucratization of government authorities. Creating transparent schemes of interaction will help reduce the number of fraudulent schemes and build a society. The article presents an algorithm for creating a non-fraudulent society using the theory of change.

Keywords: theory of change, fraud, non-fraudulent society

1. INTRODUCTION

Fraud was and remains one of the most acute problems of modern Russia and a serious obstacle to the development of the country. Fraud undoubtedly damages the growth of the economy and social stability of the country, significantly reducing revenues to budgets of various levels, displacing honest competitors from the market and reducing the level of public confidence in government bodies and representatives of social and financial structures.

Fraud is a large-scale problem that concerns everyone of us, because this is one of the reasons for the decline in the standard of living of the population. It affects us, even if we do not face it directly. "The risk of fraud and corruption destroys the reputation of the company in society. This risk should be viewed on a par with the health and safety threat to employees and the public, because the effect of its implementation is almost the same - loss of reputation, financial consequences and problems with corporate ethics. " [1] The most common types of fraud, experienced by government or state-owned enterprises are the following: asset misappropriation, accounting fraud and bribery or corruption.

If we talk about Russia, the research of Economist Intilligence Unit revealed that one of the main obstacles for cooperation of foreign companies with Russian ones is corruption (28% of respondents expressed concern about this issue).The research group Public.ru revealed that in 2012 the amount of damage caused to the state budget by fraud amounted to about 34 billion rubles, of which 31 billion rubles are in the Moscow region.

The main feature of the Russian practice of fraud in the field of government or state-owned enterprises is that most cases are concentrated at the level of senior and middle management. The share of lower management and ordinary citizens is negligible in comparison with those mentioned above. Bureaucratic apparatus of Russia is inflated so much that practically all spheres of life are permeated with fraud. If we eliminate corrupt authorities, it will create other problems. Therefore, the problem should be addressed. It is important to correctly apply the methods of its elimination.

In theory, as a rule, the following approaches to fighting fraud are distinguished:

1. Adoption of laws toughening punishment.
2. Increase in incomes of officials.

3. Creation of competition (which will reduce the potential profit from this crime).

In terms of tools to counter fraud in the field of government or state-owned enterprises, it is possible to identify external and internal oversight mechanisms:

Internal mechanisms act by stimulating a clear delineation of the duties performed. Supervision of authorized bodies is carried out for officials who work autonomously.

The external mechanism operates independently of the executive authorities. For example, such control means can be the judicial system, the media, and freedom of speech.

The most effective methods are as follows: the promotion of negative attitudes of the population towards corrupt behavior, the enhancement of a culture of business communication, the promotion of transparent schemes of doing business and the preventive checks of counterparties. A general increase in the financial and legal literacy of the population is crucial in combating various schemes of fraud.

Currently, the population has a sufficient number of sources of information, according to which it is possible to judge the legitimacy and reputation of certain entities. Among them: open databases of tax authorities, open legal online consultations, regulatory and legislative bases, open databases of court sessions on economic issues of specific firms. All this should be used if you want to protect yourself from possible involvement in fraudulent schemes.

Inspections of potential counterparts act as a preventive measure against fraud. The analysis of the reporting to be disclosed, by such special methods as Beneish M-Score reduces the likelihood of hitting in situations related to fraud.

The Beneish M-Score helps to uncover companies who are likely to be manipulating their reported earnings. Manipulations with reporting are an 'easy' form of accounting fraud which is difficult to identify by external users of reports, and at the same time internal control services are generally not interested in identifying it. Whether or not, it exists. Public reporting is both an information base for decision-making for potential investors of the firm and existing shareholders, and an object for due diligence for tax authorities. As an example I can present a metallurgical plant in Magnitogorsk (MMK). This company demonstrated quite good results of financial management [2], a high degree of maturity of risk management [3], high value based indicators [2], but it was revealed that financial statement was subject to manipulation. It was revealed using the Beneish method. M-Score is equal -1,89, that classifying a firm as a manipulator when it actually was not manipulating. Beneish M-Score is a probabilistic model, so it will not detect manipulators with 100% accuracy[4], but these results state that stakeholder have to study how does this company conduct business. The company seeks to look positively, manipulating the reporting, but in the long term, a relationship with such a company would lead to a loss of value at least, and in the worst case - to penal situations, loss of reputation and value.

Benchmark of internal control system of Russian energy companies revealed that management not only does not prevent fraud, but rather often (47% of cases) resort to it, with the goal of solving problems at the pre-trial level.

Another and quite significant direction of economic fraud is the activity at the level of representatives of different governmental power in Russia. Among them we can distinguish: lobbying for personal interests in support of legislative projects, missappropriation of assets, tax fraud.

The length of paper does not allow us to disclose the depth of this problem, or even to influence the situation in the country, but it should be noted that with the development of information systems and the Internet, the number of offenses is decreasing. Transparency and measures to tighten legislation reduce the number of economic fraud at the level of middle management. In addition, the nonprofit organization "Anti-Corruption Foundation" established in 2011 by activist and politician Alexey Navalny

FBK carries out investigations into corruption by Russian authorities. They are taking measures to prevent stealing of budget money. Also FBK helps people to make authorities work in the right way to provide normal conditions in the field of utilities sector, transport, roadways, elections, etc. During 6 years it exposed something about 30 cases of fraud in different levels governance and presented the results of it in mass media.

Special attention should be paid to the lobbying of personal interest at the level of public programs.

For example any measures of supporting Private entrepreneurship in agriculture would never work because they just do not have a market. Almost the entire agricultural industry has long been concentrated in the ownership of one person, which has the opportunity to take advantage of the preferential lending rate applicable to agricultural enterprises, the ability to set prices for the purchase of raw materials and to regulate the range of products.All regions face similar challenges in delivering sustainable transport solutions to meet their current and future mobility requirements. Transport authorities are aware of the real needs specific to their region but often find it difficult to identify detailed information on targeted solutions that would deliver direct and tangible positive outcomes.

Fraud as an object of scientific research.

Analysis of fraud and methods to combat it attracted special attention of researchers in the late XX - early XXI century. Due to the large gap in income between the developed countries and the third world countries, international assistance programs for poor countries. When analyzing their implementation, shocking facts of inefficiency were revealed due to corruption in low-income countries, which led to theft of a significant part of international aid by local corrupt elite [5,6,7,8].

E. Brown and J. Cloke studied the effectiveness of the neoliberal approach to fighting corruption [9, 10]. When asked about the functioning of corruption mechanisms in countries with economies in transition, the authors tried to give an anthropological answer [11]. The effectiveness of the proposed methods for combating corruption was investigated by a number of scientists [12, 13,14,15]. Hough also studied successes in the fight against corruption on the examples of Bangladesh and Kenya. An attempt to combine the description of corruption practices in a large number of sectors of the economy was undertaken in work carried out under the auspices of the World Bank [16].

As the study of the problems of illegal migration in Russia has shown, this phenomenon is closely linked to corruption and the shadow economy sector. An analysis of the cultural basis of corruption in Russia and informal networks, including the state and evolution of the so-called "system", was conducted by A. Ledeneva[17]. It revealed the existence of informal rules and links, often more important for making real political or economic decisions than formal laws or even a hierarchy of governance. The quintessence of these "conceptual" laws is reflected by V. Pastukhov.

Quantitative estimates of corruption in Russia are given in the work of G. Satarov[18]. Mathematical models of corruption were proposed by M. Levin [19]. In his work the author singled out both negative and positive effects of corruption for the economy and built mathematical models of its influence on economic development. An assessment of the state and dynamics of domestic corruption in Russia, including in the regional context, was given in a joint study by the Ministry of Economic Development and the Public Opinion Foundation (2011). The most comprehensive analysis of the study of corruption in economic theories is contained in the work of S. Glinkina[20], which showed how the economic policy pursued in Russia during the transition period is getting along with corruption. S. Glazyev noted the lack of accountability of the Russian government to the society. In addition, we mention the works of V. Babenko[21] on the historical preconditions of corruption in Russia, Y. Boldyrev[22], who is trying to comprehend post-Soviet Russian capitalism, and A. Yakovlev [23] on the connection between state capitalism and corruption in our country. V. Inozemtsev showed that in Russia a "corrupt civilization" has practically been formed.

Theory of change approach

Most cases of fraud in the opinion of researchers arise from the absence of a culture of business management. A rather interesting approach to preventing misinformation can be given by the Theory of Change (ToC). This theory allows stakeholders to be oriented in solving problems using a systemic organizational approach. Scientists, who studied Theory of Change stated that key reason complex programs are so difficult to evaluate, as well as the assumptions, that inspire them, are poorly articulated. She argued that stakeholders of complex community initiatives typically are unclear about how the change process will unfold and therefore place little attention to the early and mid-term changes that need to happen in order for a longer term goal to be reached. The lack of clarity about the 'mini-steps' that must be taken to reach a long term outcome not only makes the task of evaluating a complex initiative challenging, but reduces the likelihood that all of the important factors related to the long term goal will be linked [24]

The approach of the theory implies a transformation of inputs by means of activity into tangible outputs, which summarize in outcomes of several terms. From the position of the behavioral economy, outcomes are desirable, but not predictable and are of great importance only when resistance to changes(or excepted costs) are less then composition of lost profits, vision of the further development and practical steps [25].

ToC provides the conceptual framework making connections between the different elements, showing how what is done is expected to achieve the purpose, also how 'measures' provide information to help judge the whole exercise. Audits address whether the program is using resources adequately and is being implemented as planned. Formative evaluations inform ongoing program implementation management, which is important – especially in participatory initiatives, to gauge how different stakeholders carry out their activities.

outcomes	**Long-term**	Businessreputationgrowth	Economic freedom of society	Transparent shareholder oriented system	Ease of doing business	
		not a fraudulent society				
	Medium	Ease of obtaining the necessary services.	The exclusion of any personal or other financial interests interfering with the conscientious fulfillment of the debt.		Continuous improvement	
	Short-term	Reducing opaque interaction patterns	The elimination of unnecessary administrative barriers to economic development.	Economical and/or managerial knowledge	Creation of ethics and culture of a non-fraudulent society	Minimization or elimination of the condition, creating both an incentive and the possibility of declining a person to commit corrupt acts
outputs		Disclosure of the facts of corruption and the results of investigations.	Reducing bureaucracy	Monitoring data and protocol, control	Creation of training tools for officials	Limiting the ability to work and enjoy social benefits / Disciplinary sanctions
activities		Research and developing	Creation of transparent schemes of interaction.	Reporting, limitation,	Diversification of responsibilities	Policy and funding infrastructure
		Identification, prioritization and disclosure of economic fraud schemes	Declaration of property and income	Continuous improvement	Increasing the literacy of society	Tightening of preventive measures.

Fig1. logical model for building a non-fraudulent society

Based on the results of studying the experience of developed countries, we compiled an algorithm of an important steps required to achieve the desired vision. The elements, presented in this figure, have a recursive rather than unidirectional influence. The development of higher level outcomes will often interact with the implementation of lower level activities and outcomes. Many activities and lower level outcomes will contribute to the realization of multiple higher level outcomes which represent the desired changes we want to see in the real world. This reminds us that evaluating the progress of any individual activity or outcome is often more about assessing contribution, rather than direct causality.

Despite the large number of works devoted to the study of corruption, we believe that a comprehensive, systematic approach to the study of Russian corruption is promising. It should be viewed not as a historical phenomenon or an element of ineffectiveness of state or business management, not only as part of a system of informal relations, but as a cornerstone of the functioning of the Russian economy, when corrupt relations are largely its engine, thanks to which the main monetary and resource flows and economic management is carried out. An algorithm developed using the theory of changes will serve as a reliable tool for this purpose.

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„How to sell"– Opportunity for small farmers to global market

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Abstract

This topic is about regional cluster's role in agricultural field in small and developing countries, where the agro field is in difficult situation. Georgia was among the first republics of the Former Soviet Union (FSU) to proclaim independence in 1991 and after this, the economy collapsed under the impact of civil war and the loss of preferential access toFSU markets- imports fell by 70% and exports by 90%.Studies have shown that recently the Georgian agricultural space requires overall structural changes in order to make it more efficient and profit-oriented farmers' community. We think that for the Georgian economy the most appropriate and optimal model is agriculture oriented on the export of food industry products.On our works we have introduced the model of "Regional Clusters", which will give the opportunity to farmers find resources for the measures, such as: Diversification of markets in abroad; Planning the production process according to the word market demands; To raise awareness in the field; Find new investments for further development; Find new technologies and innovative methods.

Keywords:agriculture cluster, small farmers, export, competitivnes in agriculture

INTRODUCTION

Georgia was among the first republics of the FSU to proclaim independence in 1991. During the four years of upheaval that followed, the country experienced civil unrest and internal conflicts, in particular the war in the Abkhazian region, which created serious refugee problems and closure of its trade routes. Prior to independence, the Georgian economy had been closely integrated with that of the Soviet Union with trade accounting for an estimated 40% of GDP, and nearly all exports directed to and three quarters of imports coming from the Soviet republics. The industrial sector accounted for about one third of the economy and although Georgia lacked cheap sources of energy, it produced steel pipes, locomotives, and other energy-intensive products for export. The competitiveness of Georgia's heavy industry was dependent on the supply of natural gas from Turkmenistan at artificially low prices and on inflated prices for final products.

After independence in 1991, the economy collapsed under the impact of civil war and the loss of preferential access to Former Soviet Union (FSU) markets- imports fell by 70% and exports by 90%. [7]

According to the comparative advantages, Georgia can become competitive in the production of agricultural products. Production of competitive products leads to efficient use of resources, domestic and international increase in market share, improving the welfare of the effectiveness of the population.

At present, the agricultural sector of any developed country is of particular importance. In European countries the performance indicators are generally on the rise despite the fact that the agricultural sector's share in gross domestic product structure is characterized by the reduction tendency in time.

The agricultural sector is the most difficult challenge - 66.7% of farmers are not able to resist competitiveness as far as imported products are distinguished by their low prices. The main reason for above mentioned is the low level of competitiveness of the agricultural sector and agricultural products.

While importers are major competitors in the sector, the increase of competitiveness for Georgian agricultural products must not be done by imposing barriers on imported products, but by raising competitiveness of locally produced products and export potential.

It is essential to have a target market for export-oriented enterprises development. Georgian agricultural products have their consumers and are well known through the CIS member countries; these are inertial markets which have been maintained since the USSR collapse. However, due to current political situation, these markets are unsteady. Consequently, the issue for the necessity of expanding the economy arises. We strongly believe that such kind of opportunity is the agreement signed with the EU Association and a deep and comprehensive EU Free Trade Agreement which not only allows the country to new markets, but also facilitates financial support for the development of the field. It is essential to allow the spending of the amount in the right direction within coordinated policy framework in order to obtain real development of the sector and not a temporary effect.

Studies have shown that recently the Georgian agricultural space requires overall structural changes in order to make it more efficient and profit-oriented farmers' community. We think that for the Georgian economy the most appropriate and optimal model is agriculture oriented on the export of food industry products.

No matter how many laws are written in the government creating effective models for the development, it is crucial to have a powerful team who have great desire, knowledge and experience for participation and implementation of the plan. Unfortunately, today there is no such commitment. This is confirmed by the fact that all existing projects enjoy support, i.e. existing farmers who have already had their own businesses wanted to expand existing ones. Theoretically, on the one hand, it is not as bad, probably good; however, real outcome can be achieved only with the large scale effect; therefore, all mini-agricultural lands should be involved in agricultural production. The biggest problem in Georgian agricultural sector is fragmental patches of land, where practically is impossible to carry out profitable economic activities. Relevantly establishing various forms and development of farmers' cooperation should be helping them to become more competitive in global economy, to study new technologies and become a part of profitable organization.

Certainly, we are not able to export the products promptly to the European Union, the proof of it is the statistics of recent years; therefore it is necessary compliance with European standards and customer-oriented production development. European consumers are aware of the product quality standards and in result, with the growing living conditions the demand for organic food products rises. This is not so quickly digestible market as resource for growing organic produce is limited. However, it may become a competitive advantage for our country.
Studies have confirmed that foreign investors are particularly interested in the less contaminated with pesticides and clean rural environment. Consequently, Georgia's strong side should become the high-quality, environmentally friendly agricultural production for premium segment buyers who are quite certain of product quality.

AN OVERVIEW OF AGRICULTURE SECTOR IN GEORGIA

Agriculture in Georgia relies mainly on small-scale farming with low production efficiency. On average 0.88 ha of arable land is owned by one farmer. These small farms produce more than 80 percent of the total production. Large scale farms produce about 10 percent of the total agricultural production and almost all is destined for the market. At present small farms dominate the agricultural sector. They operate mainly for domestic consumption. The small size of land plots does not promote the increase of labor productivity. Until 2005, 75 percent of agricultural land and 2.5 million hectares of forests were under state ownership. In 2005, the Law on Privatization of State-Owned Agricultural Land was adopted in order to promote efficient use of land through private ownership and thus increase efficiency in the agricultural sector. Forests and other natural resources are being transferred more actively to private hands under long-term tradable licenses.

In addition, the share of farms that have privately owned farming equipment and agricultural machinery is a little more than 20 percent. In fact, in Georgia on average 53.2 tractors and 0.4 harvesters-threshers were employed per 1000 ha. This figure is less than one 35th of the relevant indicator in Slovenia, and is among the lowest in post-communist states. Accordingly, approximately 85 percent of Georgia's rural population is entirely dependent upon their farms for subsistence and they consume approximately 75 percent of their own production.

Investing

The agriculture sector, despite climate advantages, seems less attractive to banking investors. The share of the agriculture sector in total banking loans varies from 1 to 2 percent. The domestic banking system is very reluctant to give long-term credits to farmers. Banks are preferentially focusing on short-term trade financing.

Foreign direct investment's share in agriculture in Georgia today is also small. Agriculture in total FDI in 2007 amounted to 0.8 percent, in 2008 to 0.5 percent and in 2009 to 1.2 percent, this as a result of the high risk and low profitability of the sector. Improving the environment for foreign direct investment as an alternative to short-term bank credits has become crucial. At present FDI enters the nut industry (the Italian confectionery company Ferrero started operation in 2007), winemaking (Italy, Russia, Korea) and water bottling sectors (Turkey).

Fig. 1.Percentage of total FDA in Agriculture field, according to the years.
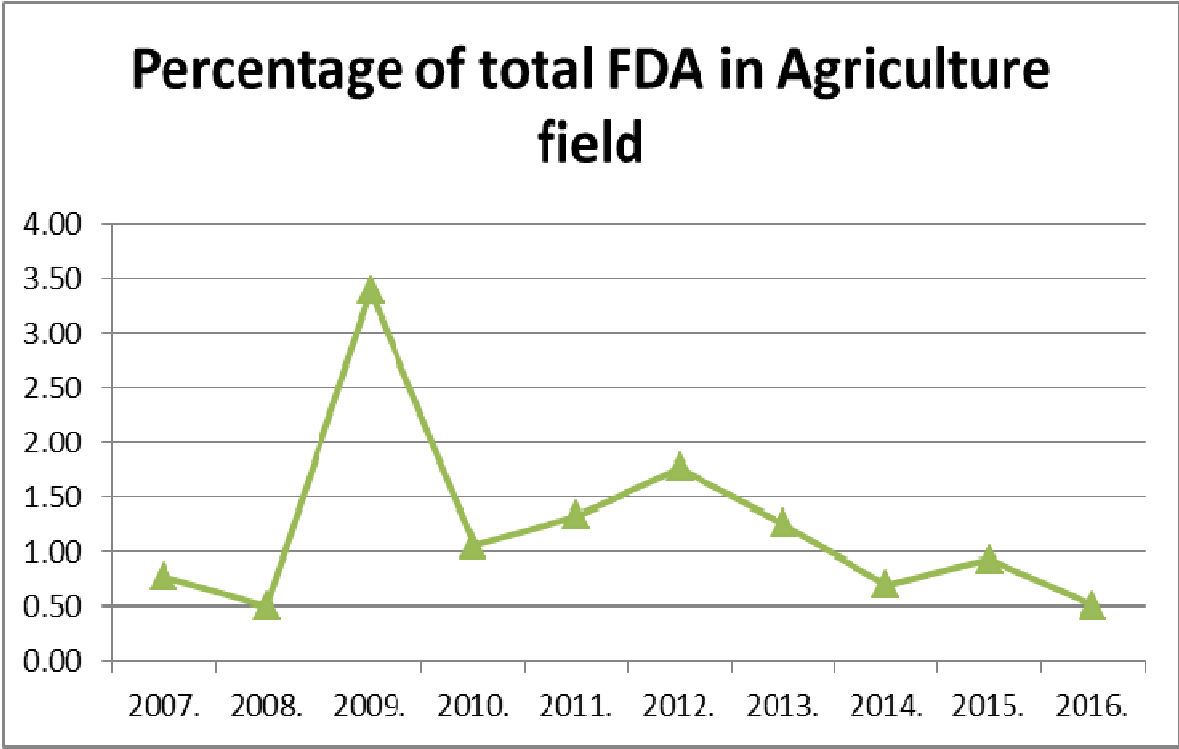
Source: www.geostat.ge

Trade

There is a huge gap in the export-import balance, despite strong growth in exports. In the beginning of the 1990s, Georgian food imports exceeded export by around 70 percent. Since then, the situation has changed, during last decade, the shares of agricultural goods (foods) in total imports decreased much faster than the shares of agricultural (food) exports. At present Georgia still depends on imported agricultural products. Imported food products amount to more than 50 percent of the total consumer market, resulting in a low food self-sustainability rate.

The main agriculture export products include beverages, spirits and vinegars, (10.9 percent of total food export), edible fruit and nuts; peel of melons or citrus (7.9 percent), oil seeds and oleaginous fruits; industrial or medicinal plants (2.1 percent). Among the main imported products are: wheat and wheat flour (2.6 percent in total food import), sugars and sugar confectionery (1.4 percent), tobacco and manufactured tobacco substitutes (1.8 percent), meat and edible meat offal (1.4 percent)

This structure of trade results from the favorable climate for agriculture production of wine, fruits and citruses and of mineral water. Russia, ranked as the first trade partner, was favored export of wine and spirits and mineral waters, fruits and vegetables till 2006. The tense of Russia-Georgian relations, as well as the export restrictions of several Georgian products to the Russian Federation, resulted in a reduction in exports of these goods. At present the agriculture and food sector exports to Russia have seen a great reduction. The problem is that Georgian farmers lost its wine, mineral water, fruit and subtropics culture market share in Russia and could not reorient quickly enough to other markets because of the high competition (e.g. in EU markets) and due to poor marketing policy of Georgian producers. During these years of course, farmers find new markets in other countries, but there are another difficulties: the quality if the product, the amount of exports and others.

The main obstacles for Georgian companies include supply constraints, satisfied EU regulations on safety (mineral waters), the recognition of Georgian brands (wines, mineral waters) by EU (except for the Baltic States and Poland) and USA consumers, non-tariff requirements, lack of resources and skills for marketing and different

preferences of the foreign consumers in comparison with those of traditional markets, mainly the CIS. The brand names of Georgian mineral waters have been decisive in their ability to reach foreign markets. People in the Baltic countries mainly buy Georgian mineral water because they remember the brand from Soviet times.

For further improvement of trade, there is a need to modernize agricultural technology, equipment and infrastructure, change out-dated irrigation and drainage systems, develop livestock feed and seed production businesses, attract skilled labor, as well as packaging and sorting technologies. The current absence of these attributes creates barriers to farmers who want to produce for export. For the agro-food sector, it is well known that the most important constraints on trade are not tariffs, but product standards and regulations. With regard to the agro-food sector, there is a need to increase incentives to adopt regulations and higher quality standards.

Besides of above, I think the only way to save the Georgian agriculture sector is a complex of the promotion and certain subsidization runs. Otherwise it is impossible to attract as much funds as the rehabilitation of the sector needs, but as European example shows, we need some balance, to stimulate the public control and medium-sized businesses as much as possible to avoid the monopoly and less effective market in the field.

Of course, there is a possibility of returning to the Russian market, but even in this case, Georgian products may not be competitive with foreign importers, because they are subsidized by the high level. The other case is that, because of the improvement of infrastructure (roads, transport, set, etc.) imported products will easily reach to the whole country and local agricultural industry will be in a more difficult position. And the major problem- high levels of unemployment, the great army of self-employed people in rural areas will be have only one way - to continue to forced labor on the land in which one can provide income for just to the minimum subsistence levels.[10]

SWOT ANALYSES OF AGRICULTURE SECTOR OF GEORGIA

Strengths

- favourable conditions for the production of a wide variety of annual and perennial crops;

- more than half of economically active population is employed in agriculture;

- low cost labor resources;

- recognition of the agriculture as a top priority sector for development by the Government;

- availability of simple and cheap agriculture processing technologies;

- existing trade preferential agreements with US

- DCFTA agreement with EU countries;

- WTO membership.

Weaknesses

- The small size of land plots, which prevents economies of scale and discourages mechanization.

- low productivity, low yields and inefficient production processes;

- high costs of raw materials;

- lack of knowledge of modern agriculture technologies resources;

- insufficient mechanization and technical equipment, fertilizers;

- lack of packaging and processing facilities;

- lack of financial resources;

- poor marketing, financial and general management;

- low capabilities of exporting;

- small size of the local market.

Opportunities

- expansion at new markets;

- expansion of global demand for food and agricultural products;

- increase in world prices on food and agricultural products;

- developing new innovative products for new markets and market segments;

- shift to production of high value-added products.

Threats

- macroeconomic threats (poverty; low incomes; inequality; unemployment; fluctuation of exchange rates);

- possible increase in energy costs;

- possible droughts and other climate related problems;

- trade and customs policies that facilitates importing of competitive products from abroad;

- fluctuations of market prices;

- high barriers of entry on global markets;

- high level of competition from foreign products at local market;

- low level of investments in agriculture.

REGIONAL CLUSTERS, OPPORTUNITY FOR SMALL FARMERS TO GLOBAL MARKET

"The Competitive Advantage of Nations" Michael Porter describes what competitive advantage is and how this results in the origin of clusters. Porter used a diamond shaped diagram to illustrate which factors determine competitive advantage. All the four factors are essential ingredients for successful local, regional, international or global competition. The importance of a cluster rises with the sophistication of competition. This means that clusters tend to increase as economies develop (Porter, 1990).

Competition depends on several aspects: personal relationships, face-to-face communication, and interaction between networks of individuals and institutions. It is obvious that both networks and clusters depend on each other. The existence of clusters makes relationships more likely to develop and become more effective and efficient in one place (Porter, 1998),(Buccirossi, Marette, et al., 2002).

In this article the main research question is: "How Can Regional clusters, offered by as, help Georgian farmers become from poor people in the villages to farmers with good profit?"

Porter's definition is: "Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities,

standards agencies, and trade associations) in particular fields that compete but also cooperate. Critical masses of unusual competitive success in particular business area's, clusters are a striking feature of virtually every national, regional, state, and even metropolitan economy, especially those of more economically advanced nations"(Porter 2008).

Another term, which is occasionally used for business clusters, is the term economy of agglomeration. Economies of Scale and the Network Effect are two related concepts to economy of agglomeration. Economies of scale appear when the costs decrease when a company size increases, this can be internal economies of scale or external economies of scale. Lower costs per unit produced are the result of scaling up. This is because of lower transport costs, competing suppliers and specialization. When competing firms are clustered, there can be positive effects; clusters can attract more customers and services than a single company can attract. However, when the cluster becomes congested due to the appearance of to many firms or industries. Therefore external diseconomies of scale may be generated (Heijman and Schipper, 2008).

Agro-based clusters in Latin America

Researchers are far from reaching a consensus on the degree of development and competitiveness of Latin American ACs. According to Bisang and Gutman (2005) severalagrifood product lines in Mercosur countries have expanded and attained higher level ofcompetitiveness thanks to the organization of these product lines in clusters or networks.Thus, they have become "focal points (axes) of accumulation and economic growth".Amighini (2003) says that Latin America enjoys a comparative advantage for developingindustries based on natural resources, including agro-industrial activities (e.g. fruit, sugar,wine, salmon, milk) and some mining industries. Dirven's work on dairy clusters in CentralAmerica (ECLAC, 2001) shows a more pessimistic view about the development of theseclusters. She states that clusters tend to be "moderately competitive, increasingly in foreignhands, with core decision-making in the capital city or abroad, shallow as to local supplychains, embryonic as to their stage of development, users and not generators of technology,and with low innovative capacity". Guaipatín (2003) limits himself to saying that the moreinteresting fact about Latin American ACs is simply that they exist, in spite of "theiragricultural structure based on small producers with difficult access to credit, information and knowledge and the current absence of public support".

It focuses on clusters of high value agricultural products that have been documented in the region, namely: wine, fruitsand vegetables, fish, cut flowers and coffee.

Latin American wine clusters were traditionally formed by a myriad of small wine growers and family-run wineries that used to produce and sell bulk wine in the domestic market.Throughout the 1970s and into the 1980s, exports accounted for very little of the production– most of it remained on the domestic market – and Latin American wines were largelyunknown overseas.

A drastic turnaround happened in the 1990s when a "quality over quantity" approach was adopted, resulting in a shift from bulk wine for the domestic market to premium winesfor demanding export markets. As a result, nowadays in Argentina only 2.4 percent of thevolumes are sold in bulk, in comparison with 80 percent before 1995; and 85 percent ofthe export revenues of the Argentinian wine industry come from fine wines. Chile has alsodecreased its exports of bulk wine to a quarter of total wine exports (Miremont, 2000).

The causes of this strategic move were multiple: excess production regionally and globally;high worldwide demand for premium wine; creation of brands from Latin America and theestablishment of Controlled Denomination of Origin (CDO) in Chile and Argentina; ban onbulk wine exports within Mercosur; industry's globalization of production, distribution andmarketing; and consistent advancements in product quality and innovation at the regionallevel (Miremont, 2000; Sawyer, 2004).

Significant investments on the production side made this jump in quality possible. Between 1998 and 2000, direct investments in wine production in the clusters studied amountedto about US$500–600 million (Miremont, 2000). Much of this capital came from foreigncompanies that invested in the creation of vineyards or in buying or setting up joint ventureswith national companies. The arrival of foreign investors energized Latin American wineclusters not only from a financial point of view, but also because of the innovations and visionthat these investors brought along with them. Sawyer (2004) enumerates some innovationsintroduced both at the vineyard level (e.g. use of cover crops, increased vine density planting,introduction/rediscovery of new varieties, drip irrigation) and the cellar level, where French,Californian and Australian winemaking techniques were put in practice. New managementand marketing styles were also adopted: state-of-the-art product development (from varietiesto blending) and quality control, co-design and co-benchmarking processes (development ofnew systems to

document practices and products, share the information and evaluate theresults over time and space), and emphasis on regional identity and branding, and launchingof collective communication campaigns, among others (McDermott, 2005).

Table 1.Wine export values from 1995 to 2004

Country	1995 (1 000 $)	2004 (1 000 $)	Δ (%)
Argentina	73 825	221 438	+200
Bolivia	27	61	+126
Brazil	12 609	1 828	-86
Chile	181 763	835 486	+360
Uruguay	403	3 160	+684

Source: FAOSTAT | © FAO Statistics Division 2008 | 4 November 2008.

Latin American wine clusters have consolidated their presence in the international wine business (PaniaguaRequena, 2002; Giuliani and Bell, 2004; Langman, 2002; McDermott, 2005; Penn, 2001; Sawyer, 2004; USAID, 2002) both in terms of quantity and quality. In only ten years Chile's wine exports exploded from US$182 million in 1995 to US$835 million in2004. Likewise, Argentina's wine exports surged to US$221 million from US$74 million in the same period. Bolivia and Uruguay also experienced a significant increase in wine exports. Brazil was the exception in the region (Table 1).

Regarding quality recognition, Visser (2004) states that Chilean wineries are increasingly penetrating ultra-premium market segments (Chile won 8 percent of awards and 7 percent of all medals at the London International Wine Challenge Rewards 2003). Chile's ColchaguaValley was awarded Wine Enthusiast's "Wine Region of the Year" for 2005, and a recent article in a wine magazine described the cabernet sauvignon of the largest Chilean winemaking company as "the best-value cabernet sauvignon on the planet" (Hojman, 2006a; Decanter magazine, May 2006). Likewise, McDermott (2005) shows that major trade magazines now rate an increasing broad base of high quality Argentinian wines of many different varieties and distinctive blends. Uruguay is also achieving increasing success with its Tannatgrape variety, grown only in France and Uruguay. Another country determined to find its niche market in Europe and elsewhere overseas is Bolivia, which has concentrated on fine wines and is holding onto the concept of the "highest wine in the world" or "high-altitude vineyards".

Agro-based clusters in Asia

Unsurprisingly for such a large and diverse continent, there is considerable variety in ACs in Asia. While ACs are almost non-existent in countries such as Uzbekistan and Tajikistan(Ji-Hyeon et al., 2007), they play a central role in the development of agriculture andagro-based industry in other countries (Malaysia, 2006). They differ in the extent of theirdynamism; some are largely "dormant" or "embryonic" while others are highly dynamic(Sandee, 1998). Similarly, some owe much of their growth to explicit state initiatives, someto other institutions such as development agencies and universities, while others have grownin a more bottom-up fashion. The case studies in this chapter highlight these and other areasof difference.

There are, however, some elements of commonality to be found when looking at ACs inAsia. One of these elements is the context within which studies of these clusters have beencarried out. The majority of studies of ACs do not study them as distinct phenomena buthave seen them as examples of industrial clusters more generally.

This treatment of ACs as no different from other industrial clusters partly reflects the contextwithin which much policy action in this area occurs. For example, in Indonesia, there is noexplicit government policy for the promotion

of agro-industrial clusters. Instead, promotionof ACs occurs through programmes promoting SME clusters more generally. Likewise, mostof the literature on Indonesian ACs reviewing the success of these programmes makes littledistinction between ACs and industrial clusters (for example, Sandee, 1998 and Tambunan,2005); similarly the lack of differentiation is apparent in much of the work undertaken byintergovernmental organizations. UNIDO's work in promoting the food-processing clusterof Pune in India, for example, is undertaken as part of a more general programme to developindustrial clusters in India. Its subsequent research publications (UNIDO 2000, 2001) reflectthis treatment of ACs as just another example of industrial clustering. In this respect, theIndian and Thai examples highlighted in this chapter represent exceptions to, rather thanexamples of, the general trend.

The first Thai agricultural region to take an active cluster approach to GAP was an area made up of four provinces near to Kasetsart University in the west of the country. These area is mainly characterized by vegetable production and has a total vegetable area of 35 200 ha (Korpraditskul, 2005). Little data exists on how the total production of this area has changed over time. The development of the cluster needs to be seen in relation to the changing fate of Thai fruits and vegetables in the export market. While exports from the sector's competitors in China, Viet Nam and the Philippines have increased, Thailand's exports of fresh fruits and vegetables to the European Union market have fallen from US$9.5 million in 2000 to just US$3.6 million in 2005 (GTZ, 2008).

The first cluster meeting occurred in August 2002 in collaboration with the Kenan Institute of Asia. Four exporters, numerous collectors, 90 farmers and 4 farmer group leaders were in attendance. Subsequent monthly meetings were held to discuss issues affecting the fresh vegetable supply chain. A key development occurred in 2004 when the Ministry of Agriculture launched the Food Safety Year, publishing GAP for a range of commodities.

This initiative became a key driver for the cluster to develop its own system of quality assurance. It was thought that it was necessary to comply not just with the Ministry of Agriculture's GAP but also EurepGAP (now GLOBALGAP), as the latter would further facilitate access to markets. The farmers were brought together by the cluster so that there could be common learning about their normal practices and the constraints they faced in trying to meet the GAP of the Ministry of Agriculture and EurepGAP. A common cluster GAP was produced in the Thai language within three months. The GAP itself was made as accessible to the relevant parties as possible. Not only was it in Thai, but any part that was not applicable to the normal practices of each relevant actor was deleted and the whole GAP was made simple to understand. Acting as a cluster aided the whole process, allowing exchange of information between the different actors (farmers, exporters, distributors, research institutes, etc.) (Korpraditskul, 2005).

While the production of a common GAP was a key step in raising the quality levels of the cluster's produce, other action was clearly necessary to ensure that it was understood and kept to. The cluster has a GAP assessment and checking system that includes farm advisors, government officials, farm leaders, trained internal auditors and various other cluster stakeholders. Recent research on small farmers' implementation of GAP revealed a general lack of understanding of the system (Korpraditskul, 2005). For this reason, training courses were developed, relevant to each area. The cluster has taken on many other related tasks. It is now committed, inter alia, to providing training to all parts of the cluster and promoting public-private dialogue. It also launched a symbol for products that achieve the GAP requirements. Overall, the cluster's work appears to have been largely successful in promoting GAP in the region. Indeed, the approach taken in this cluster is being extended to areas in the rest of Thailand. This extension (called ThaiGAP) is being driven by a PPP. The main actors are theThai Chamber of Commerce and the agricultural department of Kasetsart University. It aims to build on the Western GAP cluster's work in improving agricultural practice, and also raise the profile of Thai agricultural exports internationally (Chuenprayoth, 2007). Importantly, despite being a national initiative, this new action still has a cluster-based approach at its core. The scheme focuses upon acting in eight key clusters around the country. Similar to the Western GAP cluster, it hopes to use the dynamics of collective action by supply chain members and support institutions to promote SMEs in these areas.

Agro-based clusters in Africa

Cluster work in Africa is in an infant stage of development. Some descriptive work has been done in a few English-speaking countries where cluster initiatives are just starting to develop.The analysis so far suggests that there is vast scope for positive AC interventions at bothpolicy and programme levels.Pioneers in analysing clusters in Africa are McCormick (1998, 1999) and Mitullah (1999),who started collecting material on clusters and explored whether the benefits that clusteringprovided in other parts of the world could also be applied in Africa.

The existing literature shows that African clusters vary tremendously in internal structureand level of industrialization. In fact, the literature suggests the existence of three types ofclusters in Africa. The first type is the so-called groundwork cluster that provides a basis fordevelopment by improving producers' access to markets. The

second one is the industrializingcluster, which has started the process of specialization and differentiation. The third type isthe complex cluster that has already diversified its size structure and linkages and is able totap wider national or international markets.Groundwork clusters are more common in Africa, followed by industrializing clusters,whereas only a few complex clusters are found. Those in the last category are less developedthan in other parts of the world mainly because: a) trading networks are underdeveloped inAfrica; b) clustering has taken place in the context of an overabundance of labour, whichmeans that labour market pooling effects have not worked as expected; c) clustering hasoccurred in environments of weak political and economic institutions; and d) large-scaleindustries (including agro-industries) are in disarray as a result of a rapid market liberalizationwhile small and medium firms continue to offer low-value, low-quality products that havedifficulty competing with the widely available imports (McCormick, 1998, 2003).

The World Bank Institute (WBI) started some work on African clusters with its initiative "Knowledge, Technology and Growth in Africa" in 2005–06 (Zeng, 2008). The initiative delivered11 case studies, 3 of which are in the agricultural sector: fish clusters in Uganda, a Kenyan cutflowercluster and a South African wine cluster. The general conclusions were that Africanclusters face enormous challenges, and that their sustainability depends on how successfully theycan overcome them. Resource-based clusters, especially those in the agricultural sector, needto find solutions to avoid resource depletion and to upgrade their products. Most importantly, the public sector needs both to establish a favourable regulatory and incentive environment,facilitating knowledge and technology learning and innovation, and to provide high-qualitypublic goods, notably infrastructure, that the private sector can benefit from (Zeng, 2008).

There are several studies documenting fish clusters around the Lake Victoria. These includethe Kisumu and Uhanya Beach (about 60 km from Kisumu) clusters in Kenya, and theEntebbe and Jinja ones in Uganda (McCormick, 1999; Mitulla, 1998; and Bolo, 2006). Fishclusters in Tanzania, however, have not been recorded in the literature, despite the fact thatTanzania has become the most important African exporter of fish to the European Union.

Lake Victoria is the biggest fish reserve on the African continent, yielding about 25 percent of the total catch of all inland fisheries. These abundant fish resources have led to thedevelopment of fish clusters around this lake. The introduction of the Nile perch into thelake in the 1950s by British settlers underpinned the growth of the fish clusters. The fishclusters developed as a result of the rising overseas demand for fish, mainly in Europe, as fishsupplies in northern waters dwindled (Jansen, 1997).

The total catch of all fish species in Lake Victoria increased from about 100 000 tonnes in1979 to about 500 000 tonnes in 1989 and to an estimated 840 000 tonnes in 200630. Nileperch fillet exports grew tremendously from 1999, with Tanzania being the leading exporter.

OUR MODEL OF REGIONAL CLUSTER

On our works we have introduced the model of "Regional Clusters", which will give the opportunity to farmers find resources for the measures, such as:

- Diversification of markets in abroad

- Planning the production process according to the word market demands

- To raise awareness in the field

- Find new investments for further development

- Find new technologies and innovative methods: (Fig.2)

Figure 2. The model of Regional Cluster
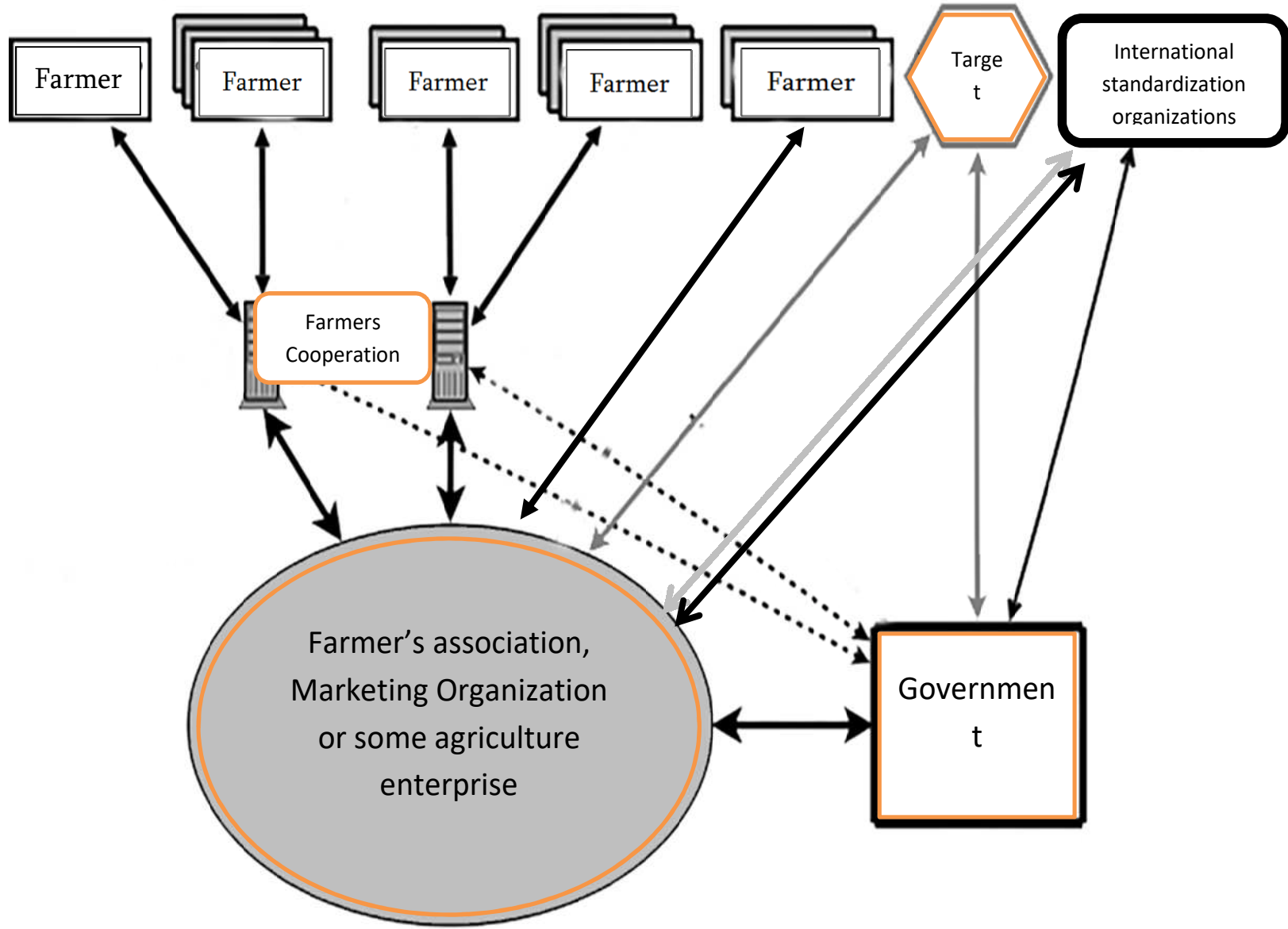
In the figure, Association is a farmer's union with pay method. But the money, they will collect, must not be the major investment for this union. These payments are for salary of few basic employees. The goals of the union will contain but not limited by

• Increasing of member's list

• Find new markets for export

• Write recommendations for the members about market changes

• Find sources for making trainings and researches about newest ways of agriculture, study new technologies and methods.

• Find finances and other resources for resolving the problems of members.

• Write projects and receive grants for implementation of ISO, HASSP and other international standards in the member organizations.

• Find international Partners and investors, for further development

• Help members and increase the coordination for collecting big batch of products for export, saving the quality and quantity of supply

But these clusters will not be able to start enactment and become successful without startup help from Government, such as:
1. Tax benefits,

2. Preferences on government purchases and tenders.

3. Regional development can be prioritized the projects, which are initiated or submitted by the regional cluster.

4. Make some of international standards as a national law and Establish new laboratories and standardization organizations, which will help farmers to obtain export documentations.

Farmers and Cooperatives in the cluster don't have mutual obligation other then they will agree with each other. But the association must become the place of finding common interests with all or part of its members in the issues, such as:
• Forming a large batch for export

• Obtain the quality certificate

• Invite the experts of the field

• Implementation of new technics and technologies

• And other

For developing countries it is very important to have an agro-production, but for further development of economics is more convenient to produce and export not only primary products (fruit, vegetables) but already processed and manufactured products (juices, canned products and ets).

Besides the problems, clusters will resolve, to stimulate manufacturing in the country, governmental politic must help entrepreneurs to resolve few more difficulties:
1. There are big gaps in greenhouse field in Georgia and therefore supply of agro products is very seasonal. That is the reason of increasing spends for production and makes it unprofitable.

2. Most important problem is, that there is a conflict of interests between the producers and farmers. For Georgian farmers his harvest is the only source of income and of course wants to sell as high price, as possible, to be provided

with dignified life. But manufacturers want to buy high quality product in low price to be competitive in market. In my opinion, this case government must resolve this case, as in European Union (as it was written above). - During first few years, government will subsidize the cost of some, most important agro product's price, if they will be sold for production.

3. And the last, but not least problem- government must stimulate the students study on the programs, market needs at this time. (Seems stupid, but in post-soviet countries there are list of prestigious programs, in which all of students want to study. For example justice, medicine and so on).

An important characteristic of the Georgian agricultural sector is the relative lack of vertical integration and the pre-eminence of small-scale production. The largest share of products, used by producers is bought from independent, small farmers on the market at the time of harvest. This gives rise to a range of problems:
1. As long-term delivery contracts are still highly infrequent, price are quite volatile. This can reinforce the lock-in on the current market; particularly prices are significantly higher when agricultural products can be sold in Russia – to the detriment of those producers attempting to enter the more price-competitive markets of the future.

2. Small farmers are often unable to invest in more modern production methods, leading to outdated, inefficient and labor intensive cultivation techniques and prices that are relatively high for a country with low wages and good natural conditions for plant growing.

3. Quality control over the plants is very hard to establish in market with hundreds of thousands of producers and little vertical integration. Small agro producers are very reluctant to allow factories and other producers to influence the varieties that they grow, their production techniques and harvest times, etc. While some small farmers do produce excellent homemade, but the resulting quantities are too small for commercial export.

A consolidation of such little farmers is unrealistic in the short run and would lead to difficult social considerations, although some larger exporters are gradually attempting to increase their own land production and should be encouraged to do so or they can initiate the regional cluster, to achieve more considerations, best quality product from suppliers and a big quantities of production for export.
To resolve these problems, it's important from government to make some actions for raising public awareness and participation in reform process. Farmers must be learned, how important is cooperation with each other and how many profit will take each of them with consideration of their resources.

CONCLUSION

In Georgia, as in other developing countries, it is very important, to find sourses for collecting the splited resources in agricultural field, to have some competitiveness in the market.
As the researches show, clusters are good (maybe the best) solution especially in poor countries, but in such rural areas, little farmers do not have the knowledge needed to establish and manage a cluster.
Georgian agriculture is characterized by low productivity and weak competitiveness across most major agricultural sectors, The only way for producing competitive products for international market, is cluster cooperation. But to start such cooperation can only marketing or farming associations, which have qualified labor.
While the "Regional Clusters" are going to be successful, they would not be developed without government protection:
• It is important to offer farmers the charter pattern and start project funding for trainings about clusters, its benefits and rules for working under the "one umbrella";

• Governmental organizations to fund farmer's associations for making entrepreneurs register and these projects will develop to the commodity exchange.

• Projects which are initiated by the farmers unions, cooperatives or regional clusters must be preference in regional development plans and implemented for the first time. This means, that there will be the coordination between regional and agrarian politics and regional development will provide the labor for agrarian development.

All above cause the intensification of production in the field increase the competitiveness of agro producers and manufacturers. The strict quality control will increase the country's image, as a best quality producer and gives opportunity Georgian companies for diversification of their markets.

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The Investigation of Bubbles in Turkish Private Sector Credits: From Past to Future

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Abstract

The main purpose of this study is to investigate the true nature of private sector credit bubbles. With this aim, this study proposes a two-step analysis. The first step analysis the existence of a high level collapse in private sector credits in Turkey over time using Generalized Sup Augmented Dickey Fuller (GSADF) test. The second step predicts whether any additional collapse will be observed in the short run, using a GSADF test and forecasting analysis. In the study, the actual data up to June 2017 was expanded until June 2019 and tested for a reverse bubble in the short-term with the forecasting method. According to GSADF test results, reverse bubbles were detected in 1994 and 2002. The 1994 and 2002 period in which reverse bubble were detected correspond to economic crisis years in Turkey. According to the GSADF test results, a significant decrease in the level of credits used in 2008 was observed but there was no reverse bubble. In the next two years period, which is obtained by the forecasting method, the use of credit has declined according to the test results but it is estimated that this decrease is not a reverse bubble as well.

Keywords:private sector credits, GSADF, forecasting

Leadership Style And Corporate Management

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Abstract

The style of leadership can have a significant impact on the success of an organization. Well-managed employees are generally satisfied, motivated and committed. This again has a positive effect on customer satisfaction.
Leadership skills are an important resource for the existence and growth of companies. The leadership will become increasingly important in the future.
In today's world, there is a lot of information about companies and their leadership. In this fullness, it is difficult to choose a suitable theory. I would like to introduce techniques and methods in process of theory selecting and, of course I want to present the selected theories of my work. In this case I want to describe in a short way the main points of my dissertation thesis.

Keywords: Company, Challenge, Leadership

Croatian experience with crowdfunding

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Abstract

Crowdfunding is nowadays the fastest growing trend in the world of entrepreneurial finance. Having in mind that the number of Croatian fundraisers who use crowdfunding is increasing, the goal of this research isto investigate their motivations for crowdfunding and their satisfaction with the conducted crowdfunding campaigns.The analysis showsthat the product promotion itself and a platform's ease of use, in comparison with the long-standing process of obtaining cash funds through traditional financing methods,are the main reasons why the respondents decided to use crowdfunding. The respondents are mostly satisfied with their crowdfunding campaigns and indicate more advantages than disadvantages in their experience. The research is limited due to its small sample size, which prevents the generalization of the obtained results.

Keywords: crowdfunding, motivation, satisfaction, Croatia

1. INTRODUCTION

In order to develop a great idea into an actual valuable business based on that great idea, entrepreneurs need funding - preferably fast and without a lot of administrative barriers. Croatian entrepreneurs often cite the lack of available financial resources and huge administrative burdens related to both the public sector andthe usage of European Union funds as some of the main reasons why Croatia lacks high quality entrepreneurship [16; 18].

Crowdfunding is the concept that addresses both of these problems. Nowadays, it represents the fastest growing trend in the world of entrepreneurial finance. Having in mind that the number of Croatian fundraisers who use crowdfunding is increasing, the goal of this research is to investigate their motivations for crowdfunding and their satisfaction with the conductedcrowdfunding campaigns. In addition, the most common advantages and disadvantages of crowdfunding from the perspective of fundraisers are explored.

2. Benefits and costs of crowdfunding

Crowdfunding is a way of funding a project or venture by raising money from a large number of people who each contribute a relatively small amount, typically via the Internet [14]. The process itself includes two parties - a fundraiser (project initiator or project owner) and the individuals who give their money in order to finance a specific project, that is, backers or contributors - which come together through the web platform. Due to the different needs of fundraisers and heterogeneous preferences of their backers, crowdfunding developed into four distinct directions: donation-based crowdfunding ('crowd donating'), crowd sponsoring ('crowd supporting'), crowd lending, and crowd investing [1; 10].

In parallel with the development of this phenomenon, the corresponding terminology has also evolved, resulting in synonyms and often overlapping terms. The most comprehensive classification of the types of crowdfunding was provided by the European Commission [10], as presented below.

Donation-based crowdfunding refers to collecting donations (typically monetary, but not exclusively) from people for specific projects during a specified time period promoted through the Internet and social media.

Crowd sponsoring refers to crowdfunding campaigns in which contributors get something in exchange. Crowd sponsoring has two sub-types: rewards-based crowdfunding and pre-sales crowdfunding. Rewards-based crowdfunding means that its contributors get some symbolic compensation such as, for example, appearing as an extra in a film, having a meeting with the fund raiser, having one's name written on the wall of the future company created through crowdfunding, or any kind of memorabilia. Pre-sales crowdfunding refers to the presale of the product that is yet to be developed and produced after the crowdfunding campaign ends successfully.

Crowd lending refers to campaigners borrowing money from their backers and promising them to pay it back on specified terms with (or, in certain cases, without) interests. The campaigners maybe consumers that borrow small amounts of money from people to renovate their homes, to finance studies, etc.; or various businesses that borrow money to finance new operations.

Crowd investing refers to those campaigns that offer some form of financial return. Crowd investing includes profit-sharing crowdfunding and securities-based crowdfunding. Profit-sharing crowdfunding promises backers a part of the future profits made by the project that theyare financing. Securities-based crowdfunding includes issuing equity or debt to backers. Unlike after IPO, the shares issued in the process of securities-based crowdfunding are typically not traded on a secondary market.

Since the crowdfunding is booming, it is logical to expect the development of its new subtypes [3]. For example, there is the *Kicking it Forward* concept, which means that any project initiator who puts the KickingItForward.org URL on their Kickstarter project page agrees to put 5% of the finished product profits back into other Kickstarter projects of their choice[11].

From a fundraiser's perspective, the benefits of the existing crowdfunding models are the following[2; 15; 17]:

- Crowdfunding provides a way to raise funds from the community, and in some models it can be done without giving up equity or accumulating debt, which means that a fundraiser is able to keep the creative independence and control over the project.

- It is a marketing tool that enables the introduction of a venture's overall mission and vision to the market for free with a potential of reaching numerous people, mainly through social media.

- It offersmarket validation to the project, especially in the case of pre-sales crowdfunding, which is good to have when contacting other potential investors, such as venture capitalists and business angels.

- It facilitates receiving feedback, which can point to certain business aspects in need of improvement and also inspire new ideas.

- It introduces early adopters to the project, who share the purpose behind it and will probably become loyal customers and support the project in the long run because of the emotional connection that is established when a person is both a customer and an investor.

- Regarding the necessary paperwork, the application process for crowdfunding is much simpler in comparison with the process of applying for a loan or pursuing other capital investments.

- It offers free PR because successful campaigns draw attention from media outlets.

- There is no participation fee. Only in case of a transfer of money from the backers to the fundraiser, the platform charges a commission of around 5% of total funds raised.

The disadvantages of crowdfunding for the fundraiser are the following[3; 9]:

- Campaign promotion is extremely time consuming.

- There is a possibility of the theft of the business idea and the fast development of competition.

- An unsuccessful crowdfunding campaign can create a bad reputation for the project or the fundraiser because the information aboutthe failure is available to the whole Internet population.

Since the advantages are numerous and substantial compared to the disadvantages, crowdfunding is rapidlygrowing in the world. According to the last available aggregated data in the year 2014, 16.2 billion USD were collected through crowdfunding campaigns, while the estimated fundraising volume in 2015 was 34.4 billion USD [13].Most crowdfunding campaigns refer to investments in business and entrepreneurship (41.3%), and social

projects (18.9%), followed by the film industry (12.3%) and the music industry (4.5), while the science projects are the rarest [5; 6]. The trend of niche platforms is on the riseto better serve both fund raisers and backers in the niches such as gaming, design, real estate investment, education, music, sport, not-for-profits, as well as location-based projects and university projects[7].

3. Crowdfunding in Croatia

The creation of web pages in Croatian language that explain the concept and the way of usingcrowdfunding - including the information on available crowdfunding platforms and advice on developing a successful crowdfunding campaign - has contributed to increasing interest for this type of financing. Crowdfunding.hris the first Croatian blog devoted to novelties about the use of crowdfunding in Croatia and the world. The web page Crowdfundingacademy.eu is also available in Croatian language and aims at teaching Croatian entrepreneurs about crowdfunding through the Crowdfunding Academy and by offering help in the creation of crowdfunding campaigns.

Despite the existence of professional blogs and the growing interest of the Croatian public for crowdfunding, there is still a lot of room for improvement, especially in raising the awareness of small and medium-sized enterprises about the potentials of this type of financing [8]. Currently, there are several Croatian crowdfunding platforms, such as www.croinvest.eu, www.cinipravustvar.hr, andwww.croenergy.eu. However, Croatian fundraisers prefer to set up their campaigns on foreign crowdfunding platforms due to a larger number of potential investors [12].

Croatia has no specific laws to either forbid or further regulate certain types of crowdfunding, which actually creates a lot of confusion among the potential fundraisers and possibly discourages them from pursuing crowdfunding. The existing Croatian laws that regulate crowdfunding activities are the following[9]: the Law on Obligations,Law on Financing Local and Regional Self-Government Units, Income Tax Act, Profit Tax Act, Payment System Act, Commercial Companies Act and Capital Markets Act.

Croatian crowdfunding figures are still quite modest. Until 2016, Croatian crowdfunding campaigns collected 10 million HRK. More than half of that amount was collected in the year 2015, which represents a growth rate of 90% in comparison to the year 2014 [12]. In 2015, 63 crowdfunding campaigns were launched by Croatian fundraisers and 23of them achieved their financial goal[12]. This success rate probably discouraged Croatian fundraisers: in 2016, 49 campaigns were launched and only 12 of them managed to reach their financial target (Hafner, 2016). Most of the successful Croatian crowdfunding campaigns had social missions[4].

4. Methodology

The number of Croatian entrepreneurs who decide to use crowdfunding is still very small. Also, there is no complete database of the entrepreneurs that used it. In order to make a list of entrepreneurs who used crowdfunding, the following secondary sources were consulted: Croinvest.eu - the first Croatian crowdfunding platform, Brodoto - Croatian marketing agency with a social mission, Crowdfunding.hr - the first Croatian crowdfunding blog.

This database included the entrepreneurs who voluntarily entered their crowdfunding campaigns into the CROwdfunding register, created by the crowdfunding platform Croinvest.eu. Since the mentioned register does not have any data on the campaigns from 2015 and 2016, the database for this research was supplemented with those entrepreneurs who used crowdfunding and were mentioned in the articles published by the marketing agency Brodoto and the blog Crowdfunding.hr. The resulting database listed 40 entrepreneurs, 20 of whom had publicly available e-mail addresses. Personalized e-mail messages were sent to them, inquiring whether they were interested in completing a short questionnaire that would be used for research purposes. It was also stated that, during the analysis of the collected data, the identity of the participant and the name of the organization would be known only to the researchers. After a potential participant expressed an interest to complete the questionnaire, the link to the questionnaire was sent to the participant together with a thank you note.

Of the 20 e-mails sent, 12 entrepreneurs expressed a desire to complete the questionnaire, while the remaining entrepreneurs offered no feedback. Furthermore, out of the 12 entrepreneurs who were sent a link to fill out the survey, only 8 ultimately completed the questionnaire. The survey questionnaire was made using a Googledrive template and contained the questions presented in Appendix A.

5. Results

The most common reason the participants list as their motivation to use crowdfunding is the promotion of the product and gaining public support. Furthermore, the respondents state that, by using crowdfunding, they had direct

access to potential buyers, avoided the intermediaries, and very easily obtained financial resources for a product that had not yet been produced and released on the market. Most of the respondents state that they were unable to meet the requirements for obtaining loans from banks for product production, which represented an additional reason for pursuing crowdfunding. They say that there were no significant harmful consequences for them as fundraisers whenthe fundraising turned out to be unsuccessful. In addition, they emphasized that the use of crowdfunding required only a small initial financial investment. However, a lot of campaign promotion activity was required to successfully collect the planned funds.

Six participants claim they did not use other sources of funding for product development apart from crowdfunding, while two respondents say that they did. One of those two states that the crowdfunding campaign brought 70% of the required funds, while the remaining 30% of the funds came from other sources, without providing more details on the type of those sources. The other participant explicitly says that the other financial sources are considered a business secret.

When asked if they used any help in the design and implementation of their crowdfunding campaigns, five respondents answered that they had had help, while three respondents answered they had not. However, those who had help agreed that the help they had used to create the campaign was free.

Furthermore, the respondents were asked to list the advantages of using crowdfunding as a means of financing their products or services. All respondents state that the main advantage of crowdfunding is product promotion and creation of loyal customers prior to the actual product launch. Such a promotion also results in networking with the backers and other entrepreneurs, which can lead to new business opportunities. The respondents also state that the crowdfunding provided feedback about the product, that is, a form of market research, which reduced the risk of launching the project itself and suggested improvements for future product releases. Moreover, the fundraising process itself is very simple and does not require entrepreneur's personal funds.

In addition to pointing out the benefits, the respondents were asked to describe the shortcomings that occur in crowdfunding. The respondents believe that this way of financing products or services does not have many disadvantages. As a shortage, they list a great effort that is needed for launching, implementing and promoting a crowdfunding campaign, as well as a long time that is necessary to finish the project and fulfil all the promises made to the backers. They find that too few people in Croatia use Internet payment, which is a distinct disadvantage because crowdfunding is based on online payment. In addition, there is a risk of not raising sufficient funds during the campaign's limited time frame. As another shortage, they mention the cost of platform use, which can reach up to 10% of the total money raised on the most popular platforms. One respondent finds few disadvantages to crowdfunding, but thinks that entrepreneurs often have incorrect perceptions about it and do not realize how much time and work is needed before, during, and after the campaign.

The respondents used either donation-based crowdfunding or crowd sponsoring. Seven respondents set up their campaigns on the Indiegogo crowdfunding platform. As their reason for using that particular platform they listed its availability in Croatia, its better usability in comparison with other platforms, its transparency, and the fact that the entrepreneurs whose advice on campaign-launching they sought had prior experiences with the Indiegogo platform. Only one respondent stated that he used the Kickstarter platform because it seemed to be the most suitable platform for the industry that he operated in and the type of product he had. All the entrepreneurs raised money in the US dollars.

Regarding the successfulness of their campaigns, three entrepreneurs failed to collect the planned amount of money. The remaining five entrepreneurs successfully collected their funds and even greatly exceeded the planned financial target. Furthermore, one entrepreneur claims to have launched three crowdfunding campaigns and in all three successfully reached the targeted financial amount. The first campaign of his involved collecting the funds for product realization, while the remaining two campaigns were used to raise the funds for further development and improvement of the existing product.

When asked about the duration of the crowdfunding campaign, most respondents state that their campaigns lasted 30 or 40 days. The respondent who launched three campaigns states that the first campaign lasted 30 days, while the other two were shorter: the second campaign lasted 15 days, and the third campaign lasted 20 days.

Most respondents are satisfied with their campaigns and the money they collected. One respondent expected more from the crowdfunding campaign, while another respondent said he was not happy with the campaign.

The financial targets of the campaigns in the sample ranged from 2,000 to 60,000 USD. The ratio between obtained and targeted funds for the successful campaigns ranged from 1.5 to 5.2. The number of backers for the successful campaigns ranged from 125 to 2,500, whereas the highest payment per campaign ranged from 80 USD to 10,000 USD. The lowest payment for most campaigns was a payment of 1 USD.

Half of the respondents, four of them, had certainty before launching their campaigns that a specific amount of money would be paid due to a pre-agreement with the backers. The three respondents whose campaigns did not

reach the targeted amount did not have such pre-agreements with the backers. Regarding the investment of one's own funds, three respondents paid certain amounts of money to themselves through their crowdfunding campaigns to fund the products.

Regarding the promotion of their crowdfunding campaigns, all the respondents attracted investors through social media such as *Facebook*, *Twitter*, and *Instagram*. Also, most of the entrepreneurs, apart from one, attracted investors via e-mail. Four entrepreneurs also used notifications and comments on their selected crowdfunding platforms to attract investors. In addition to the aforementioned, some respondents attracted investors using mainstream media, via *Reddit*, and through personal contact with investors, as well as by giving live presentations of the projects.

Half of the respondents say that, when using the desired crowdfunding platform, they encountered some platform constraints, with only two respondents pointing to specific issues. One respondent states that the biggest limitation was the fact that when they wanted to withdraw the collected funds, only *PBZ Card* could process the withdrawal. The other respondent points to the restriction on the Kickstarter platform that saysthe citizens of Croatia cannot create projects. Thus they had to find a business partner from the United States to launch their crowdfunding campaign.

When asked whether they are satisfied with this mode of financing, most of the respondents answered that they were satisfied with crowdfunding and that they planned to develop and finance their future products through crowdfunding as well. One respondent said that he was generally satisfied, although he had not met his financial goal. However, he gained the necessary experience and knowledge to help him launch a new crowdfunding campaign. One entrepreneur stated he would no longer use crowdfunding for the development of his product.

6. Conclusion

After analyzing all the answers, it may be concluded that most respondents are satisfied with their crowdfunding campaigns, and have collected the planned amount of money. The main reasons why the respondents decided to use crowdfunding are the product promotion itself and the platform's ease of use in comparison with the long-standing process of obtaining cash funds through traditional financing methods. Most respondents used only crowdfunding to finance their projects, and the benefits of crowdfunding greatly outweighed the disadvantages the respondents mentioned.

When choosing a crowdfunding model to start a project, the respondents opted for either donation-based crowdfunding or crowd sponsoring. The most commonly used crowdfunding platform was Indiegogo, and the average duration of the campaigns on that crowdfunding platform was 30 and 40 days. The respondents attracted potential investors through social media and personalized e-mails. In conclusion, it can be said that most of the respondents are satisfied with crowdfunding, as they would choose it again in the future in order to develop new projects.

This paper presents the initial feedback from the fund raisers. Further research will broaden the analyzed sample and introduce new topics for analysis. The current sample istoo small to draw any general conclusions on the successfulness of different types of campaigns according to theused crowdfunding model, the sector in question, the type of product, the type of campaign promotion, and the attributes of the fundraiser. Also, further research should explore the impact of successful campaigns on later searches for investors and the successfulness of the businesses that resulted from crowdfunding campaigns.

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Appendix A. Questionnaire

1. Why did you decide to use crowdfunding as a way to finance your product/service?

2. Did you use other sources of funding besides crowdfunding as a way of financing your product? If so, which sources were used and to what extent?

3. Did you design a crowdfunding campaign yourself or did you have any help when designing a campaign?

4. If you hadhelp when designing a campaign or just one of its segments, was the help free or was it paid?

5. What do you thinkare the benefits of using crowdfunding to finance your products / services?

6. What do you thinkare the disadvantages of using crowdfunding to finance your products / services?

7. Which crowdfunding model did you use to raise funds and why did you decide to use that model (donation-based crowdfunding, crowd sponsoring, crowd lending, or crowd investing)?

8. Which crowdfunding platform did you use to collect the necessary funds to finance a product / service and why did you choose this platform?

9. What was your target amount of funds to collect and how long did the campaign run on the crowdfunding platform?

10. How much money did you collect and are you satisfied with the collected amount? Were your expectations different?

11. Did you know before the campaign started that a certain amount of money would certainlybe paid (for example, due to a pre-agreement with people to make payments)?

12. Did you pay your own money to yourself through the crowdfunding campaign to finance your product?

13. How many investors did your product attract?

14. What was the highest payment?

15. What was the lowest payment?

16. How did you attract investors (through social networks, e-mails, notifications, commentaries on the platform, or some other way)?

17. Did you encounter any limitations when using the selected crowdfunding platform and, if yes,what were they?

18. Do you think that your project was successfully implemented?Are you satisfied with choosing this type of financing or would you opt for a more traditional way of financing when launching a new product?

Requirements For Sports Data Manager And A Proposed Definition Of The Job Profile – Results Of A Global Study

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The research seeks to examine the professional profile of Sport Data Manager as well as the study content for this profession. For this purpose, the demand on sports data managers required by the market had been determined and compared with the educational content at international universities. The analysis of the results demonstrates a diverse understanding of the profession and also, a diverse usage of different educational strategies in the analyzed regions. Moreover, it has been found, that the skills required by the market are inadequately conveyed. This paper has tended to focus on certain differences for diverse regions along with the gap between the supply and demand of the study content.

Keywords: Sports data management, sports education, global sport market.

1   INTRODUCTION

Sport is becoming more professional. Statistics, medicine, sports science and information technology are used to gain a decisive competitive advantage in professional sports, especially in the areas of training control, tactical analysis and the determination of performance indicators. Additional, these methods are applied in the amateur sector, attracting more and more hobby athletes who use technical devices to achieve their fitness goals. Therefore, an impressive range of brands and products is offered in corresponding markets. Furthermore, it is not just trainers, clubs and sports enthusiasts who rely on the collected data. TV and print journalists use the data too. Furthermore, software and game developers adopt it to create new products.

This new field of expertise which requires broad knowledge causes the need in skilled workers with special competence. On one hand, specific and complex tactical content must be evaluated and interpreted with modern data analysis methods. On the other hand, specialists in this area must also bring a certain generality to be involved in various sports or to be able to work on products for different target groups.

2   OBJECTIVES AND RESEARCH QUESTIONS

Based on the problems described above, the research set out with the aim to investigate a professional profile of Sports Data Manager and to determine how courses for Sports Data Managers should be designed. This research project attempts to identify and indicate the status quo of the study program for Sports Data Managers and to broaden a generally accepted definition of the concept and the profession "Sports Data Manager". In order to achieve these objectives, the following research question has been addressed: *"What requirements of which stakeholders are addressed in the university programs for Sports Data Managers?"*

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To answer this research question, a gap analysis was executed and in a first step the structure of the labor market for Sports Data Management was obtained. This step was followed by an identification of suppliers and customers of Sports Data Management services and professional requirements to potential employees in relevant areas. In addition, it was determined which subjects are taught at the universities. Subsequently, the comparison of the requirements for Sports Data Managers and university programs for four regions (Germany, Austria and Switzerland; Europe without Germany, Austria and Switzerland; North America; Asia + Pacific) was drawn. The results are presented and discussed in this research report.

3   STUDY DESIGN

In order to follow the exploratory nature of the presented research question and to meet the research objectives, a gap analysis was used for interpreting and analyzing data. As per 17.5.2016, the curricula from 72 international courses were evaluated and compared with specific requirements of the job-profile from 83 international job advertisements. The vacancies were examined during the period between 10.04.2016 and 15.05.2016 on the international employment-related search engines, such as www.stepstone.de, www.monster.de and www.indeed.com. The regional distribution of vacancies and curricula can be seen in Figure 1.
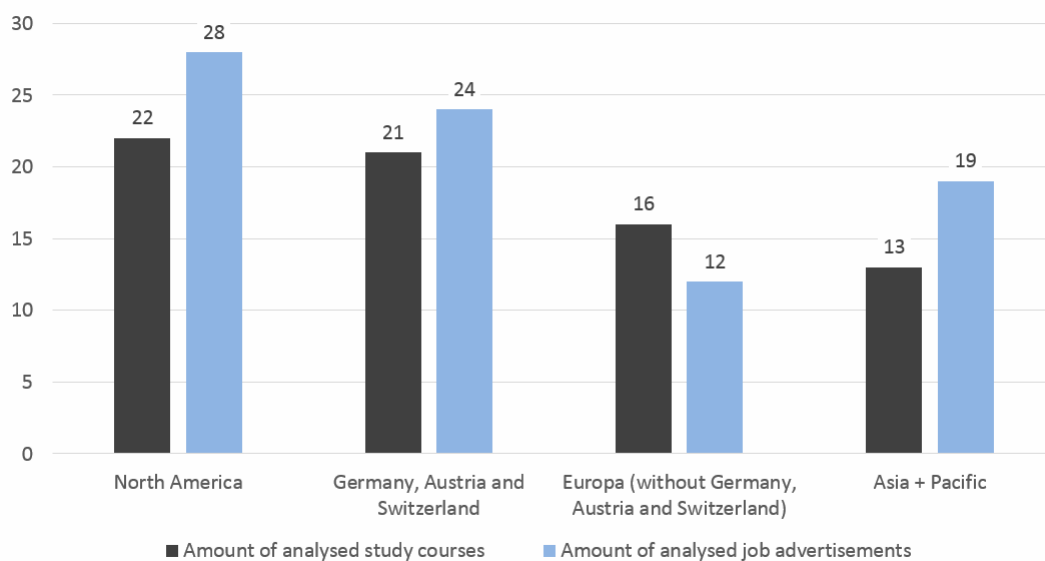

Figure 1. Regional distribution of study courses and job advertisements. (source: authors)

4   RESULTS

The analysis of the job advertisements showed a regionally differing understanding of the term "Sports Data Manager" and "Sports Data Service", and an absence of a generally accepted definition of the term "Sports Data Management". The evaluation of the study programs offered by universities and colleges shows that an image of the profession and offered courses differ widely in the analyzed countries. It was also determined that the demands on the professional image of the "Sports Data Manager" required by the market are not adequately disseminated with the university programs, and besides, strongly deviate from the requirements. In order to compare the requirements of the "Sports Data Manager" with the respective study offers, five properties were determined with the help of the affinity diagram technique:

- Information Technology, Statistics, Data Sciences
- Sports science, physiological knowledge
- Engineering, technical skills
- Medical knowledge, health
- Business skills, leadership skills.

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In the following subchapters, the results of the analysis are presented and interpreted. Based on the regional specificities regarding job requirements for Sports Data Managers and the respective study courses, the research outcomes are presented separately for four regions. Finally, a definition for the professional image "Sports Data Manager" is presented.

4.1 Germany, Austria and Switzerland

The evaluation of job advertisements for the Sports Data Manager in Germany, Austria and Switzerland indicate that the majority of the employers are looking for employees that assemble data with the help of IT or develop and supervise the software products in the sports environment. Therefore, corporations seek employees with skills in the areas of computer science, data analysis as well as sports science. As result, managerial or technical competence are the least in-demand skills (see Figure 2). Typical job descriptions for this field are "Big Data Analyst for Sports Data", "Data Scientist" or "Software Developer in the Area of Sports Data Analytics".

The programs are carried out, inter alia, in the fields of Sports Science, Sports Management, Sport Informatics and Sports Engineering. The courses are mostly taught at Universities, rarely at Universities of Applied Science, namely, Private Educational Institutions. It is curious that although engineering skills are not required on the market, they often become part of the educational program for Sports Data Manager. Furthermore, it can be stated that the need in methods of data analysis and statistics and mathematics basics is underestimated. Consequently, these subjects are underrepresented in the curricula.
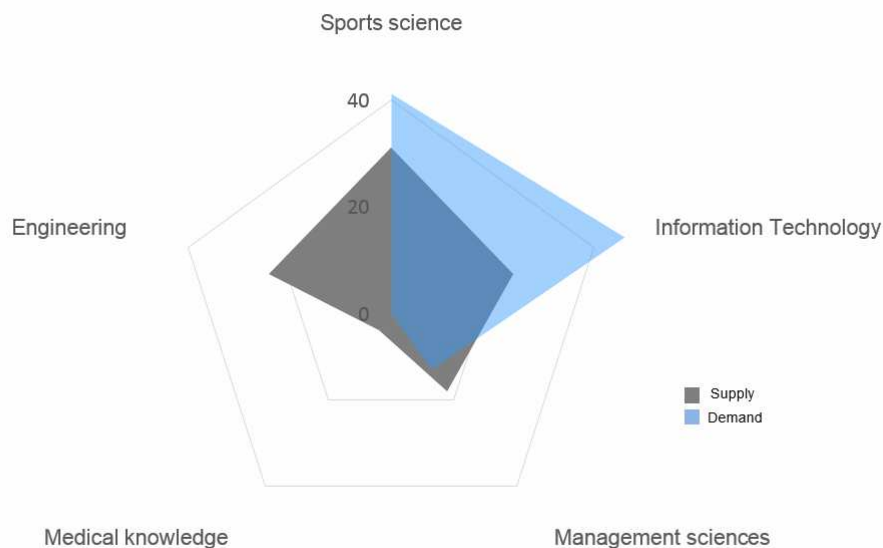

Figure 2. Comparison of the requirements for Sports Data Manager and their education in Germany, Austria and Switzerland. (source: authors)

4.2 Europe without Germany, Austria and Switzerland

For the rest of Europe, the results detect a contradictory picture regarding the requirement for the studies of Sports Data Managers. Data Scientist, Sports Data Editor or Sports Data Analyst are the main analogues for the "Sports Data Manager" position at the market. Therefore, as well as in the Germany, Austria and Switzerland regions, the IT knowledge of Sports Data Managers is of great importance. However, program content has a particular emphasis on the managerial skills instead of sport science education (see Figure 3).

The required by the job-market skills are not adequately represented in the course content. Accordingly, statistics and computer science are insufficiently covered in the course. Furthermore, the analysis of curricula showed that medical and sports science content is taught, although there is little demand for these skills. In particular, medical knowledge is mainly provided by doctors or medical specialists teams. The majority of the analyzed courses for sports data managers are offered in the UK. In other European countries, such as the Netherlands, France, Portugal and Sweden, only a few study programs are provided.
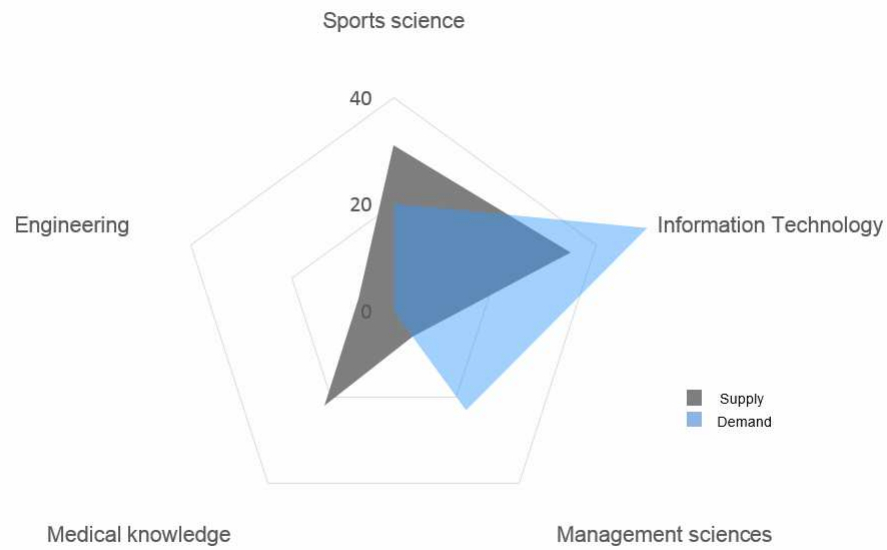
Figure 3. Comparison of the requirements for Sports Data Manager and their education in Europe (without Germany, Austria and Switzerland). (source: authors)

4.3 North America

The analysis of the North American labor market showed that the profession of Sports Data Manager is understood very generalized. On one hand, potential employees are requested to work in Operations Analytics field. On the other hand, data science managers at sports clubs, professional data providers or media companies are in high demand. Moreover, the need for development engineers for sports equipment in the various sports is exploding. As shown in Figure 4, the result is a generalized understanding of the profession of Sports Data Manager with emphasis on data analysis.

The analysis of the courses showed that the students are predominantly prepared for management tasks both in the bachelor's and master's programs, and management is the largest part of the curricula - although, there is no corresponding interest for these skills on the market. However, as it is the case in the other regions, the most important requirements are not taken into account. Sports Data Manager programs are possible at various universities at bachelor's and master's level and take place mainly in the east and south-east of the USA.
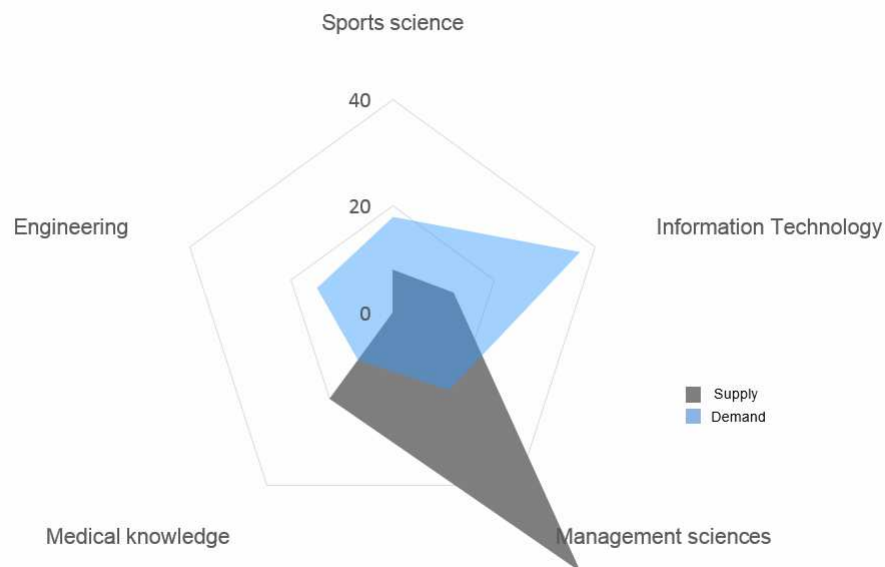

Figure 4. Comparison of the requirements for Sports Data Manager and their education in North America. (source: authors)

4.4   Asia + Pacific

A research of the job vacancies for Sports Data Managers in the Asia-Pacific region showed that the interest for this profession predominantly stems from the Asian market. Competitors and sports game manufacturers are looking for employees with a sales background for the expansion of the existing offers and the further development of products (performance analyst, trading manager). Sports clubs are looking for support in the analysis and analysis of Sports Data with the aim of increasing the performance of professional sportspeople (Data Analytics Designer, Sport Performance Analyst). For these two profiles, there is strong demand for the statistical / information technology skills of applicants, as well as the ability to take on managerial functions within the company. Medical or technical skills are in very little demand on this market.

Training for Sports Data Managers is only available in the Asian region (China, South Korea). However, the universities in Australia and New Zealand offer Bachelor and Master programs related to Sports Data Management. As well as in other regions, the analysis shows that the IT is underrepresented in the curricula. Instead, the subject concerning sports science and health care / medicine are extensively taught, although demand for these skills is clearly low on the market.
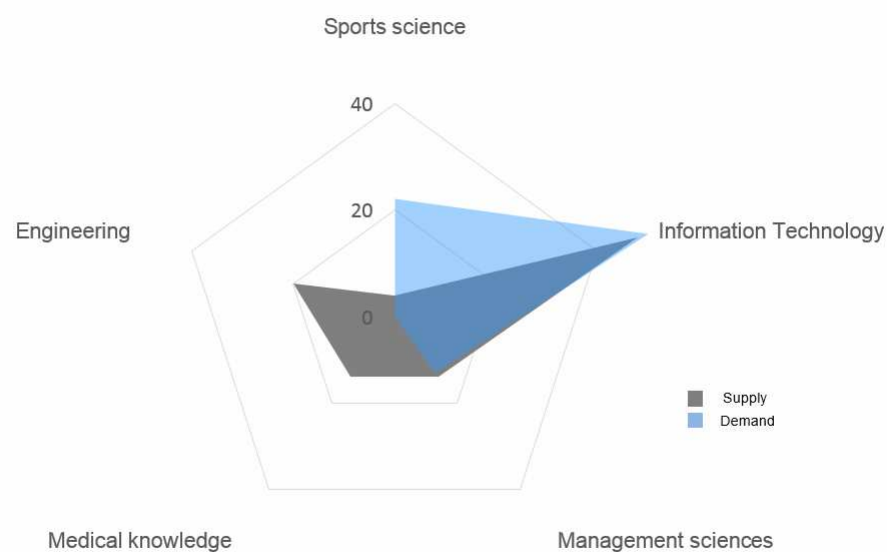

Figure 5. Comparison of the requirements for Sports Data Manager and their education in Asia + Pacific. (source: authors)

5   PROPOSED DEFINITION OF THE JOB PROFILE: SPORTS DATA MANAGER

While the profile requirements of Sports Data Manager only slightly differ in various regions, it can be seen that the term "Sports Data Manager" is interpreted distinctively in higher education.

Globally, an interest in graduates and employees that record, analyze and interpret data in the sport environment is exponentially growing. For these activities, skills from the areas of IT, statistics and data analysis are demanded the most on the market. The primary requirement suggests understanding of a particular kind of sport in which the data are collected and evaluated (secondary requirement). As a tertiary component, special knowledge in the fields of management, medicine or engineering can be considered.

Universities in all parts of the world offer a range of programs that only partly correspond to the professional image of Sports Data Managers required by the market. The study offers in various regions differ from one another and focus on tertiary components. Surprisingly, IT courses for the students are consistently neglected. This phenomenon is clearly visible in an overview of the job requirements for Sports Data Managers as well as its study programs (see Figure 6). In addition, the second major study component - Sports Science Education - is not considered accordingly. Consequently, main emphasis is placed on tertiary skills - management, medicine or engineering.
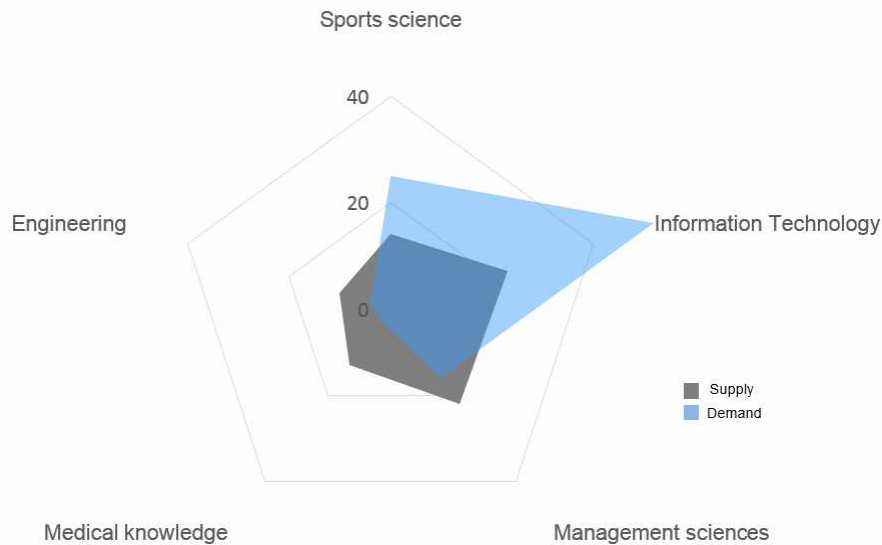
Figure 6. Comparison of the requirements for Sports Data Manager and their education global. (source: authors)

Finally, it can be said that there is a different understanding of the professional image of the sport data manager in the four analyzed regions. A cluster analysis of the respective requirements in the regions showed that the professional image of the sports data manager consists of a three-dimensional mix:

- Dimension - information technology, data analysis, statistics,

- Dimension - sports science, technical and / or tactical sports,

- Dimension - development in the fields of medicine, technology or management.

6   SUMMARY AND CONCLUSION

The studies presented analyze the labor market requirements for Sports Data Managers as well as the educational content of the study programs for this profession. The potential job market for Sports Data Manager was divided into four different regions (Europe (excluding Germany, Austria and Switzerland); Germany, Austria and Switzerland; North America; Asia + Pacific). Based on a gap analysis, the peculiarities of the respective markets were determined and the special requirements of the regions were compared with the educational content at the universities and universities of applied science.

It should be pointed out, that the analysis of the results shows limitations of this study. On one hand, the analyzed study programs are not exactly tailored to the young field of the profession of Sports Data Manager. Therefore, deviations are a priori to be expected. On the other hand, it was not possible to include all of the nationwide posted vacancies for Sports Data Managers in the evaluation, since they could not be identified in current worldwide application portals or were not published in them.

The results obtained from the analysis show discrepancy between the profession of the Sport Data Manager and the offered courses for this field. As a consequence, the suggested positions are to be occupied by candidates with interdisciplinary competence. Sports Data Managers who have worked so far in this environment usually have an IT or Sports Science education and have learned essential skills of the second and third dimension "on-the-job" or "near-the-job". Therefore, to meet the growing future demand for sports data managers, courses of study must be created on the basis of market requirements. This might be developed by means of an exchange or dialogue between universities, enterprises and associations in order to elaborate the regional specificities and to adapt them to the higher education curricula. Based on the study presented here, a follow-up project was initiated at the University of Applied Science for Engineering and Economics, HTW Berlin. It examines special features and the status quo of the education for Sports Data Manager in different kinds of sport in Germany.

An Evaluation of the Reliability of GPS-Based Transportation Data

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Abstract

GPS-based data are becoming a cornerstone for real-time transportation applications. Tracking data of vehicles from GPS receivers are however susceptible to measurement errors. The assessment of the reliability of data from GPS receiver is a neglected issue, especially in a real road network setting and in the phase after data transfer but before information identification. An evaluation method is outlined and carried out by conducting a randomized experiment. We assess the reliability of GPS-based transportation data on geographical position, speed, and elevation from three varied receivers GlobalSat BT-338X, Magellan SporTrak Pro and smart phone for three transportation modes: bicycle, car, and bus. The positional error ranging from 0 ± 158 meters, and 74% to 100% with an error within 5 meters depending on the transportation mode and route, there is also a non-negligible risk for aberrant positioning. Speed is slightly underestimated or overestimated with errors around ± 5km/h except for SporTrak Pro which had an error of -10 km/h. Elevation measurements are unreliable with errors bigger than ± 100 meters.

Keywords: Transportation, GPS tracking, Reliability, Road network

1. INTRODUCTION

Global Positioning System (GPS) has emerged for civilian use in the 1990s as the space geodetic technique became accurate and affordable (Zumberge et al., 1995). GPS tracking technologies have extensively been applied in transportation studies, in particular for studying the routes of motorized vehicles (Zito et al., 1995; Quiroga and Bullock, 1998; Murakami and Wagner, 1999). Schönfelder and Antille (2002) presented an approach to collect GPS longitudinal travel behaviour data on humans and described the complexity of their daily life with the interaction between periodicity and variability. Stopher et al. (2007) demonstrated that GPS can be used successfully to supplement travel diary surveys. Kamboj and Dahiya (2011) found standard handheld GPS receiver may be used to measure sag in overhead conductor of power transmission lines along with error estimation technique LSPE. Lindsey et al. (2013) confirmed the feasibility of using GPS for route tracking to identify the specific locations where cyclists ride on a street. In environment control, for instance, Carling et al. (2013) and Jia et al. (2013) studied the induced pollutant emissions of CO2 from car movements by using a GPS tracking data of car movements.

Shen and Stopher (2014) conducted a review of GPS-based travel studies going back to late 1990s, which range from application of GPS travel surveys to methods of processing GPS data. In their review they listed representative studies using dedicated GPS receivers from 14 different countries, as well as four studies regarding smartphones. They stated that data collection based on GPS surveys is more reliable, and cheaper, than self-reported diaries, though GPS data still has some issues that require data processing methods to enhance the reliability of the data.

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Gathering information of spatial-temporal mobility by GPS is subject to critical reflections. Leduc (2008) examined recent developments in road transportation data collection and discussed the potentials in providing real-time information for routing and estimating traffic flow and volume. The author also pointed out the bottlenecks of the uncertainty in the GPS technologies still leads to the question: "How good the quality of the traffic data is?". Moreover, Van der Spek et al. (2009) concluded that GPS offers a widely useable instrument to collect invaluable spatial-temporal data on different scales and in different settings adding new layers of knowledge to urban studies, but the use of GPS-technology and deployment of GPS-receivers still offers significant challenges for future research. Besides, the enormous use of GPS tracking technologies hinges critically on the functioning of the receiver.

Nowadays, the internal system of a portable, inexpensive GPS tracking receiver is designed in a complex way due to the desire for accuracy. The U.S. National Coordination Office stated in the performance standard that "well designed GPS receivers have been achieving horizontal accuracy of 3 meters or better and vertical accuracy of 5 meters or better 95% of the time". Configuration of a GPS receiver when conducting field tracking is becoming more complicated. However, the receiver can function as an effective and reliable tool for data collection only if it does not affect the nature, quality or authenticity of the data collected (Shoval, 2008; Huang, 2013). Studies on gathering information of trips, travel modes and trip purpose have shown that accuracy varies depending on the methods, attributes and ground truth (c.f. Table2 and Table 3 in Shen and Stopher 2014). The methods reviewed in the tables either performed poorly due to the ambiguity of similar modes or were highly dependent on the "ground truth data" (Zheng et al. 2008; Chang et al. 2015). Moreover, the methods are primarily designed for information identification directly from the data rather than for data evaluation. No doubt that the application of GPS survey has opened a new era for travel data collection, the information identified from the data can be broadly applied. However, it is difficult to choose a so called "well designed" GPS receiver given that all manufactures are advertising their products to be the best. It is therefore questionable whether a GPS receiver for normal civil use can meet the standard of the U.S. National Coordination Office. The reliability of these GPS data needs to be examined before further processing for the new areas of applications.

In this study we intend to complement the existing literature by contributing to a specific issue that has little been studied, being examining the reliability of GPS data collected in a real road network setting. Especially in the validation phase after data has been transferred into computer, but before information extraction such as trip identification, mode detection, purpose imputation. This means that we will focus on questions like: What is the dynamic data reliability with varying transportation modes, road network, environmental conditions and collection settings? How well do the concurrent GPS receivers perform in tracking vehicle mobility? To what extent can the accuracy provided by the manufactures be trusted?

Following this, the assessment of the reliability of GPS tracking data needs to be scrutinized. This paper outlines a method to examine how well GPS tracking data matches the travel information of position and speed. Specially, we applied the method in a real field experiment. In the experiment, we vary the transportation mode, speed, elevation, sampling frequency, filtering level as well as the receivers. A bicycle, a car, and a bus travelling on pre-set routes with pre-set speeds are tracked by GPS receiver GlobalSat BT-338X with different collection settings. Two other receivers being Magellan SporTrak Pro and smart phones (Samsung Galaxy S5 Mini) are used to track the bicycle under same settings for comparison of performances as well as avoiding the results being receiver specific. The acquired experimental data are freely available[2] for the interest of replicability.

Section 2 provides a review of researches related to examining the reliability of GPS tracking. Section 3 presents the experimental design and the data collection process. Section 4 gives the experimental results. Section 5 ends the paper with a concluding discussion of the findings.

2. LITERATURE REVIEW

A thorough search for literatures relevant to the use of GPS-based transportation data was conducted in a former related work (Zhao et al., 2014). There is a vast body of studies reporting on applications of GPS with a brief

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[2] http://users.du.se/~xzh/

discussion about the reliability of the data. The discussions contained in these studies do not add any new knowledge to the data reliability and we therefore turn to studies with reliability as the primary concern.

Obviously the quality of the hardware and the surroundings where the GPS is being used may affect the reliability of the receiver. The starting point is that a GPS receiver requires a clear sight with at least four satellites to determine spatial positions. In urban environments, buildings may partly block satellite signals, forcing the GPS receiver to work with a poor geometric constellation of satellites, thereby reducing the accuracy of the positional estimates. Multipath propagation of the radio signal due to reflection in the surroundings may further lead to decreased positional accuracy without notification by the GPS receiver, thereby reducing the integrity of the navigation solution. The accuracy may be enhanced by advanced hardware chipsets, dual-frequency receivers, carrier-phase measurements supported by augmentation systems (e.g. SBASs, WAAS, EGNOS and MSAS), even combination of the global navigation satellite system (GPS, GLONASS, BeiDou and Galileo, Li et al, 2015). It is possible to have a real-time positional accuracy within decimetres under required conditions; however, those kinds of receivers are too expensive for normal use like in car tracking systems. Moreover, the required conditions do not only call for sophisticated GPS receivers, sensors, vehicles, and map information, but also put requirements on trajectory dynamics and surrounding environment (Skog and Handel, 2009, Li et al. 2015).

Dead Reckoning (DR) system and map matching algorithms integrated with differential GPS (DGPS) are examples of commonly used hybrid systems for enhancing the positioning of vehicles on land (Zhao et al., 2014). The DR system can smooth the error of the GPS and provide continuous positioning even in times when the GPS is unavailable (Meng, et al., 2004). Map-matching has been predominantly applied in post-processing GPS data (e.g., Marchal et al., 2005; Schüssler and Axhausen, 2009a, 2009b). In essence, map matching is to use a digital map of the road network to impose constraints on the GPS navigation and tracking recordings (Skog and Handel, 2009). It has become a popular solution to remedy the inherent error of the GPS when an underlying network is available. Quddus et al. (2007) reviewed the currently existing map-matching algorithms and their limitations. Stopher et al. (2013) proposed adding map editing to manually fix certain data errors besides fixing the cold/warm start issue (Chen et al. 2010).

Stopher and Speisser (2011) conducted tests for five transportation modes under various circumstances and found that the tested GPS devices are accurate enough to be useful as a substitute for self-report surveys. However, they only checked one type of GPS device (BTT08) and neglected the examination of speed. The reviewed studies in Zhao et al., 2014 most relevant to our study are those attempting to assess the reliability of GPS data by comparing them to known conditions. These studies aim to evaluate the reliability of GPS receiver, but are typically not conducted as experiments. They examine one transportation mode, one environment, one aspect of tracked information, or one configuration of the receiver, the importance of road network is neglected as well. Those studies are also examining the static accuracy using small samples without controlling for external conditions. Studies that examined the reliability of GPS receivers on sport events, animal activities are not reviewed in detail considering there is no road network restriction and the standard for reliability is different from transportation research. A notable exception is the recent work of Schipperijn et al. (2014). They tested the dynamic accuracy of Qstarz Q1000XT portable GPS receiver for the use in public health applications under varying real-world environmental conditions, for four modes of transportation at three levels of sampling frequency. They found that not even a half of the positional recordings were within 2.5 meters of the actual positions with the proportions varying by travel mode and area. Montini et al. (2015) compared the travel diaries generated from smartphones and dedicated GPS devices but with a focus on the performances of sampling frequency, route and activities detection. As claimed by Schipperijn et al. (2014), mobile objects in free-living studies are likely to move dynamically. It is therefore vital to know the dynamic accuracy for various travel modes in changing surroundings. However, Schipperijn et al. (2014) only studied the influence on positional accuracy by changing the sampling frequency of the GPS receiver but neglecting other factors possibly affecting the accuracy.

To conclude, despite the increasing popularity of GPS in active living research, missing data and errors are still the main challenges for GPS studies (Shen and Stopher, 2014). The reliability of current GPS receivers employing different configurations and how they are affected by a variety of conditions for tracking various types of vehicles on real road networks is limited.

3. EXPERIMENTAL DESIGN AND DATA COLLECTION

Vehicles are restricted by an underlying road network when travelling, various transportation modes are therefore necessary in representing common users travelling on different levels of a road network (c.f. Schipperijn et al. 2014). To examine how well GPS tracking data of vehicles matches an actual route travelled, we therefore consider bicycle, car, and bus being the dominating modes in private transportations; the mode of pedestrian is omitted because bicycles travel on the same level of a road network. In the experiment, the vehicles travel on pre-set routes of known geographical position and elevation with speeds decided in advance. Their mobility is being tracked simultaneously by the GPS receivers when they are travelling.

For the experiments, a standard and integrated GPS receiver that could be broadly used in different vehicles under various circumstances is preferable. Other important features in selecting the receiver are that the receiver is user friendly, easy to operate and has a durable battery. GlobalSat BT-338X, Magellan SporTrak Pro and smart phone (Samsung Galaxy S5 Mini) were chosen after a survey in the product market. According to the manufacturer, with WAAS enabled, the GlobalSat BT-338X should provide a geographical positioning within an error of 5 meters and a measurement error of speed less than 0.4 km/h while the Magellan SporTrak Pro should have positioning error within 3 meters and a measurement error of speed less than 0.2 km/h. There is no specific claim of GPS accuracy for the smart phone, we take 10 meters for positioning error and 0.5 km/h for speed tracking error (Djuknic and Richton, 2001; Herrera et al., 2010). The manufacturers make no claims about the acuracy in the measurement of elevation for all three types pf receivers.

We set intensive sampling intervals of every 1 second, 5 seconds and 30 seconds. Note that the 30 seconds implies that some of the vehicles will easily travel more than 500 meters between recordings. Such setting implies a coarse assessment of the vehicle's mobility pattern. Hence, the levels of sampling frequency represent both dense and sparse data to track position, time, date, speed, and elevation. For BT338-X we also consider both enable and disable data logging when distance is less than the selected radius 20 meters, while the SporTrak Pro and the phone do not equip with this setting.

We are in possession of 15 BT338-X, 6 SporTrak Pro and 6 Samsung Galaxy S5 Mini; each of them is assigned with a unique identifying number. The experiment is combined with two phases. The first-phase mainly focuses on the influence of the change of transportation modes and travel environment on the data reliability. The second phase focuses on the influence of different types of receivers on the data reliability, which is described in Section 4 below. Table 1 summarizes the main factors and corresponding levels of first phase in the experimental design. In the data transferring phase, the recordings for bicycle, car and bus were transferred separately, and a filed was added to fill in the information of error. The BT338-Xs are randomly assigned to one of three groups of equal size and the sampling interval is set to 1, 5, and 30 seconds respectively to track bicycle, car and bus in the first phase. In each group two randomly selected receivers have the data logging disabled if distance is less than the radius of 20 meters. The data collection of the bicycle and the car is undertaken in Borlänge in Sweden. The data collection of the bus is undertaken along the bus line 151 between Borlänge and its neighbouring city Falun.

Table 1: Experimental design (*first phase*) of collecting GPS tracking data

Phase-I (BT338-X)														
Sampling Interval	1s					5s					30s				
Receiver No.	3	29	37	36	42	4	14	39	40	77	9	32	74	24	72
Distance Restriction	Distance radius 0m			Distance radius20m		Distance radius 0m			Distance radius20m		Distance radius 0m			Distance radius20m	
Bicycle & Car 15km/h															
20km/h															
30km/h															
40km/h															
45km/h															
50km/h															
Car 60km/h															
70km/h															
Bus 80-100km/h															

It was difficult to fix the speed of the bus in advance as would be preferable. The speed varied along the scheduled route due to the traffic and the behaviour of the drivers. For this reason, only a segment of the route, where the speed varied smoothly between 80 km/h and 100 km/h was used for GPS tracking. Meanwhile the bus trip was filmed. The bicycle followed a strict setting of speeds ranging from 15-50 km/h in six levels. For the car, 15-70 km/h were considered. Travel diaries were used to note unexpected changes in route, speed, and emergent situation. The cyclist and the driver of the car was the same throughout the experiment.

Data for the bicycle was collected at noon in order to reduce the risk of deviation from the protocol caused by other people on the route. Likewise, data collection for the car was undertaken between 3 and 4 in the afternoon to avoid peaks in the traffic. The data collection for the bus was conducted after 6 in the afternoon thereby minimizing the variation in speed due to people waiting at bus stops.

An accurate speedometer of the vehicles is essential for the experiment. We calibrated the car speedometer by riding the bicycle and driving the car side by side and recording the speeds simultaneously. The relationship between the recordings from the bicycle speedometer and the car speedometer by means of linear regression: *Car = 1.0385*Bike* with a strong correlation of 0.998. The speedometer of the car was adjusted accordingly in the experiment.

The routes for the experiment were chosen having the need for maintaining a constant speed. As for the car, we also needed to consider the speed limits of the roads while a bicycle may be ridden at any speed on a bicycle path.
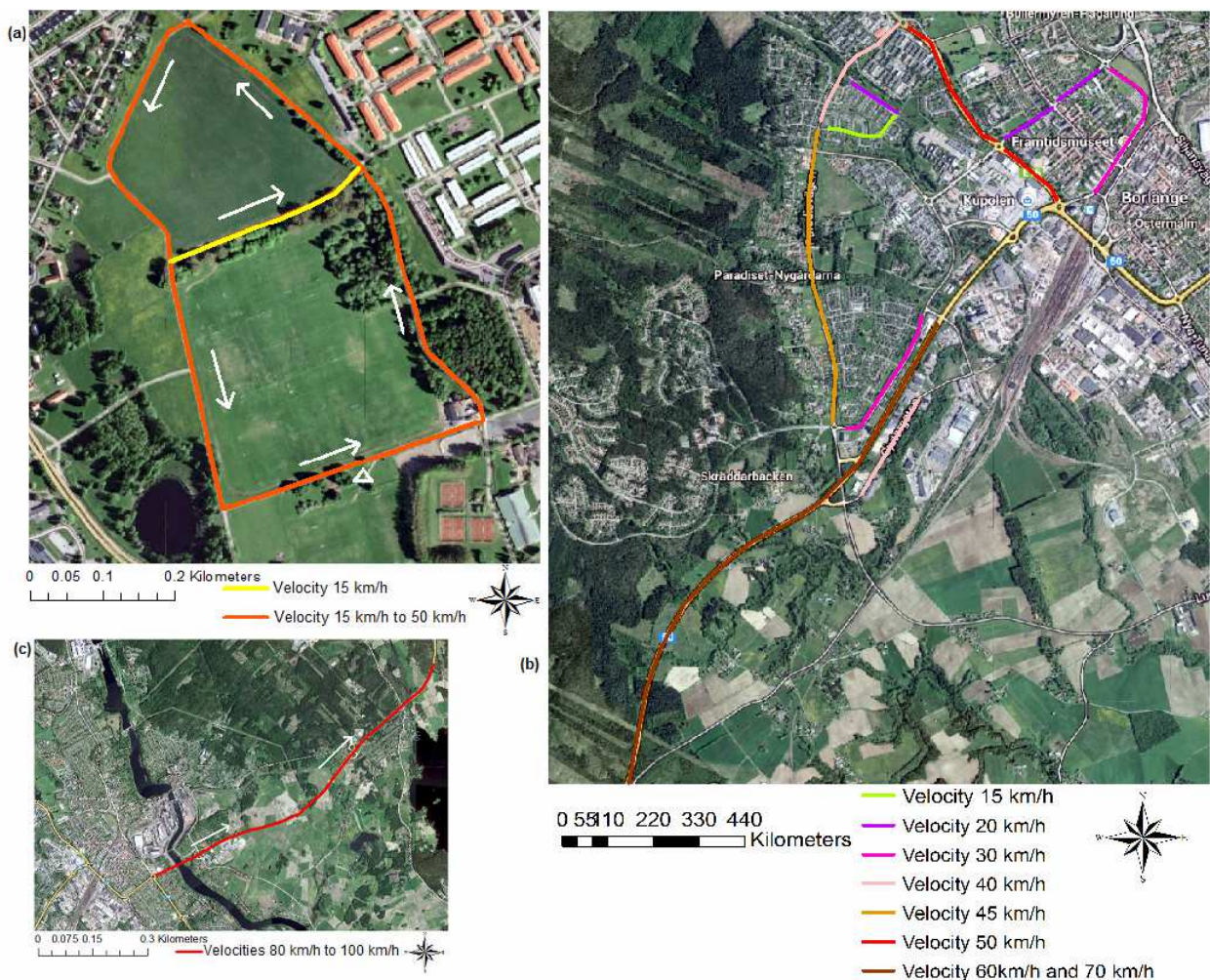

Figure 1: (a) The bicycle route; (b) The car route; (c) The bus route

Figure 1(a) depicts the route for the bicycle with arrows indicating the riding direction. The route is about 2 kilometres and it is a paved bicycle path. The route was used consecutively for each speed at a time. For instance, at

the speed of 20 km/h there could be 360, 72, and 12 recordings per GPS receiver for the three levels of sampling frequency. The variation in elevation of the route is only a few meters.

Figure 1(b) depicts the route for the car. The route is segmented by colour representing the attained speed. The route was travelled 3 to 4 times on both directions to ensure sufficient recordings per cell. The range in elevation is 40 meters, maintaining a constant speed with a car in an ordinary traffic situation is of course difficult. The roundabouts and intersections in Figure 1(b) are identified in advance to highlight it is usually impossible to maintain the speed due to traffic rule and real conditions. The recordings pertaining to segments where the intended speed was not met according to the travel diary were removed. Figure 1(c) depicts the bus route. This route has a variation in elevation with a range of 37 meters.

The original GPS tracking data were kept into DataLogger files. The data were retrieved to a computer by using the software Global Sat Data Logger PC Utility directly after the experiment was completed. The receiver number 4 malfunctioned and did not record any data. The other 14 receivers worked well and we obtained in total 25,901 recordings of the car, 9,224 recordings of the bicycle, and 8,688 recordings of the bus.

4. EXPERIMENTAL RESULTS

4.1. *Geographical positioning*

The position and the trajectory of a car are restricted by the road network (Skog and Handel, 2009). The geographical positions of the mobile object are necessary to identify the objects' trajectory. In the experiment the trajectory of the vehicles is known by the road network and its digital representation. The concordance of the recordings and the road network is measured to be a statistic to assess the reliability of the geographical positioning obtained from the GPS receiver. Ideally the positional recordings should be on the underlying road network[3] given that the width of the driving road is 14-20 meters and 3.5 meters for the bicycle road.
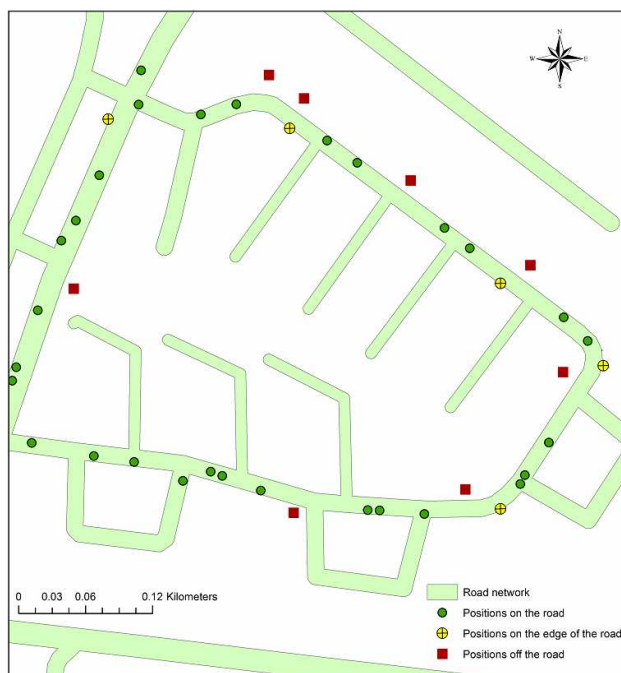

Figure 2: Example of positional recordings and the road network

Figure 2 shows an example of how the positions actually recorded on the car route. The green circles indicate the recordings that match the road network. The yellow circles indicate recordings on the edge of the road network are regarded as matching the road network well enough. The red squares indicate inaccurate recordings off the road

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[3] The road network is provided by the National Road Data Base (NVDB) and is operated by the Swedish Transport Agency. The positional error of the road segments used in this study is within 0.2 meter.

network. In this example, 8 of the 42 recordings failed in giving an accurate position of the car, which we suspect how well the positional recordings match the road network. Figure 3 illustrates the empirical cumulative distribution of the positional error.

Given the width of the roads, almost all the recordings are expected to match the road network. However, people do not usually drive or ride right in the middle of the road, especially on two-lane roads. What's more, given the real travel circumstances with trees, buildings and other interference for GPS signals, the positional recording are not precisely on the roads. Figure 3 shows that more than 95% of positional recordings for the bus are accurate to be 0-meter error and the biggest error is 28.2 meters. The positioning of the car was accurate that around 80% to be 0-meter error while the biggest error is 158.4 meters. As for the bicycle, the biggest error is 54.8 meters; the recordings from 5-second and 5-second with 20-meter restriction frequently fail to identify its travel positions on the network while for the other settings, 90% are within 5-meter positional error whereas only 30% are with the 0-meter error.
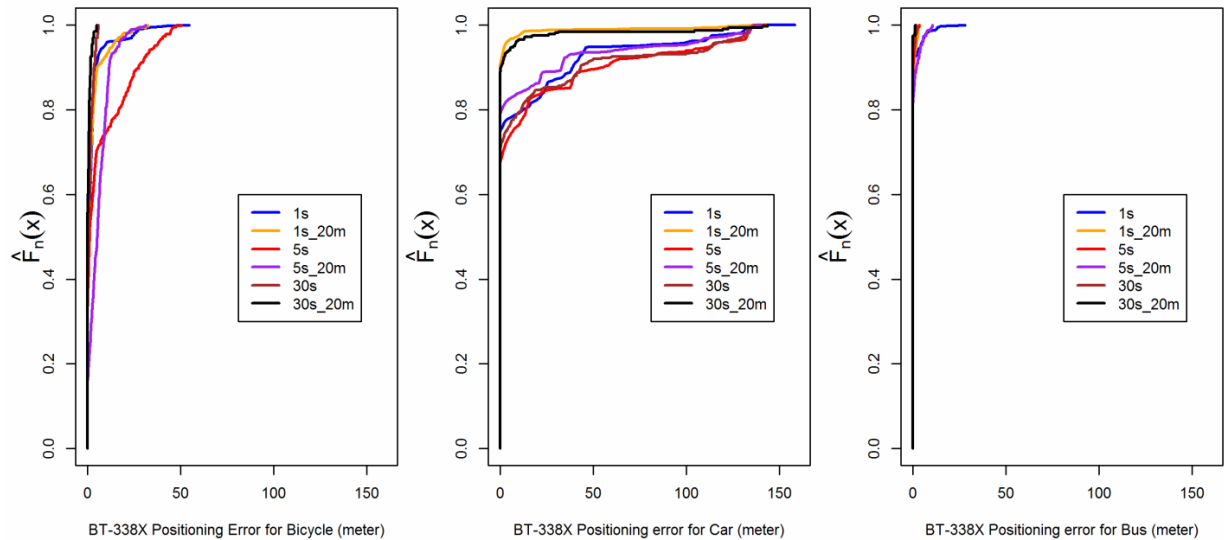

Figure 3: Empirical cumulative distribution of the positioning errors of BT-338X for bicycle, car and bus

As an overall finding drawing on Figure 3, there is no clear pattern emerging from the factors considered in the experiment. Possibly the longest sampling interval tends to lead to better positioning; the setting of the distance of restriction does not have obvious influence in positioning; the receivers generally give higher accuracy in positioning for the bus and the car but tends to have large variation on bicycle. However, we have noted a serial correlation of the recordings implying that an inaccurate recording is likely to be followed by another if the time interval is short. Especially, numerous inaccurate recordings from the first phase experiment are found in the three areas marked with the white circle and the two triangles depicted in Figure 4.

The circled area is nearby power lines located to the north and 200 meters to the east. The areas indicated by triangles have trees with a height of 8-10 meters. We speculated that the positional recordings of the bicycle were interfered by the surrounding environment. We also suspected that the single choice of one specific receiver is partial for the experiment; therefore in the secondary phase of the experiment, we randomly chose 6 BT338-X and added the 6 SporTrak Pro and 6 Samsung Galaxy S5 mini. The speeds 15km/h and 30 km/h and frequency 5s and 30s are chosen for the experiment on the bicycle route and the car route. Table 2 illustrates the factors and corresponding levels the second phase in the experimental design. Figure 4 depicts the two routes travelled by the bicycle; the red route coincides with the route used in the original experiment while the yellow route is a part of the car's route.

Figure 4: Bicycle and car routes in the secondary experiment

Table 2: Experimental design (*second phase*) of collecting GPS tracking data

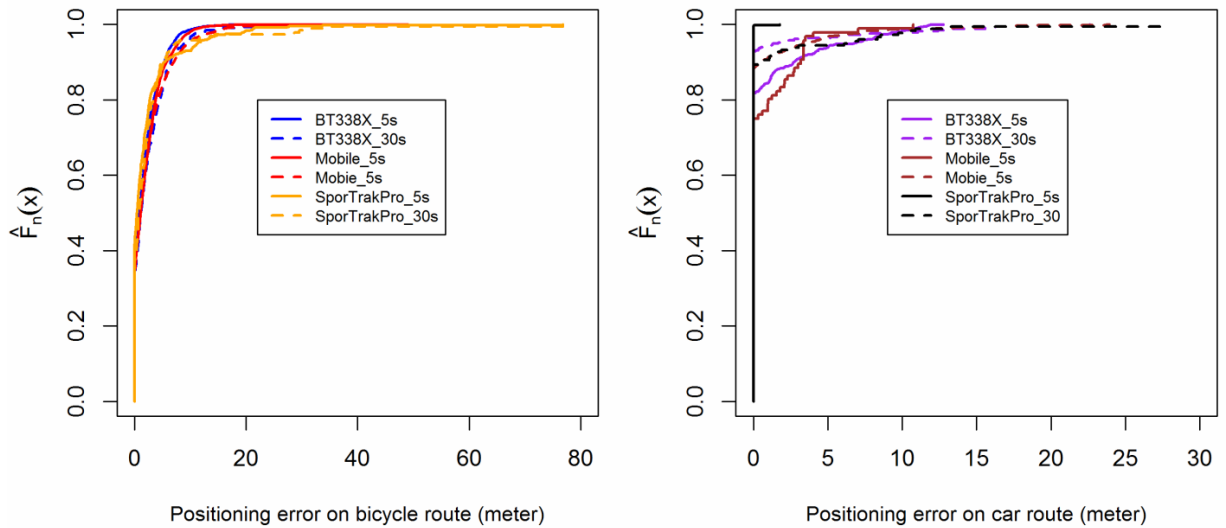| Phase-II			
Sampling Interval		5s	30s
Receiver No.	BT338-X	1-6	1-6
	SporTrak Pro	7-12	7-12
	Samsung Galaxy S5 mini	13-18	13-18
Bicycle & Car Speed	15km/h		
	30km/h		

Figure 5: Empirical cumulative distribution of the positioning errors for the three types of receivers on bicycle and car route

Figure 5 gives the empirical cumulative distribution of the positional error for the three types of receivers on the bicycle and the car routes. Although the proportion of accurate recordings on the original bicycle route is higher and

330

with smaller variation, it is still rather low comparing to the car route which is substantially accurate. The biggest error on car route is 27 meters while it is 78 meters on the bicycle route. The errors (≤5 meters) of three types of receivers differ but not big than 5% under the same route with same speed and settings. Most inaccurate recordings are identified that happened again at the three areas that are previously identified as problematic. This illustrates that the GPS receiver may generate (infrequent) errors due to the interferences with the surroundings such as trees and built-ups in a non-obvious way (Modsching et al., 2006).

4.2. *Estimating the speed*

It goes without saying that it is more difficult to estimate a changing speed than a constant speed. Drivers (and cyclists) need to adjust their speed in line with the traffic but also at intersections, roundabouts, tortuous locations (Jia et al., 2012) and traffic lights. This is also true in conducting an experiment of this kind. We used the travel diary of the car and the bicycle to delete recordings where the intended constant speeds were not possible to maintain. As for the bus, the films were used for deleting recordings where the speeds were not constant.
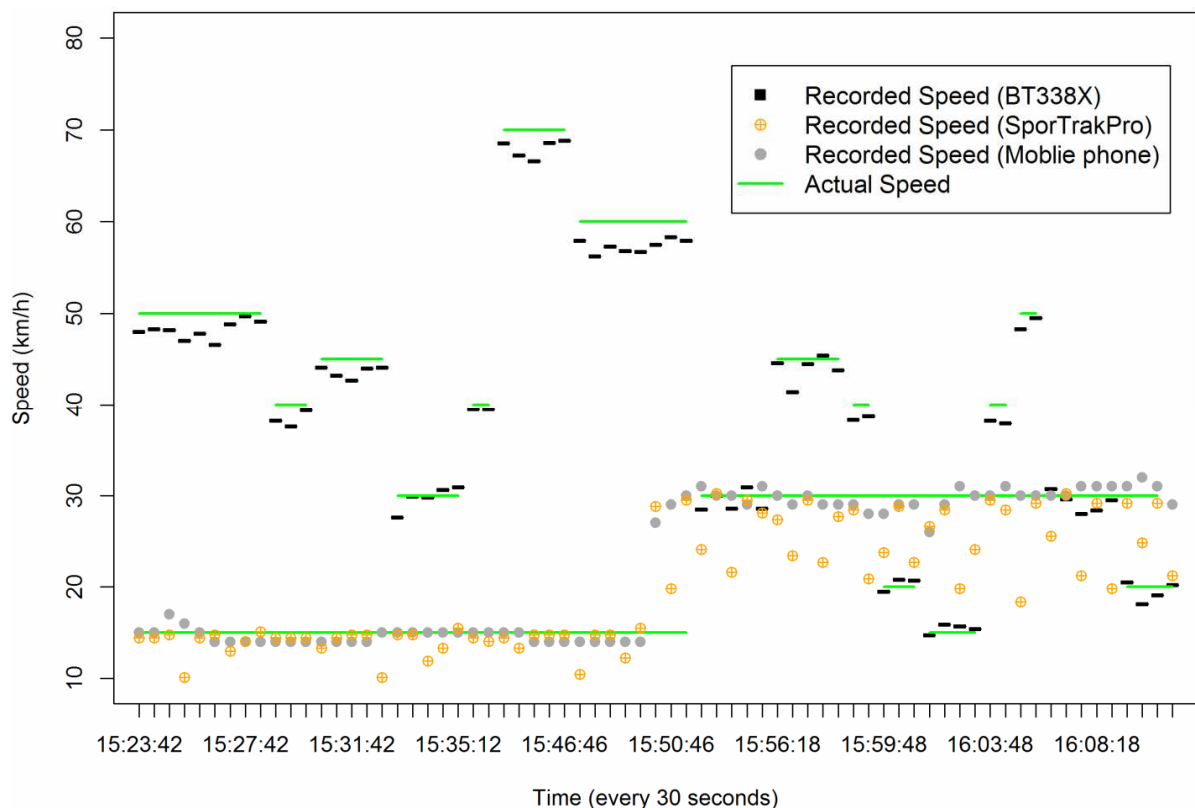

Figure 6: Recorded speed versus actual speed as measured by three types of GPS receivers

Figure 6 illustrates how the recorded speed of the car varies around the pre-set constant speed of a sample from tracking interval 30 seconds of all data of phase-I and phase-II. There is a tendency that the recorded speed is lower in general than the actual speed for all three types of receivers. For BT-338X, the errors are within 5km/h while the manufacturer claimed that the error is within 0.4 km/h. As for the smart phone, the errors are smaller to be within 3km/h; SporTrak Pro had the worst performance with the error to be -10km/h under the test speed 30km/h while the manufacturer claimed that the error is within 0.2 km/h. The speed recordings from SporTrak Pro also exhibited the biggest variation comparing to the other two types of receiver. The analysis of variance (ANOVA) was conducted to formally test for the factors that affect the performances of speed recordings. The response variable is the error between the recorded and the set speed in the experiment. The error increased with the speed. Table 3 shows the specific results. There was no significant difference for whether the distance restriction was on or off. The sampling frequency interval was related to the error but less significant. It's found that longer sampling interval was associated with a (marginal) increase in the error. The type of the travel route corresponding to the vehicle type significantly influences the accuracy of the speed recordings. There is significant different performance among the

types of receivers. It was strongly significant suggesting that if the positional recording was inaccurate, there will be a greater underestimation of the speed.

Table 3: Analysis of variance table (a) Results from recordings of experiment phase-I; (b) Results from recordings of experiment phase-II

Analysis of Variance Table (a)					
Response: Error					
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Set_Speed	1	719.1	719.1	465.5412	< 2e-16 ***
Distance_Radius	1	2.4	2.4	1.5403	0.21459
Time_Frequency	2	7.1	3.6	2.3098	0.09932 .
On_Off_Road	1	119.7	119.7	77.5258	< 2e-16 ***
Vehicle_Type	2	6533.1	3266.5	2114.8093	< 2e-16 ***
Residuals	14346	22158.8	1.5		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					

Analysis of Variance Table (b)					
Response: Error					
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Set_Speed	1	714.3	714.35	225.8096	< 2.2e-16 ***
Receiver_Type	2	321.0	160.49	50.7323	< 2.2e-16 ***
Time_Frequency	1	16.3	16.26	5.1403	0.02341 *
On_Off_Road	1	157.9	157.88	49.9061	1.783e-12 ***
Route_Type	1	61.3	61.32	19.3838	1.086e-05 ***
Residuals	6421	20312.7	3.16		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					

4.3. *Elevation*

Elevation is useful in providing information when two dimensional positioning is not sufficient to identify overlap points on roads with different heights. Moreover, elevation is also influential in travelling cost considering the time and energy use, it is necessary in route scheduling, and environment control. The accuracy of elevation are commonly expected to be poorer than the geographical position due to the requirement of satellites availability for signal strength in estimating elevation.

In order to check the accuracy in the recorded elevation, the geo-information of elevation in Borlänge from the national elevation database (NNH)[4] is referred for validation. Each position of the vehicle where a recorded elevation occurred is related to the nearest point in the actual elevation layer. The maximum distance between the recorded position and the actual elevation layer is 21 meters. This is an inconsequential approximation as the road network covered in the experiment does not contain any steep up- and down-hills.

The error in recorded elevation with respect to the actual elevation is large for all three types of receiver. No receiver showed substantially good measurement comparing to others. Most of the errors were within the range of -100 meters and 100 meters, but frequently the error exceeded 150 meters. Considering for instance that the bicycle path travelled in the experiment was essentially flat, and even for the car road the elevation change is within 40 meters, such a magnitude in error is enormous and peculiar given error in GPS elevation readings is generally twice as high as horizontal error (Noronha & Goodchild, 2000) and even better (Zandbergen, P. 2009).

5. CONCLUDING DISCUSSION

Current studies have rarely focused on the problem of examining the reliability of dynamic GPS data in the validation phase after data transfer but before further analysis, especially have neglected influences from the variation of road network. This paper focuses on evaluating the reliability of GPS-based transportation data from three different types of portable GPS receivers (including the commonly-used smart phone). The evaluation focuses on data of geographical position, speed, and elevation by tracking vehicles in a complex road network with varying transportation modes, environmental conditions and collection settings in real settings. The experimental method can be reproduced, reorganized and reformed into different combinations according to the applications.

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[4]The elevation data is provided by Sweden's Mapping, Cadastral and Land Registration Authority (www.lantmateriet.se). The elevation model is made by laser scanning and has an average elevation error of 0.1 meter and 0.4 meter in the plane.

The GPS tracking data identified the actual positions of the vehicles fairly successfully. The three types of receivers performed with not big than 5% differences of accuracy on the same route with same speed and settings. The surroundings of the experiment had no obviously interfering attributes like high built-ups, forests, magnetic fields, and so on; the partially poor identification of the bicycle's positions by trees and in the vicinity of magnetic fields shows however that the positional error of the GPS is highly vulnerable to the surroundings. Overall, the positioning accuracy meets the requirement of applications like routing, mobility pattern recognition, destination imputation and other location based services.

The tracked instantaneous speeds are quite accurate with a tendency of underestimation. The error is monotonically increasing with the speed and the inaccurate position recording. It should however be noted that we did not study the accuracy regarding acceleration and deceleration which are common phenomena in ordinary traffic. More overlapping speeds for different transportation modes should be tested as well. Concerning the recorded elevations in the tracking data, we found it to be highly inaccurate and we suggest disregarding this parameter in practical use until further investigations.

The reliability seems to be unrelated to the sampling frequency. Of course, intensive positional recordings provide more details regarding the mobility pattern. However, it comes at the expense of more aggressive data rendering communication, storage, data processing, data mining, and data analysis. Balancing between these aspects is necessarily specific to the domain of application.

There is drawback of GPS receivers due to a short effective lifespan of the battery (Ryan et al., 2004; Stopher and Speisser, 2011). The data collection part of the experiment in this paper lasted at the most for three hours; the duration of the receivers was not a concern here as the operational time for the receiver is about 11 hours after being fully charged and in continuous mode. However, the lifespan may be a costly drawback in full-scale applications especially for the smart phone (Bierlaire et al., 2013).

Finally, this study examined three specific standard GPS receivers. It would be interesting in the future to conduct further analyses including other types of GPS receiver on larger sample sizes, longer recording periods and more possible environment settings by using the experimental method outlined in this study. What's more, the ground-truth data used for evaluation are inaccurate in a limited tolerance, the choice of the "true value" and the confidence assigned to them has become a general issue to be considered in evaluating the reliability of GPS-tracking data.

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The Investigation of Angiotensin Converting Enzyme and Skeletal Muscle Gene Alpha-Actinin 3 Gene Polymorphism in Elite Athletes

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Abstract

Introduction: There has been much recent proof indicating that certain genetic traits affect athletic performance. In this study, distribution of ACE (I/D) and ACTN3 (R577X) genetic polymorphisms, which are among those genetic markers, and the frequency of these polymorphisms in elite athletes and the possibility of determining athletic performance with genetic traits were investigated.

Method: The participants of the study were 100 elite national and international short and long distance athletes, and 100 healthy sedentary control subjects chosen randomly.

Findings: No statistically significant results were observed in distribution of ACE and ACTN3 gene polymorphism and allele distributions. Statistically significant differences were observed in ACE gene polymorphism allele distribution between national and international experimental groups and the control groups. There were statistically significant differences between groups of national and international short distance athletes in terms of ACE gene polymorphism allele distribution.

Results and Conclusions: Though few studies were conducted on effect of ACE gene polymorphism on Turkish athletes' performance, ACTN3 gene polymorphism was never studied. This pioneering study on Turkish elite athletes can contribute to literature. Statistical power of the results could be strengthened by data sharing from studies on various groups including Olympic athletes.

Keywords: ACE, ACTN3, Athletics, Elite Athletes, Genetics

1. INTRODUCTION

Scientists researching genetics and sports have emphasized that various genetic factors are most effective on sportive performance in studies conducted on successful athletes. Especially the determination of the genetic contribution to sport performance and the related orientation of talented athletes to suitable sports at young ages are important targets of sport genetics.

Researchers are now concentrating on looking for the exact genetic profiles contribute to sport performance and determining the underlying mechanisms involved in specific fields of elite athletic performance. One of the main aims of such studies is to help clinicians and coaches to recognize and guide individuals with genetic potentiality to be elite athletes.[1]

The angiotensin I-converting enzyme insertion/deletion (ACE I/D) polymorphism and the α-actinin-3 gene (ACTN3) R577X polymorphism have been most widely studied for such association analysis. Based on the results of many studies, the angiotensin-converting enzyme (ACE) and the α-actinin-3 (ACTN3) genes are considered

strong candidate genes associated with human physical performance. On the other hand, the data regarding the association of the ACE I/D and ACTN3 R/X polymorphisms with human physical performance in different populations have been conflicting.[2]

The ACE gene is located on the long arm of Chromosome 17q 23.2. It covers approximately 20,546 bases of genomic DNA and is composed of 25 exons. After post-transcriptional splicing and removal of non-coding introns the transcript is represented by a 4,195 base mRNA that directs synthesis of the final 1,306 amino acid protein.[3]

The ACTN3 gene is located on the long arm of chromosome 11q 13.2. It spans approximately 16,407 bases of genomic DNA and is composed of 21 exons. After post-transcriptional splicing and removal of non-coding introns the transcript is represented by a 2,858 base mRNA that directs synthesis of the final 901 amino acid a-actinin-3 protein. There are two sections of the gene that are being examined for genetic variations in this project. Polymorphisms of exons 15 and 16 are created by point mutations within the coding regions of the DNA molecule and are hypothesized to influence ACTN3 gene function and potentially athletic performance.[3]

2. METHODS

This study was carried out to investigate the polymorphism of angiotensin converting enzyme (ACE) gene (I/D) polymorphism and skeletal muscle gene alpha-actinin 3 (ACTN3) gene (R577X) in elite athletes. The athletic branch was formed from 100 elite athletes who achieved national and international ratings in short and long distance branches. The control group was included in the study as a control group of 100 individuals randomly selected from the adult population, who were not regular sports history, but were sedentary and healthy.

2 cc venous blood samples of EDTA were taken to identify ACE (I/D) and ACTN3 (R577X) gene polymorphisms in all study and control groups included in the study. DNA was isolated and polymorphisms of ACE and ACTN3 genes were determined using the Polymerase chain reaction (PCR) - Restriction fragment length polymorphism (RFLP) method.

The data was evaluated by transferring to the SPSS 21.0 program. Mean values were expressed as "arithmetic mean±standard deviation". Categorical data were indicated with "frequency and percentage (%)"; Chi-square and Fisher's exact Chi-square tests were used in the intergroup comparisons. Analysis results were evaluated at 95% confidence interval and a statistically significant difference of "p <0.05" was accepted.

3. FINDINGS

When the characteristics of the study groups participating in this study to examine the angiotensin converting enzyme (ACE) and skeletal muscle gene alpha-actinin 3 (ACTN3) gene polymorphism in elite athletes were examined; the study group consisted of 23 female and 77 male athletes with a total of 100 athletes with a mean age of 21.54±5.49 years and an active sporting time of 8.75±5.66 years, with a weekly training period of 6.03±0.22 days and a daily training period of 2.51±0.69 hours. When the control group was examined, it was determined that 50 female, 50 male total 100 sedanter individuals and the mean age was 23.89±2.56 years.

Study and control group; D/D genotype was 40 (40.0%), I/D genotype was 35 (35.0%) and I/I genotype was 25 (25.0%) in the study group when the ACE gene polymorphism genotype and allele distributions were compared 33.0%), I/D genotype 45 (45.0%) and I/I genotype 22 (22.0%) and there was no statistically significant difference between the groups (p=0.348). When alleles were compared in terms of allele distributions, D allele distribution was 115 (57.5%) and I allele distribution was 85 (42.5%) while D allele distribution was 111 (55.5%) and I allele distribution was 89 (44.5% There was no statistically significant difference between groups in terms of allele distribution. (p=0.687; OR=1.08; OR95 % CI=0.72-1.64). (Table 1)

Table 1. Comparison of ACE genotype (D/D, I/D, I/I) and allele (D, I) distributions of study and control group

Groups	n	ACE			p	Allele Distributions		p	OR
		D/D (%)	I/D (%)	I/I (%)		D (%)	I (%)		
Study Group	100	40 (40.0)	35 (35.0)	25 (25.0)	0.348	115 (57.5)	85 (42.5)	0.687	1.08
Control Group	100	33 (33.0)	45 (45.0)	22 (22.0)		111 (55.5)	89 (44.5)		

When the short and long distance subgroups (national and international) were compared in terms of ACE gene polymorphism genotype and allele distributions; short-distance national group D/D genotype was 15 (50.0%), I/D

genotype was 10 (33.3%) and I/I genotype was 5 (16.7%) while in the international group, the D/D genotype was found to be 7 (21.9%), I/D genotype 15 (46.9%) and I/I genotype 10 (31.3%) and no statistically significant difference was detected between the groups (p=0.063). (Table 2)

When the short distance subgroups (national and international) are compared in terms of allele distributions; D allele distribution was 40 (66.7%) in the national group while the I allele distribution was 20 (33.3%), D allele distribution in the international group was 29 (45.3%), I allele distribution was 35 (54.7%); statistically significant differences were found in terms of allele distribution among the groups. (*p=0.017*, OR=2.41; OR 95% CI=1.10-5.35)

There was no statistically significant difference between ACE gene polymorphism genotype and allele distributions between long distance subgroups (national and international) (Genotype: p=0.162, Alel: p=0.056, OR=3.55; OR 95% CI=0.82-17.59) (Table 2).

Table 2. Comparison of short and long distance subgroups (national and international) ACE gene polymorphism genotype (D/D, I/D, I/I) and allele (D, I) distributions.

Groups	n	ACE			p	Allele Distributions		p	OR
		D/D (%)	I/D (%)	I/I (%)		D (%)	I (%)		
Short Distance									
National	30	15 (50.0)	10 (33.3)	5 (16.7)	0.063	40 (66.7)	20 (33.3)	**0.017**	2.41
International	32	7 (21.9)	15 (46.9)	10 (31.3)		29 (45.3)	35 (54.7)		
Long Distance									
National	8	5 (62.5)	3 (37.5)	0 (0.0)	0.162	13 (81.3)	3 (16.7)	0.056	3.55
International	30	13 (43.3)	7 (23.3)	10 (33.3)		33 (55.0)	27 (45.0)		

R/R genotype was 39 (39.0%), R/X genotype was 44 (44.0%) and X/X genotype was 17 (17.0%) in the study group when the ACTN3 gene polymorphism genotype and allele distributions were compared in the study group and control group R genotype was 35 (35.0%), R/X genotype was 43 (43.0%) and X/X genotype was 22 (22.0%) and there was no statistically significant difference between the groups (p=0.648). When alleles were compared in terms of allele distributions, R allele distribution was found to be 122 (61.0%) and X allele distribution was 78 (49.0%) while R allele distribution was 113 (56.5%) and X allele distribution was 87 (43.5%) There was no statistically significant difference between groups in terms of allele distribution (p=0.361; OR=1.20; OR 95% CI=0.79-1.83). (Table 3)

Table 3. Comparison of ACTN3 genotype (R/R, R/X, X/X) and allele (R, X) distributions of study and control groups

Groups	n	ACTN3			p	Allele Distributions		p	OR
		R/R (%)	R/X (%)	X/X (%)		R (%)	X (%)		
Study Group	100	39 (39.0)	44 (44.0)	17 (17.0)	0.648	122 (61.0)	78 (49.0)	0.361	1.20
Control Group	100	35 (35.0)	43 (43.0)	22 (22.0)		113 (56.5)	87 (43.5)		

There was no statistically significant difference between groups in terms of short and long distance subgroups (national and international) ACTN3 gene polymorphism genotype and allele distributions (Short distance, Genotype: p=0.322, Allel: p=0.783, OR=0.90, OR 95% CI=0.41-1.99, Long distance; Genotype: p=0.238, Alel: p=0.119, OR=2.63; OR 95% CI=0.67-11.00). (Table 4)

Table 3. Comparison of short and long distance subgroups (national and international) ACTN3 gene polymorphism genotype (R/R, R/X, X/X) and allele (R, X) distributions

Gruplar	n	ACTN3			p	Alel Dağılımı		p	OR
		R/R (%)	R/X (%)	X/X (%)		R (%)	X (%)		

Kısa Mesafe									
Ulusal	30	13 (43.3)	11 (36.7)	6 (20.0)	0.322	37 (61.7)	23 (38.3)	0.783	0.90
Uluslararası	32	12 (37.5)	17 (53.1)	3 (9.4)		41 (64.1)	23 (35.9)		
Uzun Mesafe									
Ulusal	8	5 (62.5)	2 (25.0)	1 (12.5)	0.238	12 (75.0)	4 (25.0)	0.119	2.63
Uluslararası	30	9 (30.0)	14 (46.7)	7 (23.3)		32 (53.3)	28 (46.7)		

4. DISCUSSION

According to the results of our study, we tried to investigate the distribution of ACE (I/D) and ACTN3 (R577X) gene polymorphisms which are thought to affect sportive performance, to determine how often it is seen and to compare the athletic performance with the sedantary individuals, there was no statistically significant difference between ACE and ACTN3 gene polymorphism in elite athletes and normal population.

When the results of the literature are examined, it can be seen that our results are in similar studies, but it is suggested that these two markers may be more effective in sports branches that use elite level and high level endurance aerobic system.

In our study; there was no significant difference between the groups in the analysis to compare the ACE I/D gene polymorphism genotype and allele distributions between the study and control groups. Similar to our results, Taylor et al. and Rankinen and colleagues have suggested that there is no association between ACE genotype and exercise.[4, 5] Nazarov et al. reported that they did not find an association between ACE gene polymorphism and physical activity in a similar study conducted by Russian athletes.[6] D allele is found to be both positive[7] and negative[8] related to maximal oxygen consumption. In a study of 116 Jamaican and 114 American elite athletes and 311 Jamaican and 191 American sedentary control groups, there was no correlation between speed and oxygen consumption and the d and I alleles.[9]

The ACE genotype and allele distributions are compared with the normal population and there is a parallel association between these studies and our study results. In a meta-analysis study of 366 scientific studies, no statistically significant association was found between the ACE I allele and endurance spores, but a close association was found. (OR, 1.13; 95% CI, 0.89-1.44).[1]

The absence of any association with the ACE genotype and allele distributions when compared to the normal population and the differences between the results of the studies clearly indicate that this genetic marker is not yet a potential marker for the ability selection for potential early detection of athletes. At the same time, ACE I/D genotype distributions also vary among ethnic groups. Because of these different opinions, many investigators have emphasized that such studies should be done on different types of exercise on sportsmen belonging to different races and ethnic groups.[4, 5]

In our ACTN3 R577X gene polymorphism study, one of the genetic markers believed to be able to help elite athletes to be detected at an early age; When the ACTN3 gene polymorphism genotype and allele distributions of the study and control groups were compared, no statistically significant difference was found between the groups. There was no statistically significant difference between the study and control groups in terms of allele distribution when the groups were compared in terms of allele distributions.

429 senior athletes who were 50 Olympic athletes were examined and according to the study results it was reported that allele and genotype distributions did not show any significant difference when athletes and control group were compared. However, when athletes were divided into smaller groups in the form of sprint and endurance, the results were found to be on the contrary and significantly differentiated between males and females, and it was reported that 577R alleles could be an advantage for sprint athletes.[10] Parallel to our study results, Ruiz et al. found similar results in a study of 243 male, 91 female, 334 university students and 31 male, 35 female, 66 volleyball players.[11]

5. CONCLUSIONS AND IMPLICATIONS

ACTN3 gene polymorphism has never been studied in spite of the limited number of studies conducted with Turkish athletes to investigate the effect of ACE gene polymorphism on sporting performance. Therefore; This is

the first study in the Turkish population and athletics branch to investigate the prevalence of the ACTN3 R577X genotype and allele distribution in the elite athletes group and the sedanter control group which have gained the chance to participate in the Olympic Games, Mediterranean Games, Balkan, European and World championships. It is thought that this field will contribute to national and international studies to be done, it needs to be investigated at the Olympic level and the results obtained through collaboration and data sharing with different athletes and research groups at Olympic level will increase the statistical power.

Notes;

PhD thesis; This abstract has been accepted as a PhD thesis at Gazi University, Institute of Health Sciences, Department of Physical Education and Sports, Ankara, 2013.

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Comparison of Sporting Habits of Boarding and Day Students

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Abstract

Aim: The purpose of this study was to determine sports habits of the students of boarding and day students.

Methods: A total of 1344 students, 700 males and 644 females attending Samsun, voluntarily participated in the research. In the study, 6th, 7th and 8th grade students studying, 843 were in boarding schools and 501 were in in other public schools. A 15-question questionnaire was applied under observation to determine demographic characteristics and sports habits. Obtained data had been evaluated with the version of SPSS 10.0. Chi-square test and Fisher's definite test was used for the statistical analyze method. The statistical relation level is $p<0.05$.

Results: The average age of the participants was determined as $12,64 \pm 1,6$. There was a statistically significant difference between the participants in terms of sports activities ($p <0.05$).

Conclusions: It has been found that the participation of the boarding school students in sporting activities is less than that of the students in daytime schools.

Keywords: Boarding and day education, sport habits

INTRODUCTION

In today's world it is possible to talk about rapid change and development. Education is seen as the most important factor for the individual to keep up with this development and to be able to be an effective and constructive person in the development process. For this reason, the importance given to education increases day by day. It is known that they have produced different solutions according to the social structure of the countries in order to reduce and eliminate the negativities in education.

In the 21st century, it can be said that there are people in our country who are not yet schooled, and people who are experiencing economic impossibilities that can not afford the education costs of the child. In order to provide equality of opportunity to these people in the direction of the legal provision prepared in these places, it has been continued to open and disseminate residential primary schools in villages where several primary schools have not yet been opened, several villages close to each other, or villages where houses and house groups are scattered. Due to the problem of immigration to the city, which is a sociological fact of Turkey, the population of the small settlement units has been reduced due to the immigration problem in order to meet the primary education students living in these schools in a central educational institution with the aim of establishing boarding schools. (Şenol ve Yıldız 2009).

Education is a social process, under the influence of schools. It expresses the development of the individual's physical, emotional, intellectual and social skills in the most appropriate way for himself and society. Thus, this will be able to bring forth a spiritually healthy society and be able to cultivate individuals who can make positive changes in society (Gündüz, 2006). Education is not just about shaping plastic objects. Education is to allow for, healthy body and soul life; to stimulate the intellectual and emotional efforts desired and to direct them to the relevant field (Göde ve Alkan, 1998). In this process, the quality and the quality of education are crucial in order to be able to raise individuals with the characteristics mentioned. For this reason, in addition to academic

education in schools, raising individuals by supporting them with social and sportive activities will increase the quality and quality of education. This is even more important for boarding students, who spend most of their time in these schools.

It can be said that those who play sports are more easily and emotionally balanced than those who do not play sports, to be more lively, outward-oriented, hard-working, more patient, ready to socialize and adapt to a new situation (Tiryaki 1991). Moreover, if the development of motor development in children is considered to be at a high level during primary education period (Dündar U. 1998), it will be better understood how important it is for children to participate in sports activities. The purpose of this study is to evaluate the habits of sports students who are studying in schools that day and boarding education.

METHODS

In the academic year of 2007-2008, a total of 1344 students including 700 male and 644 female students studying in Samsun province; Alaçam Göçkün YİBO (n=173), Tekkeköy Gelemen YİBO (n=167), Kavak Atatürk YİBO (n=266), Asarcık YİBO (n=161), Merkez Yavuz Selim YİBO (n=76) Yakakent 100. Yıl Primary School (n=196), Erdoğan Cebeci Primary School (n=114), Kozköy Primary School (n=191 students have volunteered to work.

In the study, 843 were in boarding schools and 501 were in day schools. The 15-item information evaluation form, which includes the demographic characteristics and sports situations of the participants, was made by an expert staff in the form of an individual question and answer. The data were evaluated with SPSS version 10.0. Chi-square test and Fisher's definite test were used as statistical analysis method and significance level was accepted as $p < 0.05$.

FINDINGS

In the study, the evaluation of the questions directed to participants is given below;

644 of the students who participated in the study were female (47,91%) and 700 were male (52,09%), and total of 1344 volunteers. 843 of these volunteers are studying in boarding schools and 501 are studying in day schools. The average age of participants was (years) 12,64 ± 1,6. In the study, the rate of sports was determined 25.02% (n = 211) in the boarding schools and 40.32% (n = 202) in the day schools.

Table - 1: Comparison of doing sports situations of students who are educated by day and boarding schools

			Boarding school students		Day school students		
			n	%	n	%	p
Sex	Woman		421	49,95	223	44,51	
	Man		422	50,05	278	55,49	
	Total		843	100	501	100	
Sports situations	Doing sport	Woman	21	2,49	32	6,39	**p<0.05***
		Man	190	22,53	170	33,93	**p<0.05***
	Total		211	25,02	202	40,32	**p<0.05***
	Not doing sport	Woman	400	47,45	191	38,12	**p<0.05***
		Man	232	27,52	108	21,56	**p<0.05***
	Total		632	74,97	299	59,68	**p<0.05***
Fields of activity of sportsmen	Plays in an amateur or professional club	Woman	1	0,11	11	2,19	**p<0.05***
		Man	30	3,56	30	5,99	**p<0.05***
	Total		31	3,67	41	8,18	**p<0.05***
	Plays in school teams	Woman	21	2,49	32	6,38	**p<0.05***
		Man	180	21,35	150	29,94	**p<0.05***
	Total		201	23,84	182	36,32	**p<0.05***
	Participate in both	Woman	1	0,11	11	2,19	**p<0.05***
		Man	20	2,38	30	5,99	**p<0.05***
	Total		21	2,49	41	8,18	**p<0.05***

*p<0.05

A statistically significant difference was found in the comparison of the students who were educated in boarding and day schools according to sports situations (p <0.05). It has been determined that the proportion of both male and female boarding students who play sports is higher than that of day schools, and generally the students who are studying in boarding schools perform sports activities in school teams. At the same time, it was determined that there was a statistically significant difference in the rates of playing in amateur or professional clubs and school teams both in girls and boys (p<0.05).

DISCUSSION

In many branches of sports, the starting age is at the primary level. It is very important to give sports habits to students and to direct them to the sport. However, the fact that 74.97% of the boarding students and 59.68% of

the daytime students did not play sports indicates that these students' habits of sports are not enough. It was determined that 85,31% of boarding schools and 69,80% of daytime schools were in school teams. This rate is an indication of their first encounter with sport at school.

In our study, it was also determined that 36.32% of the students in day schools and 23.84% of the students in boarding schools are participated in school teams. Çebi et al. (2016) found 45.20% participation in sporting activities in school teams among children who attended in public and private day schools between the ages of 11-14. Kırımlıoğlu et al. (2010) found that 52.7% of 6th, 7th and 8th grade students in the boarding schools were doing sports. In general, it can be said that the participation rate of spores is low in the studies. Differences in participation rates of sports emphasize that the existing structures of schools do not support the students' participation in the sport, rather than the schools being boarded or daytime schools.

CONCLUSIONS

Students should be encouraged to participate to the sport activities, either in daytime schools or in boarding schools where students spend a large part of their time at all levels of education. It should be guided by expert teachers in the field. The importance of participation in sporting activities should be ensured both by the students and by all the education staff. At the same time, the existing curriculum structures of the schools must be reviewed and these programs should be organized in a way that encourages students to participating to the sport.

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