

eISSN: 1307-6892



INTERNATIONAL SCIENCE INDEX

VOL:8 NO:11 2014



NOVEMBER 10-11, 2014 MADRID SPAIN

International Scholarly and Scientific Research & Innovation

InternationalScienceIndex.org

INTERNATIONAL SCIENCE INDEX

Dear Distinguished Delegate,

The International Conference is a major scholarly and scientific meeting, devoted to original research and innovation in science, engineering and technology, hosted on six continents. The International Conference since its inception is at the cutting edge of nonprofit scholarly and scientific progress to promoting excellence in science, engineering and technology.

All full text paper submissions are peer-reviewed, refereed and evaluated by International Scientific Committee based on originality, research content, correctness, relevance to contributions and readability. In this context, the full text paper submissions are chosen based on technical merit, interest, applicability, and how well they fit a coherent and balanced International Conference Programme for contributed Oral, ePoster and Virtual presentations.

INTERNATIONAL SCIENTIFIC COMMITTEE

Alexander Vaninsky, USA Mathematics Department Hastings Community College, CUNY, USA	Mikhail E. Semenov, RU Department of Higher Mathematics and Mathematical Physics Tomsk Polytechnic University, Russia
Andy Simoneau, CA Department of Mechanical Engineering UNB Fredericton, Canada	Miloš Šeda, CZ Brno University of Technology Institute of Automation and Computer Science, CZ
Arkady Bolotin, IL Department of Public Health Ben-Gurion University of the Negev, Israel	Nigel Russell, UK Learning and Teaching Services The University of Sheffield, UK
Helko Thimm, DE School of Engineering Pforzheim University, Germany	Quoc-Nam Tran, USA Lamar (Texas State) University Beaumont, Texas, USA
Igor Astrov, EE Department of Computer Control Tallinn University of Technology, Estonia	Sara Bouchenak, FR LIG Laboratory University of Grenoble, France
Irisa Murniece, LV Department of Food Technology Latvia University of Agriculture, Latvia	Sébastien Poncet, FR M2P2 Laboratory Aix-Marseille University, France
James. A. Nelson, USA Department of Accounting and Information Systems New Mexico State University, USA	Simon Cooper, UK School of Science and Technology Nottingham Trent University, UK
Jean-Claude Martin, FR LIMSI-CNRS Paris South University, France	Stephen Garrett, UK Department of Mathematics University of Leicester, UK
Kenan Matawie, AU School of Computing and Mathematics University of Western Sydney, Australia	Thierry Condomines, FR Modeling, Information and Systems Laboratory University of Picardie Jules Verne, France
Margaret Morgan, UK School of Engineering University of Ulster, UK	Zarita Zainuddin, MY School of Mathematical Sciences Universiti Sains Malaysia
Mark Willis, UK School of Chemical Engineering and Advanced Materials Newcastle University, UK	Zhanna Mingaleva, RU Faculty of Economics Perm State University, Russia

TABLE OF CONTENTS		Page
Article		
101	Teachers' Awareness of the Significance of Lifelong Learning: A Case Study of Secondary School Teachers of Batna - Algeria <i>Bahloul Aniel</i>	491 - 495
102	Simulation Programs to Education of Crisis Management Members <i>Jiri Barta</i>	496 - 501
103	Web-Content Analysis of the Major Spanish Tourist Destinations Evaluation by Russian Tourists <i>Natalia Polkanova, Sergey Kazakov</i>	502 - 509
104	Developing Logistics Indices for Turkey as an Indicator of Economic Activity <i>Gizem Intepe, Eti Mizrahi</i>	510 - 514
105	A Stock Exchange Analysis in Turkish Logistics Sector: Modeling, Forecasting and Comparison with Logistics Indices <i>Eti Mizrahi, Gizem Intepe</i>	515 - 515
106	The Impacts of Cost Stickiness on the Profitability of Indonesian Firms <i>Dewi L. Warganegara, Dewi Tamara</i>	516 - 519
107	Institutional Foundations of Capitalism and Tourism Management Problems of Countries at the Transition Stage (Case of Georgia) <i>Malia Margvelashvili, Kakhaber Chetashvili, Ineza Yatsadze</i>	520 - 524
108	The Influence of EU Regulation of Margin Requirements on Market Stock Volatility <i>Nadira Katinova</i>	525 - 531
109	The Basic Problems for the Realization of the Concept of Economic Policy <i>R. Gvitseliani, I. Gogorishvili</i>	532 - 535
110	Pulse Generator with Constant Pulse Width <i>Rozita Burhan, Hanif Che Lah, Wee Leong Sun</i>	536 - 539
111	The Integration and Automation of EDA Tools in an Integrated Circuit Design Environment <i>Rohaya Abdul Wahab, Raja Mohd Fuad Tengku Aziz, Nazaliza Othman, Sharifah Saleh, Nabilah Razali, Rozalmah Baharim, Md Hanif Md Nasir</i>	540 - 543
112	The Use of Crisis Workplace Technology to Protect Communication Processes of Critical Infrastructure <i>Jiri Barta, Jifi F. Urbanek</i>	544 - 547
113	Numerical Simulation of a Solar Photovoltaic Panel Cooled by a Forced Air System <i>Djanila Nebbali, Rezki Nebbali, Ahmed Ouibrahim</i>	548 - 552
114	Evaluation of Debris Flow Sediment and Using It in Order to Increase Agricultural Lands <i>Tamriko Supatashvili</i>	553 - 554
115	The Study of Three Tier Drainage and Use It for Colchis Wetland Soils Reclamation <i>Maku Guguchia</i>	555 - 555
116	Chloride Transport in Ultra High Performance Concrete <i>Raika Pernicova</i>	556 - 559
117	Effects of Several Ions and Chemicals on Thermostable Pectin Lyase Secreted by <i>Aspergillus niger</i> <i>Kader Poturcu, Ismail Ozmen</i>	560 - 560
118	Production of Pectin Lyase with Three Different <i>Aspergillus niger</i> Strains <i>Kader Poturcu, Ismail Ozmen</i>	561 - 561
119	Determination of pH Stability and Thermal Stability of Pectin Lyase <i>Kader Poturcu, Ismail Ozmen</i>	562 - 562
120	Pectinase Production from 2 Submerged Media and Its Application on Clarification and Ascorbic Acid Determination of Apricot and Lemon Juices <i>Kader Poturcu, Berrin Kir, Ali Akyol, Ismail Ozmen</i>	563 - 563
121	Action of Ascorbic Acid and Sulphate Salts on Pectin Lyase Produced by <i>Aspergillus niger</i> <i>Hacer Cesur Yamanici, Ismail Ozmen, Kader Poturcu</i>	564 - 564
122	Biological Organic or Inorganic Sulfur Sources Feeding Effects on Intake and Some Blood Metabolites of Close-Up Holstein Cows <i>Mehdi Kazemi-Bonchenari, Esmail Manidari, Yahid Keshavarz</i>	565 - 569
123	Micromorphological Traits and Essential Oil Contents of <i>Valeriana tuberosa</i> L. <i>Nada Besić, Valerija Dunkić, Antonija Markovina, Mirko Ruščić</i>	570 - 570
124	Microbial Contamination of Haemolymph of Honeybee (<i>Apis mellifera intermissa</i>) Parasitized by <i>Varroa destructor</i> <i>Massaouda Belaid, Salima Kebbouche-Gana</i>	571 - 571
125	Antibacterial Activity of Northern Algerian Honey <i>Messaouda Belaid, Salima Kebbouche-Gana, Djamila Benaziza</i>	572 - 572

TABLE OF CONTENTS		Page
Article		
126	Investigations of Metals and Metal-Antibrowning Agent Effects on Polyphenol Oxidase Activity from Red Puppy Leaf <i>Osman Arabaci</i>	573 - 577
127	The Associations between Self-Determined Motivation and Physical Activity in Patients with Coronary Heart Disease <i>I-Hui Chu, Hsiang-Chi Yu, Hsuan Su</i>	578 - 578
128	Walnut (<i>Juglans Regia</i>) Extracts: Investigation of Antioxidant Effect, Total Phenols and Tyrosinase Inhibitory Activity <i>N. Aoki, S. Nalbantoglu, M. Akin, G. Arabaci</i>	579 - 579

security of critical infrastructure elements and their preparedness of employees to manage and minimize damage of communication and information systems. It ensures better training of critical infrastructure emergency staffs. Good practical preparedness and quickly management of emergency or crisis situation will have a positive effect of the course event solutions and it will minimize the impact of negative effects on the environment.

Finally, it is necessary to say that all software products represent the function of crisis manager helper in his decision making. All computer programs are only "lifeless" products. The crisis manager is featured, especially his knowledge, abilities and acquisitions, and many times also his extemporization.

REFERENCES

- [1] Czech Republic, *Act No. 239/2000 Coll.*, on the Integrated Rescue System and on amendment of certain codes, in later wording". In Czech Republic Statute Book, 2000.
- [2] Heretik, J., Barta, J. Počítačové modelování možných havárií s únikem nebezpečných látek. In: *Interoperabilita managementu ochrany obyvatelstva*. 2006. ISBN 80-7231-138-7.
- [3] Kubíček, P., et al. Process Support and Adaptive Geovisualisation in Emergency Management. In *Geographic Information and Cartography for Risk and Crisis Management - Towards Better Solutions*. 2010. Heidelberg: Springer-Verlag.
- [4] Ludík, T., Racek, J. Process Methodology for Emergency Management. *IFIP Advances in Information and Communication Technology*, Heidelberg: Springer, 2011, p. 302-309. ISSN 1868-4238. 2011. od s. 302-309, 8 s.
- [5] Ludík, T., Sadovska, V., Barta, J. Crisis Staff Education Through a Process Simulation. In: *Education in the Modern European Environment*. Zagreb: University of Zagreb, 2012. p. 156-164. ISBN 978-953-7210-55-7.
- [6] Ministry of Interior. *Large-scale accident caused by selected dangerous chemical substances*. Model Action Plan of the Ministry of Interior. Prague: Ministry of Interior Czech Republic, 2010.
- [7] Rehak D., Grasseova M. *The ways of assessing the security of organization information systems through SWOT analysis*, pp. 162-184. DOI: 10.4018/978-1-61350-311-9.ch007. In ALSHAWI, Mustafa, ARIF, Mohammed (eds). *Cases on E-Readiness and Information Systems Management in Organizations: Tools for Maximizing Strategic Alignment*. 1st edition. Hershey, PA, USA: IGI Global, 2011. 318 p. ISBN 978-1-61350-311-9. DOI: 10.4018/978-1-61350-311-9
- [8] *Special Publication to Establishment University of Defence*. University of Defence. AVIS, Prague, 2006. ISBN 80-7278-349-1.
- [9] Urbanek J. F., Barta, J., Heretik, J., Navrátil, J., Prucha, J. Cybernetic Camouflage on Human Recipient - Visual Illusion INTERFACE. In: *The 9th WSEAS International Conference on Circuits, Systems, Electronic Control & Signal Processing (CSECS'10)*. Recko: WSEAS, 2010, p. 22-33. ISBN 978-960-474-262-2.
- [10] Urbanek J. F. et al. *Crisis Scenarios*. Brno: University of Defence, 2013. 240 pp. ISBN: 978-80-7231-934-3.
- [11] Vratný, M. *Wave Program - user's manual*. Military University of the Ground Forces, Vyskov, 2002.

Jiri Barta was born 16th June 1977 in Vyskov, Czech Republic. He was graduated 2001 at Military University of Ground Forces in Vyskov, Faculty of Economic and Management. From 2003 to 2004 he worked as a lecturer at the Civil Protection Department of Military University of Ground Forces in Vyskov. He gave the lectures on Crisis Scenarios, Civil Emergency Planning and Information Systems for Crisis Management. Parallel he 11 years operated in the private sector in the field of insurance and family finances.

Since 2004 he gives lectures at University of Defence, Faculty of Economics and Management in Brno, Czech Republic. His research branches are Safety, and Management in Brno, Czech Republic. His research branches are Safety, Civil Protection, Interoperability, Security Management, Crisis Scenarios and Civil Emergency Planning. He solves many national research and development projects. He is the author of more than 50 scientific articles, patent and co-author of two monographs collective expertise.

Web-Content Analysis of the Major Spanish Tourist Destinations Evaluation by Russian Tourists

Natalia Polkanova, Sergey Kazakov

Abstract—In the second decade of the XXI century the role of tourism destination attractiveness is becoming increasingly important for destination management. Competition in tourism market moves from ordinary service quality to provision of unforgettable emotional experience for tourists. The main purpose of the present study is to identify the perception of the tourism destinations based on the number of factors related to its tourist attractiveness.

The content analysis method was used to analyze the on-line tourist feedback data immensely available in Social Media and in travel related sites. The collected data made it possible to procure the information which is necessary to understand the perceived attractiveness of the destinations and key destination appeal factors that are important for Russian leisure travelers.

Results of the present study demonstrate key attractiveness factors of destination 'properties' that were unveiled as the most important for Russian leisure tourists. The study targeted five main Spanish tourism destinations that initially were determined by in-depth interview with a number of Russian nationals who had visited Spain at least once.

The research results can be useful for Spanish Tourism Organization Representation office in Russia as well as for the other national tourism organizations in order to promote their respective destinations for Russian travelers focusing on main attractiveness factors identified in this study.

Keywords—Tourism destination, destination attractiveness, destination competitiveness, content analysis, unstructured image.

I. INTRODUCTION

SOME countries in Europe, like Spain, Italy and Greece that hit in EU and globally five years ago. Even though the recession seems to be almost over, some EU countries yet witness its aftermath. The outcome of the recession led Spain, Italy and Greece to draw their growing attention and put more emphasis to develop the existing destinations as well as to develop and promote new tourist areas in their respective countries [1]. Tourism, currently being one of the most tangible segments of the service economy encourages the development of the local national economy as a whole, and in particular, it feeds the country's budget replenishment and certainly helps greatly to create new labor opportunities for the

local residents. It is known that currently nearly 18 million EU residents are employed in hospitality industry in tourism in Europe. However, competition in this market is also known as being quite intensive even severe in some parts of Europe especially in its southern part.

Until the 1980s tourism had had no particular importance for the national budgets, respectively, the countries there had had no motivation to invest in the development of domestic tourism destinations to make them appealing for foreign tourists. As a result, at that time it was not possible to witness the improvements in country attractiveness and its competing ability leverage whereas tourists usually generate such benefits. However, in the beginning of the XXI century the situation changed radically and tourism currently is one of the fastest growing markets worldwide. According to World Tourism Organization forecast in 2030 the tourism market will double its capacity compared to 2010 and will amount 1.9 billion people as industry customers. Revenues of businesses in tourism will reach 2 trillion dollars. [2]

Thus, the tourism destinations attractiveness factors play the important role in the tourists' decision-making process. Tourism destinations attractiveness evaluation has captured a lot of attention from scholars recently. The research questions, for instance, how tourism destinations compete for their clients and how destinations can increase the number of tourists' and how much previous experiences of visiting a tourism destination influence the tourists' loyalty are very important for a decision-making in terms of tourism policy planning and execution for the specific destination. Tourism development destination management needs to identify key areas for major investments and do this in a position of recourses lack. In order to get return on investments in destination the tourists' demands and requirements have to be determined and fully understood.

Competition between territories for their clients is based not only on the independent development of tourism products' components (for example, environment, resources, transport, infrastructure, hospitality and etc.), but also on the consideration of a tourism destination as an integrated indicator of interrelated variables in terms of a single client [3], [4]. As a result, tourism destinations faced the problem of managing and organizing their resources to provide consumers with unforgettable emotions and experiences that should outperform alternative possible ways of spending time for holiday. [5] - [9]

N. Polkanova is with the National Research University Higher School of Economics, Moscow, Russia (corresponding author to provide phone: +7-983-363-6911; e-mail: natlypolkanova@gmail.com).

Dr. S. Kazakov, is with the National Research University Higher School of Economics, Moscow, Russia (e-mail: sergey.p.kazakov@gmail.com).

Over the past 40 years the global market of tourism destinations has changed dramatically with emerge of new highly competitive players. Nevertheless some European destinations still remain quite appealing for both EU and non-EU tourists. Spain is a prominent representative of such kind of countries. It is especially attractive for Russian tourists. Hence, we made main Spanish tourism destinations the research object for the present study. These destinations were identified by in-depth interview conducted in December 2013 with the tourists who have travel experience to Spanish destinations. In this paper the particular community, not the whole region or 'comunidad autónoma', in Spain was identified as a separate tourist destination.

The paper contains five main parts. Firstly, theoretical background dedicated to tourism destinations attractiveness and competitiveness was revealed and analyzed. Based on the basics of attractiveness and competitiveness of destination the assessment criteria or factor list that is specific for the Spanish destinations was developed. Secondly, research methodology was defined and it was based on the research target and objectives. There also the factor list for destination evaluation was also determined for the research measurements. Thirdly, we ran a series of in-depth interviews with randomly selected Russian national who possess the experience of traveling to Spain at least once in their lives. This assisted us to determine the most popular tourism destinations for Russians in Spain. Then, the empirical results of the study were presented and explained. And the last part contains some concluding remarks, managerial applications, limitations of research and there also we streamline the future avenues of the study.

II. THEORETICAL BACKGROUND

Role of destination management and coordination of all involved parties operations has risen due to the increasing role of tourism destinations, as well as due to its complexity. Many countries have established destination management organizations (DMO) to enable them to coordinate the activities of many institutions responsible for the tourist destination operations and activities. The key known DMO competence is to monitor the hospitality services and measure if they stay at least on the level of minimum consumer or tourist satisfaction. [10] DMOs are aimed to ensure that tourists receive some positive feelings and attitudes about the managed destination. It influences the tourists loyalty and their WOM readiness e.g. inclination to recommend this destination to relatives, friends and colleagues. [11]. Buhalis yet noted that the DMOs play an important role in the strategic objectives sets for the destinations development planning. [3]

However, in this scenario of destinations development DMO should also consider the local population and related sustainability issues as an integral part of the tourism destination environment. Quality and quantity of tourism destination services largely depend on locals' willingness, capabilities and readiness to develop the destination. The role of the destination is precisely important in the social, economic welfare and wellbeing improvements of the local population. [10]

Thus, it should be noted that there are many definitions of the term "tourism destination" found in the papers. Most of the researchers agree that complexity or 'system-a-like' is a key category which can best describe tourism destination, so the development of the destination can be possible only if all components of the local system e.g. governmental officials, entrepreneurs, hospitality and tourism enterprises, local communities will alliance and work in unison on the behalf of their territory.

In this academic area, the concept of tourism destination attractiveness is often confused with the term tourism destination competitiveness. Craocolici and Nijkamp do not see the fundamental differences between them. Tourism destination competitiveness is the position of a tourism destination and tourism enterprises in the domestic and foreign markets which is supported by recreational potential, economic, social, political and other factors. [12]. The fundamental difference between these concepts applies to persons who can identify these characteristics. The characteristics of competitiveness can be assessed only by experts in this field, because they have special number of competencies to do so. Tourists cannot assess the competitive edge of destinations 'a priori' as well as they do not keep in mind it when decide where to travel next time. In contrast, personal attitudes, mind sets even stereotypes use to prevail in destination attractiveness evaluation by consumers. In other words, the destination can be considered as highly competitive according to experts, but due to the fact that consumers prefer another destination for some reason they will not come to the area highly graded by the tourism experts.

It was mentioned hereinabove that attractiveness and competitiveness can be interrelated and converged. Attractiveness of a tourist destination is largely determined by its ability to compete in the tourism market. Craocolici, Nijkamp developed the scheme, which includes constructs associated with both competitiveness and attractiveness. The basic idea is that firstly researchers receive an aggregate result for the tourism destination attractiveness. Then it can be used to calculate the indicator of destination capability to compete. Since the destination is perceived as a service product that can provide the consumer with an unforgettable holiday experience which can last for the lifetime, each individual experience received from the destination could then be snowballed to common travelers' attitude with respect to it.

There is an increasing number of papers that aim at destination peculiarities assessment. Some of them refer to attractiveness, another go to competitiveness. There is no unique, universal and uniform list of indicators that should be assessed to get right conclusion about the consumer behavior. It should be noted yet that this set of peculiarities varies not only from researcher to researcher, but also from specific tourist destination to destination.

Table I contains brief overview of attractiveness peculiarities or destination appeal factors proposed by different researchers [13] - [16]. As it is presented in the table, the research related to destinations attractiveness factors,

commenced in 1970s and this research area is still relevant these days.

TABLE I
ATTRACTIVENESS AND COMPETITIVENESS CHARACTERISTICS OF TOURISM DESTINATION

Attractiveness of tourism destinations		Competitiveness of tourism destinations	
Ritchie and <i>Zins</i> , 1978	J-H Kim, 2014	Craocolici, Nijkamp, 2008	Porter, 1990 Blanke, Chiesa, 2013
Natural beauty and climate	Infrastructure	Reception and sympathy of local residents	Human resources
Culture and society	Cost/Value	Artistic and cultural cities	Natural resources
Sport leisure and education	Accountability	Landscape, environment and nature	Capital
Shopping	Local culture	Hotels and other accommodations	Scientific capacity
Region infrastructure	Physiography & Climate	Typical foods	Infrastructure
Price level	Entertainment	Cultural events (concerts, art exhibitions, festivals etc.)	Prioritization Of Travel and Tourism Air transport infrastructure
Tourism characteristics	Environment management	Level of prices, living costs	Ground transport infrastructure Tourism infrastructure
Destination accessibility	The quality of service	Quality and variety of products in the shops	
	Safety/Security	Information and tourist services	ICT infrastructure
	Hospitality	Tourist safety	Price competitiveness in T&T industry Human resources Affinity for T&T Natural resources Cultural resources
	Place attachment	Wine quality	
	Superstructure		
	A mix of activities		
	Special events		

All of those studies have much in common. Generally, such destination attractiveness factors as the culture, nature, value for money, events, special activities, national food and some others are concerned in many papers. Having analyzed all of the above findings by preceding scholars we elaborated our vision of destination attractiveness factor set and it will be described furthermore herein below.

Another finding we have revealed from the studied papers led to a conclusion that most of the previous research projects were aimed to describe particular tourist destination in unstructured way. Recent studies commonly involve tourists' opinions either to measure an image of destination or to design an attribute list or destination attractiveness factor set. Tourism destination image cannot be detached from the

tourists' opinions because they are the prime destination's consumers as they bring money into the region's economy. While the structured destination image may be positive, tourists' overall perceptions of a destination may be either favorable or unfavorable as consumers are naturally different as normally humans are.

Pike (2002) noted that there exist a need for destination to develop its positive image and do it from the tourist's point of view. He examined 142 papers related to destination image time spanned from 1973 till 2000 and argued that the majority of these papers (114 out of 142) applied to structured techniques to describe destination image construct of its image and do not consider consumer opinions and feedback at any research stage [17].

III. TOURISM DESTINATION ATTRACTIVENESS FACTORS

There are numerous currently known techniques that evaluate consumer's behavior. The data collection can be done through direct communication with customers as well as by the utilization of indirect communication and technological means. It is possible to witness a growing amount of research that use content analysis method in the hospitality industry. Holjevac, Markovic, Raspor, Hidayat, Morosan, Jeong and some other scholars are notable researchers in this narrow niche of research. [18], [19]

Content analysis method is the most unbiased and will help to achieve the goal of this research. This method was also chosen to serve as a main research tool due to the fact that according to Whitty (2002) people are less likely to lie in the Internet environment, because their personal information hidden under nicknames or IP digits making no sense in any identification attempts. Conversely, people tend to give "socially acceptable" answers in their everyday life filling in the questionnaire forms or by responding to questions posed face to face with an interviewer [20]. Unlike other products and services tourists have no motivation to deprave their attitude about destination in their on-line reviews.

Content analysis is a synthesis of quantitative and qualitative methods. It allows researcher to convert qualitative data into quantitative through text data evaluation. Typically, this method is used to analyze various documents to identify specific factors and characteristics that reflect the trend of development or a particular phenomenon. [21]. A special place should be given to the selection sources of information that will be used in the study. Also the respondents' base needs to be verified in order to exclude people who do not meet research objectives criteria. [22]. According to purpose of this research the list of factors related to destination attractiveness was developed in order to meet the objectives of the study.

- 1) **Safety and security**- criminal situation, performance of local medical treatment and police institutions including the work quality evaluation of other local emergency and security organizations;
- 2) **Well-developed infrastructure** - development and quality of roads and pavements, underground transport, water transport, air transport (in general in this indicator

refers to the availability, accessibility, transit speeds and comfort of transport means) system;

- 3) **Information availability about tourism destination** – how easy tourist can get information about destination (books, magazines, guides, information desk, Internet, apps, expo);
- 4) **Prices** – how much prices in this tourist destination are higher or lower than average or elsewhere, in other tourist destinations;
- 5) **Natural resources** – the presence of water basins, parks, as well as their availability;
- 6) **Cultural heritage** – museums, monuments and other attraction objects that represent cultural value to destination;
- 7) **Entertainment and leisure** – presence in the destination restaurants and bars of different categories, concerts, festivals, sporting events, etc;
- 8) **Quality of hospitality services** – how tourists assess the overall quality of hospitality industry service products delivered by local hotels, restaurant service, tourist information offices and by the others;
- 9) **Friendliness of locals** – language barrier level, how easily the locals go to the contact, how they react to tourists, how friendly they are towards alien tourists.

Based on all of the above the collected data will help to test one basic and four working hypotheses and provide information to understand the perceived attractiveness of the destinations and their key attractiveness factors appropriate for Russian travelers.

Hypothesis 1: Tourists evaluate the characteristics associated with the tourist destination attractiveness in a different way depending on the particular destination.

The mentioned frequency of the tourism destination attractiveness factors will vary from destination to destination. In other words, tourists will focus their attention on certain well-known characteristics of destination (such as natural resources and cultural heritage) where they go.

Hypothesis 1.1 Russian tourists assess factors associated with the tourism destination attractiveness very carefully and thoroughly.

This hypothesis arose from the assumption that Russian tourists seek the best possible return on investment into vacation spending. Traveling once a year on average, Russian tourists spend a considerable amount of their annual income for leisure travel. It means that they expect to receive the best service that tourism destination can offer for the money they spent.

Hypothesis 1.2 Russian tourists mostly prefer to spend their leisure on the beach, whereby the quantity and quality of references about other destinations will be less and more negative respectively.

Russian tourists prefer more seaside leisure rather than cultural sightseeing. It can be concluded by the fact that Turkey, Egypt and others beach resorts top the outbound tourism flow numbers. Accordingly, it is possible to assume that the reviews regarding the cities that do not have any water basins will get a higher percentage of negative references, as

well as the total number of references will be less from the same number of respondents.

Hypothesis 1.3 Top rank of tourism destination in Spain from the Russian traveler point of view will differ from other destinations in the same country.

It was mentioned earlier in H1.2 that Russian travelers prefer marine leisure, so that they will choose seaside and islands more likely. Furthermore, Russians do not prefer individual tours in the majority of cases. They commonly use to choose the destination, which is offered by the local tour operator.

Hypothesis 1.4 Madrid and Barcelona have strong correlations one to another as tourist destinations and have the same factors of attractiveness rankings for Russian tourists.

Madrid and Barcelona are two main Spanish cities and tourism destinations. They are always compared by Russians one to another. We expected to find strong correlation between these two cities based on destination attractiveness factors. This correlation will be more tangible than correlation between, for instance, Madrid and Valencia or between Barcelona and Valencia and between two more destinations – Mallorca and Tenerife.

IV. METHODOLOGY

To conduct the survey we've used a target sample consisting of 500 respondents for each destination who already visited them. The sample was chosen based on criteria of review completeness and travel period during the last 3 years. For data collection, we have analyzed the tourists' comments via the Internet on the Russian travel sites in order to determine the mention's frequency of attractiveness characteristics. In Russia there are many web-sites and travel blogs where people can share their experience and photos, also they can give some advices to others. The main web-sites which were used in the survey was <http://www.tourister.ru> (tourism social network), <http://tonkosti.ru>, <http://www.turizm.ru>.

The main advantage of content analysis method is that it is based on word-count of the number of references in the text units. This allows the conversion of the collected qualitative information into quantitative empirical data to carry out pair correlation analysis of factors and also to determine the possible dependence between the variables.

The sample was build based on random approach. The reviews were erratically selected from Russian public Internet travel related resources to analyze mentioned frequency of tourism destination attractiveness factors identified earlier by the means of in-depth interviews.

In order to get 2500 reviews valid for data collection it was necessary to analyze a total of 3164 reviews. Thus, the response rate was 79.01%.

V. EMPIRICAL RESULTS

Spain is a beautiful country that combines wonderful natural resources and unique cultural heritage, which varies

from region to region. Over the last period, Spain has enjoyed a position of one of the top-ranked tourism destinations. According to the UNWTO data Spain takes the 4th place with a total number of 57.7 million inbound tourist arrivals and the 55.9 billion dollars tourist spending in the year of 2012 [23]. The Government of Spain has realized that tourism is a significant part of the national economy and vital budget contributor. Both of them suffered the consequences of the 2008 economic recession in EU. The hospitality and tourism sector in Spain was amounted at a share of 5.4% in GDP as of 2013 [24], so it was decided to strive the development of the existing tourist destinations as well as to release and promote new ones. At the same time, the press secretary of the Ministry of Tourism of Spain, Mrs. Isabel Borrego announced that the country's total budget allocated for the development of tourism in 2014 will amount €496 million [25].

The image and its development of Spain in the whole as tourism destination are indeed different challenges from the brand building of its individual regions, because each of them is unique.

There are some methods that can be used to identify the objects of the research. Firstly, researcher can concentrate on the numbers of inbound tourists, which are presented in the Table II.

TABLE II
INTERNATIONAL ARRIVALS BY CITY IN SPAIN 2007-2012

City	2007	2008	2009	2010	2011	2012
Barcelona	4120.4	4208.2	3992.2	4850.2	5431.5	5459.1
Madrid	3574.6	3602.7	3534.0	4041.1	4375.0	4111.3
Palma de Mallorca	1172.1	1174.0	1126.1	1268.7	1383.7	1365.5
Sevilla	953.2	895.3	818.1	965.0	1075.7	1086.5
Cádiz	1262.0	1114.2	981.8	996.0	1099.6	1176.9
Saint Barnabed de Trinquanes	939.4	960.5	872.6	960.4	1064.7	1049.7
Adeje	944.0	948.1	798.1	858.4	997.6	1035.7
Benidorm	805.1	792.9	661.9	720.8	749.8	781.8
Pájara	522.9	539.6	422.9	528.6	724.1	680.6
Sabon	567.7	625.5	475.3	544.9	627.9	646.1

These statistics reflect the total quantity of international visitors, regardless of country origin and purpose of the visit. Since we focus on the Russian outbound tourists market, the definition of the top tourism destinations was carried out on the basis of in-depth interviews with Russian tourists travelling to Spanish destinations. The survey was conducted in the travel agency office in Nizhny Novgorod (Russian Federation) in December 2013.

The main questions set was aimed at a purpose to identify the criteria of consumer behavior when choosing the place for travel. The survey involved 17 people who visited any destination in Spain previously at least once. Following those interviews it was possible to build a destination attractiveness factor set that is as follows:

- 1) Sun;
- 2) Prices;
- 3) Availability information about tourism destination;

- 4) Infrastructure;
- 5) Friends and relatives' opinions and recommendations;
- 6) Second time travel due to positive initial experience.

Also respondents were asked to choose a number of destinations in Spain, that they would like to visit or come back next time. All respondents noted that Barcelona and the nearby coast are the most desirable area for a vacation trip.

Thus, this analysis allowed us to determine the choice of tourist destinations for further study: Barcelona, Madrid, Valencia, Mallorca, Tenerife. In this research we will concentrate on top 5 tourism destinations that are attractive for Russian tourists.

For data collection, we analyzed the reviews on the Internet found in specialized travel web-sites to determine the frequency of determined earlier factors of attraction with regard to tourist destination, using the method of content analysis. In this study, 2500 reviews by Russian tourists describing tourist destination were selected and analyzed. It is noteworthy that it was not difficult to retrieve such reviews. There are specialized websites dedicated to particular country, as well as special travel sites where people share their experiences, pictures and emotions. Same is true for the on-line Social Media too.

Pilot survey was conducted in May 2014 and included 25 reviews. It was aimed at the selection of content analysis categories that were subsequently analyzed with a help of the special data processing software. In order to code the data with the that software the following updates to the attractiveness attributes were added, as follows:

- 1) Safety and security – amount of police patrolling and theft, friendly policemen etc.;
- 2) Well-developed infrastructure – public transport, city navigation and signs, city-airport rapid transit connection, facilities location in close proximity etc.;
- 3) Tourism destination information availability – reliable and updated information on the web-site, information on transportation and events;
- 4) Prices – accommodation cost levels, fares, restaurant bills etc.;
- 5) Natural resources – parks, gardens, temperature, “green city”, mountains, beach recreation availability etc.;
- 6) Cultural heritage – sightseeing, museums (with free entrance), architecture, art, literature (Cervantes), nearby towns, business district with tall buildings etc.;
- 7) Entertainment and leisure – bars, restaurants, cafe, flamenco, hop on hop off bus, football, Spanish corrida etc.;
- 8) Quality of hospitality services – quality of accommodation, f&b, quality of services, delays etc.;
- 9) Locals – atmosphere, ability to communicate in English, cute and friendly people, souvenirs availability etc.

Unfortunately, due to complexity of tourism destination and purpose of the research it was decided not to use the special software as originally intended as the important details can be missed. Software may provide the results of the analysis that will be only good enough to give a general overview of

destination attractiveness. However, it is planned to go back to this issue in future research projects under similar purpose.

The results of the study are presented in the Table III. It contains the information about attractiveness factors and their word-count and frequency in the total number of on-line reviews.

TABLE III
FREQUENCY APPEARANCE COMPARATIVE ANALYSIS OF ATTRACTIVENESS FACTORS IN RUSSIAN TOURISTS FEEDBACK WITH REGARD TO TOURIST DESTINATIONS IN SPAIN

Factors of tourist destination attractiveness	Frequency (% of total)					
	Barcelona	Madrid	Valencia	Mallorca	Tenerife	Top 5 destinations TOTAL
Safety and security	1,33%	3,62%	1,60%	5,06%	1,56%	2,13%
Well-developed infrastructure	12,06%	8,50%	11,76%	13,92%	6,26%	11,02%
Available information about tourism destination	7,55%	3,41%	3,26%	6,33%	7,82%	5,64%
Prices	13,02%	4,10%	9,03%	13,92%	18,78%	11,28%
Natural resources	9,92%	14,52%	10,07%	11,39%	17,21%	11,56%
Cultural heritage	26,57%	24,50%	13,98%	10,13%	1,34%	18,41%
Entertainment and leisure	18,27%	16,54%	36,34%	29,11%	23,47%	24,72%
Quality of hospitality services	7,98%	15,47%	10,77%	8,86%	21,91%	11,44%
Friendliness of local	3,31%	9,33%	3,18%	1,27%	1,65%	3,78%
Total (value)	12277	4951	9461	3318	3579	33586

Analyzing empirical data related to tourism destination of Madrid it is feasible to determine the biggest number of references that are mostly related to cultural heritage. Tourists consider a large number of cultural sites and architectural landmarks, as well as some of the best European museums in a positive way especially if they are free for entrance. Tourists have also noted that the city has well-developed entertainment and leisure facilities. They mentioned that life in Madrid comes at nightfall when the temperature becomes acceptable for Russians who got used to more moderate climate. Tourists highly praised the quality of the local community facilities and businesses. Also they marked the friendliness of the local people, officials and especially of the metropolitan police officers. Also Russian demonstrated the great importance to natural resources in Madrid.

The "safety and security" attribute is assessed in a negative way according to the study. Despite the fact that in the overall ranking of this attribute was the 8 out of 9, it was reviewed negatively. Tourists were surprised that regardless of the large number of police cars patrolling the city, there are many crimes being committed in Madrid like theft and illegal trade. Thus, we can conclude that this is characteristic of tourism destination attractiveness that concerns Russian tourists. In

other words, if the safety is good enough, consumers will not write anything about it. Otherwise they will spread their word and make it a negative message.[26]

Analyzing data from tourists' reviews about Barcelona, it was expected that cultural heritage, the spirits of Gaudi and Salvador Dali would be the most attractive factor and study proved this to be true. At the same time the entertainment activities, e.g. famous fountains, bars and restaurants, an aquarium, zoo and etc. also bear a great importance for Russians. The price reached the third place in the rankings of destination importance factors. Here more than half of the reviews considered this factor in a negative way. Tourists have noted that Barcelona is an expensive city, especially with regard of accommodation rates, prices of goods and services on main city streets, like Rambla, Diagonal or Cataluña Square.

There are less cultural heritage objects in Valencia than in Barcelona or Madrid. In order to appeal for tourists to the destination the local DMO has built a city of Science and Arts. Tourists are attracted to the destination by the availability of stimulating activities and the beautiful beaches. These improvements require building of new well-developed infrastructure that was positively noted by tourists.

The same situation can be observed in Mallorca and Tenerife, where there are not as much cultural heritage as in Barcelona or Madrid. From the Russian travelers' point of view the most attractive characteristics in the destination are entertainment and leisure, cultural heritage. After that prices, natural resources, well-developed infrastructure and quality of hospitality industry shows approximately equal importance to customers.

TABLE IV
PAIR CORRELATION ANALYSIS

	Madrid	Barcelona	Valencia	Mallorca	Tenerife
Madrid	1	0,7371	0,5499	0,3253	0,1452
Barcelona	0,7371	1	0,6339	0,5754	0,1502
Valencia	0,5499	0,6339	1	0,9416	0,5835
Mallorca	0,3253	0,5754	0,9416	1	0,6592
Tenerife	0,1452	0,1502	0,5836	0,6591	1

The pair correlation analysis (Table IV) shows that there is a high correlation between the mentioned frequencies of attractiveness factors in most of these destinations. It means that tourists guided similar factors when writing a review about tourism destination.

In this way, it is possible to formulate a statement that tourists give their consideration to cultural heritage and entertainment activities as factors of top importance. It should be noted that Madrid has smaller number of references especially in comparison with Barcelona and Valencia when it comes to culture and entertainment. Also the factor mentioning frequency is more similar compared to other destinations. This indicates that marketing strategy of Madrid tourist destination development may be less successful compared with others in some cases. Madrid did not create

its unique selling advantage and only capital image and the Real Madrid football club support its popularity.

All Spanish destinations have much in common; tourists marked the locals' friendliness and willingness to help the others in getting around. However local population almost does not speak English even those people who are employed in hospitality industry.

VI. CONCLUSION

This research was aimed to determine tourist attractiveness factors set of tourism destination and its testing. It was found in the present study that Barcelona received the biggest number of references in regard to destination attractiveness factors. Tourists assume that Barcelona possesses a lot of cultural heritage of Cataluña and Spain as a whole. The Gaudi influence and contribution to destination attractiveness was largely mentioned in the visitors feedback. The main factors of attraction in this destination by their mentioning frequency include cultural heritage, entertainment and prices. Valencia is a second top destination by frequency of the tourist reviews. Although there is a lack of global scale cultural heritage in the city, local government built a city of Science and the Arts, which is considered as the main and only point of attraction by Russians. In addition to this, another attraction in Valencia is well developed infrastructure. As for the Madrid destination, it is also perceived as mainly cultural heritage. However, as beside leisure is not possible there tourists redirect their attention to entertainment venues (bars, restaurants, night life, football and others). At the same time they pay much attention to the importance of service quality provided by local hospitality business.

Concerning the stated hypotheses, the first hypothesis was partly confirmed. The reviews made by Russian tourists include both positive and negative comments. The percentage of negative references ranges from 7 to 14% depending on the destination. Attraction factor of price varies from position of 3 through 7 depending on the destination as well (See Table in Appendix I). Many of these references were about relatively high prices, especially in the city center or other tourist spots. In other words, in order to save money tourists spend a lot of time and efforts to look for any suggestions and go to non-tourist areas.

Another hypothesis was partly confirmed. Number of tourists' reviews about the city with no beach availability such as Madrid is less than such destinations as Barcelona and Valencia that enjoy this tourist attraction. The percentage of negative responses is slightly higher there. The ratings of top tourism destination by Russians are quite similar but Valencia is not in the top of cities visited by Russian tourists.

VII. LIMITATIONS OF RESEARCH

Due to the fact that some tourism destination attract people from different regions and countries, choosing the Russian tourism web-sites can be considered as a limitation of the present study. The selection of tourism destination for analysis was made on the basis of tourist opinion that reside in one of

Russian regions and thus may not be relevant to all Russian tourists as the universe. The certain number of tourist destinations in Spain that were chosen for comparison may also turn into a limitation of research.

Nevertheless, these limitations do not contradict with the purpose of the research and may be overcome in the future research projects.

VIII. FUTURE RESEARCH AVENUES

Russia is an important market for many counties to attract tourists, especially for tourist destinations in EU. That is why their opinion may influence decision-making process in tourism oriented institutions. On the other hand, Spanish tourism destination management is interested to be appealing for people in other countries also. Therefore, we believe that one of the directions for future research can be the study of cross-cultural differences in the perception of tourism destinations attractiveness. The selection of countries and their respective nations for comparison will be based on the analysis of the inbound tourist flow to Spain.

Content analysis is one way of getting information about the perception of tourism destination attractiveness. Comparison of the results obtained by Internet resources with another way of gaining information about tourists' perception and behavior (questionnaire, in-depth interview, focus group and etc.) may be proper avenue for a future research.

Tourism destination attractiveness factors that we have analyzed in this research are directly related to certain destinations indicators, which can be measured in absolute numbers or related to other destinations. Comparison of the obtained results with the real statistics of the destinations using one-sample Levene's T-test (price level, crime rate, representation on the web-sites and others) may be another research direction in the future.

IX. MANAGERIAL APPLICATIONS

Study results may have two areas of application. Firstly, there is some scientific outcome. It is concerned with the analysis of previous studies in the field of tourism destinations attractiveness and competitiveness, as well as with the demonstration of content analysis method utilization, which becomes a standard research tool in opinion data mining towards many research objects.

Secondly, there are some managerial applications. The results can be largely beneficial to Spanish National Tourism Organization that operates in Russia to promote a particular tourism destination with a great emphasis on those factors that are important to Russian tourists. Furthermore, results may be used by DMOs in those cities that are already analyzed as well as by other destinations. Results of the present study may also help to identify key areas for investments for local DMOs. It is highly important that emphasis should be given to the preservation of national identity of the region where the destination is located and also to its sustainable development. Following the globalization and the neighboring regions have negative effect to the development of a certain region, because

it does not provide unforgettable and unique experience for the coming tourists.

REFERENCES

- [1] Cracolici, M. F., & Nijkamp, P. 2009. The attractiveness and competitiveness of tourist destinations: A study of Southern Italian regions. *Tourism Management*, 30(3): 336-344.
- [2] WTO Forecast. <http://mkt.unwto.org/publication/unwto-tourism-highlights-2014-edition>
- [3] Buhalis, D. 2000. Marketing the competitive destination of the future. *Tourism management*, 21(1): 97-116.
- [4] Ritchie, J. R., & Crouch, G. I. 2000. The competitive destination: A sustainability perspective.
- [5] Alavi, J., & Yasin, M. M. 2000. A systematic approach to tourism policy. *Journal of Business Research*, 48(2): 147-156.
- [6] Enright, M. J., & Newton, J. 2004. Tourism destination competitiveness: a quantitative approach. *Tourism management*, 25(6): 777-788.
- [7] Kozak, M. 2002. Comparative analysis of tourist motivations by nationality and destinations. *Tourism Management*, 23(3): 221-232.
- [8] Kozak, M., & Rinnington, M. 1999. Measuring tourist destination competitiveness: conceptual considerations and empirical findings. *International Journal of Hospitality Management*, 18(3): 273-283.
- [9] Ruhana, L. 2007. Destination competitiveness: meeting sustainability objectives through strategic planning and visioning. In *Advances in modern tourism research*: 133-151.
- [10] Bornhorst, T., Brent Ritchie, J. R., & Sheehan, L. 2010. Determinants of tourism success for DMOs & destinations: An empirical examination of stakeholders' perspectives. *Tourism Management*, 31(5): 572-589.
- [11] Tung, V. W. S., & Ritchie, J. R. 2011. Exploring the essence of memorable tourism experiences. *Annals of Tourism Research*, 38(4): 1367-1386.
- [12] Selcznev, A. Competitive position and market infrastructure in Russia. Moscow: Yurist, 1999
- [13] Ritchie, J. R., & Zins, M. 1978. Culture as determinant of the attractiveness of a tourism region. *Annals of Tourism Research*, 5(2): 252-267.
- [14] Kim J. H. The antecedents of memorable tourism experiences: The development of a scale to measure the destination attributes associated with memorable experiences // *Tourism Management*. - 2014. - T. 44. - C. 34-45.
- [15] Porter, M. E. 1990. The Competitive Advantage of Nations. Harvard business review.
- [16] Blanke, J., & Chiesa, T. 2013 The Travel & Tourism Competitiveness Report 2013. In *The World Economic Forum*.
- [17] Pike, S. 2002. Destination image analysis—a review of 142 papers from 1973 to 2000. *Tourism management*, 23(5): 541-549.
- [18] Holjevac, I. A., Marković, S., & Raspor, S. 2010. Customer satisfaction measurement in hotel industry: content analysis study. University of Rijeka. Opatija [Links].
- [19] Morosan, C., & Jeong, M. Y. 2007. Making hotel reservations online: a content analysis of US travelers' comments. *Revista de Turism*, (3): 5-10.
- [20] Whitty, M. T. 2002. Liar, liar! An examination of how open, supportive and honest people are in chat rooms. *Computers in Human Behavior*, 18(4): 343-352.
- [21] Howard Harris 2001 Content Analysis of Secondary Data: A Study of Courage in Managerial Decision Making, *Journal of Business Ethics*
- [22] Vitouladiti, O. 2014. Content Analysis as a Research Tool for Marketing, Management and Development Strategies in Tourism. *Procedia Economics and Finance*, 9, 278-287.
- [23] UNWTO <http://dx.doi.org/10.18111/unwto/tourism-review-2014>
- [24] Database <http://92.242.59.41:3335/ViewResults.aspx> (Marketline)
- [25] Spain budget for tourism <http://www.tourism-review.com/spain-government-will-grant-eur-221-million-to-tourism-businesses-news396690Y1uLrMqybfX1asP.99>
- [26] Hu, Y., & Ritchie, J. B. 1993. Measuring destination attractiveness: A contextual approach. *Journal of Travel Research*, 32(2): 25-34

Developing Logistics Indices for Turkey as an Indicator of Economic Activity

Gizem Intepe, Eti Mizrahi

Abstract—Investment and financing decisions are influenced by various economic features. Detailed analysis should be conducted in order to make decisions not only by companies but also by governments. Such analysis can be conducted either at the company level or on a sectoral basis to reduce risks and to maximize profits. Sectoral disaggregation caused by seasonality effects, subventions, data advantages or disadvantages may appear in sectors behaving parallel to BIST (Borsa Istanbul stock exchange) Index.

Proposed logistic indices could serve market needs as a decision parameter in sectoral basis and also helps forecasting activities in import export volume changes. Also it is an indicator of logistic activity, which is also a sign of economic mobility at the national level. Publicly available data from "Ministry of Transport, Maritime Affairs and Communications" and "Turkish Statistical Institute" is utilized to obtain five logistics indices namely as; exLogistic, imLogistic, flLogistic, dLogistic and LLogistic index. Then, efficiency and reliability of these indices are tested.

Keywords—Economic activity, export trade data, import trade data, indices, logistic index.

I. INTRODUCTION

The delivery of products and/or services in a planned schedule is involved in logistics. Logistics services are required for the continuity of today's economic systems. Developments of transportation systems are analogous with the quality of life. From this point of view, logistics services are accepted as, one of the most powerful factors which stimulate economic developments [1]. Contributions of logistics sector to national economy provides many advantages not only to investors but also to the public.

On the other hand, technological advances have created new opportunities to the logistics sector and companies can make use of this advantage through economic growth. In this highly competitive world, the quality of logistics is an outstanding feature and companies can improve their quality with technological advances. Besides, it is easier to access global markets, which makes logistics a powerful sector for the economic growth.

Turkey is a growing economy with an average annual growth rate of 5 percent over the last decade and has an advantageous geographical location, which provides many

opportunities to the logistics sector. Due to the latest developments, trade in Turkey has been rising significantly and has shown its presence in global trade [2]. Also transportation sector has an important share in Turkey's national economy [3].

Because of all of these reasons explained, it is important to measure the logistics activity to have a better understanding of the economy. Also these measurements can be used by companies and governments, for analyzing the state of art of the logistics sector. Indices are one of the foremost tools that provide more in-depth understanding of economies, detecting the success of economy policies and forecasting the future of economies.

The World Bank has been the first to attempt measuring logistics sector performance. The Bank aimed at helping countries by developing logistics reform programs to enable trade and enhance their competitiveness. Their index is called Logistics Performance Index (LPI) and represents the difference in the level of trade between countries [4]. But LPI is based on a worldwide survey which covers operators on the ground and calculated from the responses to the questions on the logistics "friendliness" of the countries in which they operate and those with which they trade [5].

Another important logistics index is the Transportation Services Index (TSI), which measures multiple means of transit in both passenger and freight transit. It is calculated on a monthly basis in three forms: passenger only, freight only, and combined passenger and freight transit. The freight TSI is built from data from inland waterway, air, railroad, trucking, and pipeline [6]. Kaynak and Mert (2009) attempted to calculate TSI for Turkey and investigated the relationship between these indices and the gross domestic product index. Because of the lack of regular data, they ended up calculating based on annual data. They stated that TSI index is insufficient to research the relationships between the improvement of transportation services and business cycles & economic fluctuations [7].

Another national level indicator is developed by the researchers at the University of Louisville to predict changes in the level of activity within the logistics and distribution industry activity in the US and is represented by a value between 1 and 100. Index is called the national LoDI index and uses cargo volume data from rail, barge, air, and truck transit [8].

Fite et al (2002) stated that, growth in economic activity leads to an increase in flow of goods. Industrial and economic indices - which are used for forecasting economic activities -

G. Intepe is with the Mathematical Engineering Department, Istanbul Technical University, Istanbul 34469, TURKEY (phone: 0090-212-285-4311; fax: 0090-313-6180; e-mail: gizem.intepe@itu.edu.tr)

E. Mizrahi is with the Mathematical Engineering Department, Istanbul Technical University, Istanbul, 34469, TURKEY (e-mail: emizrahi@itu.edu.tr)