TURKISH ECONOMY IN A NEW ERA: SELECTED ARTICLES

Edited by William Sayers
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IN A NEW ERA:
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Turkish Economy in a New Era: Selected Articles

As we go further in a new century, challenges and opportunities of the region in which Turkey is situated, becomes more and more obvious and relevant each day. It is clear that a new revaluation of various economic indicators such as growth, stability, energy-balance, local factors and purchasing power needs to be done and done quickly.

The articles in this volume have been chosen with an eye to giving the reader an idea of the current state of the mainstream of contemporary Turkish Academia on economics and its diverse related fields. Therefore, we have not included any hackwork. We hope that this will be an important contribution to the growing field of humanities in Turkey and elsewhere.

The editors’ corrections are limited to the expunction of typos and to changes for the sake of consistency. Except for these superficial changes, the text is always that of the author.

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# TABLE OF CONTENTS

**CHALLENGES AND THE FUTURE**

Abdullah Karakaya & Emine Genç - Innovation and innovation barriers at the 1000 big industrial enterprise in Turkey…………………………………………………………………………1.

Canan Dağdır & Ufuk Alkan - The Relation Between Financial Innovation And Banking Sector In Turkey……………………………………………………………………………9.

Funda Çondur & Sidre Gül Bige Göcekli & Halit Yılmaz - An Evaluation Of The Volume Of Loans In The Banking System And Economic Growth In Turkey………19.

Oktay Kızılkaya & Emrah Sofuoğlu - Are Economic Activities the Engine of Environmental Pollution? An Application of Cointegration Analysis for Selected Developing Countries…………………………………………………………………………………28.

Özen Okat Özdem & Yeliz Yapıcıoğlu - Green Marketing: A Semiotic Analyse on Green Advertisements………………………………………………………………………35.


Alpaslan Yaşar - Determinant Factors Of Modified Audit Opinions In Turkey……66.

Sema Behdioğlu, Gozde Koca - Evaluation Of The Decisive Criteria Of Commercial Lending At Banks Using Fuzzy Topsis And Fuzzy Todim……………………………………75.

Recep Aslan, Bayram Özhasar, Davut Buzkiran - Terms Of The State Border E-Commerce Evaluation…………………………………………………………………………………81.
ENERGY AND ITS PROBLEMS


İsmet Ateş & Orhan Şanlı & Halit Yılmaz - The Economic Relation between Turkey and Russia until Fighter Aircraft Crisis in 2015……………………………………99.


LOCAL AND ITS ECONOMY

Umut Evlimoğlu & E.Yasemin Bozdağlıoğlu - Evaluation Of Stock Market Istanbul In Terms Of Investor Profile………………………………………………………………114.

Mustafa Durman & Fatih Çelebioğlu & Metin Yılmaz & Tuğrul Çınar & Volkan Aslan- The Effects Of Earthquakes On Local Economy The Case Of Simav District………125.

Ebru Onurlubaş - A Research On The Factors That Affect The University Students Preference to Purchase Mobile Phones…………………………………………………………132.

İsmail Kara & Özcan Karahan & Koray Bulut - Field Research In Usak Region About Using The Manufacturing Resources Planning And Material Requirements Planning…………………………………………………………………143.

Ersan Ersoy & Ferda Üstün & Ülül Ünlü - The Impact of Professional Management on Firm Performance: Evidence from Turkey………………………………………………150.

Ali Bancar & Beyza Aydın & Gönül Budak - The Influence Of Workplace Dna In Job Satisfaction And The Practices Towards Nurses In A Health Organization In The City Of Izmir……………………………………………………………………………156.

CUSTOMERS AND THEIR BRANDS

Ayşe Anafarta & Nilgün Anafarta - The Meta-Analysis Of The Relationship Between Emotional Labor And Burnout…………………………………………………………164.

Didem Uğurlulu - Lean Production And Management………………………………………………174.

Zekeriya Nas & Vildan Kayar - Factors Affecting Purchasing Power Of Customers……………………………………………………………………………………………………181.

Derya Yörük & Ömer Turunç - The Role Of Person-Organization Fit In The Effect Of Career Satisfaction On Turnover Intention………………………………………………191.

Sinem Yeygel Çakır - Values of Corporate Reputation: A Study Based on Similarities and Differences of Brand Image and Employer Brand Image ........................................... 207.

Senem Demirkıran - Operational Efficiency and Management of Organizational Conflict ........................................................................................................ 217.

Burak Kaleli - Identifying a Brand, a Person or a Corporation ......................... 224.

Gülcan Şener & G. Motif Atar - Caution, Emoji Crossing! Employing Emoji to Improve the Effect of Advertisement ......................................................... 229.

Ayşen Temel Eğinli & İslı Karpat Aktuğlu - The Strong Connections in Interpersonal Relationships: Virtual Brand Communities and Consumer Engagement .............................. 238.

Innovation and innovation barriers at the 1000 big industrial enterprise in Turkey

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Abstract. Innovation is a new or an improved product (goods or services) or process, a new marketing strategy or realization of a new organizational method in internal applications, company organization or in external relationship. Many companies, that are aware of the importance of innovation as the key determinant in competitiveness, are ahead from the others with a significant margin.

This study is done with the aim of determining the innovation activities and innovation barriers within the 1000 large industrial enterprises of Turkey. The data were collected from 300 enterprises via survey method from the first 1000 enterprises determined by Istanbul Chamber of Industry based on 2014 data. Frequency and percentage share of the Enterprises and the authorities according to the descriptor information; and the authorities views regarding to innovation barriers are analysed with arithmetic average and standard deviation. It is tested via One-Way Anova test that whether the innovation strategies followed by the companies shows a significant difference according to the activity year or not.

As a result, it is determined that innovation is usually made at the companies and many issues are not seen as barrier for innovation, mostly offensive (%34) and traditional (%26) innovation strategies are followed by the enterprises. There is a significant difference between the innovation strategies followed by the companies operating for a long time (56 years and over) and the ones operating for a short time (6-15 years).

Key Words: Innovation, Innovation Barriers, Innovation Strategies, İstanbul Chamber of Industry (İSO).

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1 It is generated from the doctoral thesis namely “Innovation in enterprises and synergistic action of the competition strategies to the competitiveness” by Emine GENÇ under counseling of Associate Professor Dr. Abdullah KARAKAYA at Karabük University, Faculty of Economic and Administrative Sciences.
1. Introduction

In today's changing and developing world, intense competition, continuously changing customer needs and demands, and especially improvement of information and communication technologies make it difficult for the companies to survive in such a competition environment. It is compulsory for the companies to gain an advantage with creating superior ability in order to get the edge over the others. This makes innovation activities compulsory rather than preference for the companies.

This study is done with the aim of determining the innovation activities and innovation barriers in the 1000 big industrial companies in Turkey. In the parallel with the aim of the study, first of all, innovation, its types, its strategies and its barriers explained in the literature review part. In the Application part, a research takes place which is related to Turkey’s 1000 big industrial companies (the first 500 company + second 500 company) announced by ITO based on the 2014 data. The data were collected from the companies via survey method. Frequency and percentage share of the Enterprises and the authorities according to the descriptor information; and the authorities views regarding to innovation barriers are analyzed with arithmetic average and standard deviation. It is tested via One-Way Anova test that whether the innovation strategies followed by the companies shows a significant difference according to the activity year or not. Final indications are negotiated and suggestions are made in the conclusion.

2. Literature Review

2.1. Innovation and Types

Innovation derived from “innovare” in Latin meaning “doing something new and different”. It means that renewing the science and technology so will provide social and economic benefit (1).

Innovation is described as “the driving force for the development” by economist and politics scholar Joseph Schumpeter for the first time (2). According to Schumpeter, innovation is anything which is profitable for entrepreneurs and arise as a result of technological improvements (3). Innovation is described as a technology or technology combination that worth time consuming and generate benefits.

Innovation is a process starting from finding an idea and carrying it into the implementation. Innovation is the realization of a significantly improved product (product or service) or a process, a new marketing strategy or a new organizational method in in-operating applications, working place organization or in foreign relations (4).

The term of innovation covers a big area from a little improvements to the important inventions that lead to industry transformation. In this respect one of the main classification criterias of the innovation is made depending on the level of radicalism and level of impact it causes. These innovations are expressed as radical (impermanent or revolutionary) and gradual (permanent or evolutionary) (5).

Radical innovation, usually arises as a result of deep development studies, means a completely new innovations for clients or industry. Gradual Innovation, is the improvement of the current products or processes (6).

Despite the separation of the innovation types into many categories, Oslo Manual, which is in use as base in European Union and OECD countries, guides for the classification of innovation types that covers a part of this study. While the types were categorized as “technological product and process innovation” and “organizational innovation”, it is categorized under four different titles in guidance of the year 2005 as “product innovation” “process innovation” “marketing innovation” and “organizational innovation” (4).

Product Innovation, is providing a new product or service which is new or significantly developed comparing to the current features or foreseen usage. This includes all the significant developments related to the technical features, components and materials, joined software, user-
friendliness and the other functional features. Process Innovation, is realizing a new or significantly improved production or delivery method. This innovation includes the important changes about the techniques, equipments and/or softwares. Marketing Innovation, is a marketing method covering important changes about the product design and packaging, product placement, product promotion or pricing. Organizational Innovation, is a new organizational method application regarding to firms’ commercial applications, working place organizations or foreign relations (4).

2.1. Innovation Strategies

Innovation strategies are examined in different classification by different authors same as innovation notion. According to Freeman’s innovation strategies approach, strategies split into 6 groups. These are offensive, defensive, copiest, dependent, traditional ans differentiation strategies.

Miles ve Snow (1984) talks about 4 different strategies in general: defensive, seeking/brash/pioneer, analyst and reactionary (7; 8). Baruçoğul (1981) has classified the strategies as copiest, offensive, defensive. Güleş ve Bülbul (2004) has describerd the innovation strategies that can be preferred by the enterprises has classified under 7 titles based on timing of enterance to technological area and the speed. These are, offensive, defensive, copiest, dependent, traditional, following the opportunities and gaining strategies.

We have examined the innovation strategies under 6 titles in this study. These are: offensive, defensive, copiest, dependent, traditional, following the opportunities strategies.

**Offensive strategy,** it is applied in order to move before its competitors regarding to finding new product and production process and providing them into market and also gaining the market leadership. Since the science and technology are open for any business and easy to access, following this strategy is depend on a strong and independent r&d structure, special relationships, taking the new opportunities speedly and the ability of putting these advantages together in an appropriate way (9). It is needed for the business’ that want to follow this strategy, to have a top level and multiple communication with its environment, and also a strong information infrastructure and flexible organization shape inside the organization which allows a multiple communication as well. Additionally an organization climate, which allows the employees to express their opinions and take a risk when it is necessary, should be created with top managements support (10).

**Defensive strategy,** instead of increasing the situation in the market it is a preference of keeping the current market share for businesses (11). Businesses try to get a share in the same market via correcting the mistakes on the product of the first innovative businesses or putting new functions to them. They would not like to take risk. The activities done related to defensive strategies are cost less and less time consuming comparing to offensive ones (12). Defensive strategies also requires some r&d activities. However r&d activities aim to satisfy the blank and breakdowns determined after developing the current product or process in the line with the satisfy the market needs with gradual innovations, rather than improving radical changes, because of the risks it carries (5). The firms having defensive strategies put attention on the internal environment rather than external environment.

**Copyist strategy** is a common strategy type in the Market where technology rapidly grows and changes. The businesses using this strategy would not aim to be in the first place in the market, avoiding from taking risks, and having low cost tools and workforce (13). These businesses usually prefer to watch the innovations so far and trying to use the current technology and information. They can make more profit in case of finding new markets for the copied innovations. The have the cost advantages since their general expenses are low. Hence, they can provide the product with lowe prices into the market. (14). The biggest problems that face are related to getting information about the changes in the market, choosing the innovation that will be coppied and determining the businesses where the know-how will be gathered (15).

**Dependent strategy,** is applied by the businesses that prefer to be dependent to the leader business in case of innovation. The
firms that follow this strategy are operating like a satellite of a strong and assertive firm or like it’s subsidiary (15). They do changes on the technique features of the product or service in case of a requests come from clients (12). They are small and capital intensive companies which have almost no enterprise regarding to product design and r&d. Fully dependent businesses operate as a part of big ones or as a workshop of them (16).

Traditional strategy, these are usually applied by the businesses in a stable and less competitive markets. Due to less innovation requests coming from outside and no force from the competitors for innovating, the need of innovation is quite less (14). These companies, that are not paying enough attention and reserving money for the innovation, do not have the scientific and technological ability to make an innovation accordingly. However they can make little schematic changes. But the environment they are involved, there is no need for innovation or the competitiveness does not force for it. Due to the nature of the product they produce, it can be hold in the market.

Following the opportunities strategy, the strategy based on following the weaknesses of the competitors and the unexplored parts of the market. The businesses following this strategy are extroverted and always searching for new market opportunities. They grant benefits from the opportunities that have not been seen or left empty by the leader, without facing the competitors. They always performs innovations which can repond to competitors even if they are not as effective as the competitors ones’ (5).

2.1. Innovation Barriers

Innovation Barriers can be separated into two groups, the internal innovation barriers caused in enterprise and the external innovation barriers caused outside the enterprise.

External innovation barriers; These barriers consist of obstacles such as negative reactions from customers, barriers of entry to research institutes, negative effect of the economy over the innovation, bureaucratic barriers, input related problems, cartelization and monopolization, short term government policies, banking policies over the loans, confidentiality of customer needs, the lack of enterprises in a joint venture to be made, the lack of outsourcing and collaboration partners, patent and licensing policies, government policies over the competitiveness, no need for innovation in the sector, negative expectations for the sector’s future, consumer protection policies, the technology which is hard to reach or expensive, tax policies, lack of supplementary institute, easily copied innovation, social insurance policy, lack of government support, the lack of sufficient staff to take part in the innovation studies in the labour market.

Internal innovation barriers; lack of the founds reserved for innovation, lack of research and development, lack of training of employees, lack of employees working experiences, communication mechanism, the employees reaction for the innovation, insufficient organization structure, lack of market information, lack of systematic management process, lack of technological know-how, no need for innovation, not being able to allocate enough time for innovation, bot being able to commercialise the innovation, containing high risk in terms of cost of innovation, such a long time needed to be spent for innovation (17).

3. Methodology

3.1. Purpose of the Study and the Method

This study is done with the aim of determining the innovation activities and innovation barriers in the 1000 big industrial company in Turkey.

The population of the study consist of the first 500 + second 500 biggest businesses prepared based on the 2014 datas by ISO. In the study the simple random sampling method is preferred which is one of the probability based sampling methods. Since the populatin size is a 1000, 278 is enough as a sample size (18). In this regard the datas were collected from 300 businesses via survey methods.

Survey form consist of 3 sections; in the first section, there are questions for descriptive information directed to the enterprise and the
 enterprise authority who replies the survey, in the second section, questions regarding to innovation activities in the enterprise, in the third section, questions about the innovation barriers. The Innovation barriers scale consist of 23 clauses and has been subjected to the five-point liker type rating. The levels of participation for each statement pointed as ‘strongly disagree=1’, ‘disagree=2’, ‘neutral=3’, ‘agree=4’ and ‘strongly agree=5’. Descriptive information of the enterprises and the authorities are analysed with frequency and percentage divisions; authorities views about the innovation barriers are analysed with arithmetic average and standard deviation. It is tested via One-Way Anova test that whether the innovation strategies followed by the companies shows a significant difference according to the activity year or not. The indications gained from the research are limited to the first 500+second 500 big enterprises determinated by ITO based on 2014 and the statements take place in the survey.

3.1. Indications

%24,3 of the enterprise authorities who reply the survey within the scope of the research are sales executive and %23,3 of them are marketing executive. (Table 1).

Table 1. Status of the Authorities in the Business Enterprise

<table>
<thead>
<tr>
<th>Status</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>16</td>
<td>5,3</td>
</tr>
<tr>
<td>Vice General Manager</td>
<td>5</td>
<td>1,7</td>
</tr>
<tr>
<td>Export specialist</td>
<td>4</td>
<td>1,3</td>
</tr>
<tr>
<td>Quality Control Manager</td>
<td>20</td>
<td>6,7</td>
</tr>
<tr>
<td>Marketing Executive</td>
<td>70</td>
<td>23,3</td>
</tr>
<tr>
<td>Purchase Executive</td>
<td>31</td>
<td>10,3</td>
</tr>
<tr>
<td>R &amp; D Executive</td>
<td>44</td>
<td>14,7</td>
</tr>
<tr>
<td>Sales Executive</td>
<td>73</td>
<td>24,3</td>
</tr>
<tr>
<td>Production Executive</td>
<td>7</td>
<td>2,3</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

%74,7 of the authorites who replied the survey are Man, %38,7 of them aged between 26-34, %36,3 of them aged between 35-44 and 56 of them in the level of postgraduate, 206 of them bachelor's degree, 18 of them associate degree, 20 of them high school and under (Table 2).

Table 2. Descriptive Information of the Business Enterprise Authorities

<table>
<thead>
<tr>
<th>Gender</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>224</td>
<td>74,7</td>
</tr>
<tr>
<td>Woman</td>
<td>76</td>
<td>25,3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education Level</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School and under</td>
<td>20</td>
<td>6,7</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>18</td>
<td>6,0</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>206</td>
<td>68,7</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>56</td>
<td>18,7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 and under</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>26-34 years</td>
<td>116</td>
<td>38,7</td>
</tr>
<tr>
<td>35-44 years</td>
<td>109</td>
<td>36,3</td>
</tr>
<tr>
<td>45-54 years</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>55 and above</td>
<td>16</td>
<td>5,3</td>
</tr>
<tr>
<td>Unanswered</td>
<td>5</td>
<td>1,7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

138 of 300 enterprises negotiated in the scope of the research are in the first 500 list, 162 of them in the second 500 list. 239 of the enterprises have private equity, 22 of them have the foreign capital, 9 of them have mixed capital. %20 of the enterprises have been operating for 26-35 years, %18 of them have been operating for 36-45 years. %48,3 of the enterprises have 100-499 employees, %29,3 of them have 500-999 employees and %17,7 of them have over 1000 employees. (Table 3)

Table 3. Descriptive Information of the Business Enterprises

<table>
<thead>
<tr>
<th>Sermaye Yapısı</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Private</td>
<td>239</td>
<td>79,7</td>
</tr>
<tr>
<td>Foreign</td>
<td>22</td>
<td>7,3</td>
</tr>
<tr>
<td>Mixed</td>
<td>33</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity Year</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years and less</td>
<td>7</td>
<td>2,3</td>
</tr>
<tr>
<td>6-15 years</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>16-25 years</td>
<td>51</td>
<td>17</td>
</tr>
<tr>
<td>26-35 years</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>36-45 years</td>
<td>54</td>
<td>18</td>
</tr>
<tr>
<td>46-55 years</td>
<td>47</td>
<td>15,7</td>
</tr>
<tr>
<td>56 years</td>
<td>51</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Employees</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>99 and less</td>
<td>14</td>
<td>4,7</td>
</tr>
<tr>
<td>100-499</td>
<td>145</td>
<td>48,3</td>
</tr>
<tr>
<td>500-999</td>
<td>88</td>
<td>29,3</td>
</tr>
<tr>
<td>1000 and over</td>
<td>53</td>
<td>17,7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

When the division of the innovation strategies applied by the enterprises have been
examined, it shows that %34 of them follow the offensive strategy, %26 of them follow the traditional strategy. (Table 4)

**Table 4. Division of the Innovation Strategies Applied by the Enterprises**

<table>
<thead>
<tr>
<th>Innovation Strategy</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offensive</td>
<td>102</td>
<td>34</td>
</tr>
<tr>
<td>Defensive</td>
<td>32</td>
<td>10.7</td>
</tr>
<tr>
<td>Copiest</td>
<td>31</td>
<td>10.3</td>
</tr>
<tr>
<td>Dependent</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>Traditional</td>
<td>78</td>
<td>26</td>
</tr>
<tr>
<td>Following the opportuni</td>
<td>50</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>TOPLAM</strong></td>
<td><strong>300</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Arithmetic average and standard deviation values of the views of the Enterprises authorities, who replied the survey, regarding to innovation barriers have been shown at Table 5.

**Table 5. Innovation Barriers in the Enterprises**

<table>
<thead>
<tr>
<th>Statements</th>
<th>X</th>
<th>s.s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation is not applied at our plant due to unsufficient organizational structure.</td>
<td>1.72</td>
<td>0.52</td>
</tr>
<tr>
<td>Innovation is not applied at our plant due to the needs of new Technologies.</td>
<td>1.85</td>
<td>0.42</td>
</tr>
<tr>
<td>Innovation is not applied at our plant since it does not efficient at competitive advantages.</td>
<td>1.75</td>
<td>0.46</td>
</tr>
<tr>
<td>Innovation is not applied at our plant because it does not meet the customer needs.</td>
<td>1.76</td>
<td>0.44</td>
</tr>
<tr>
<td>Innovation is not applied at our plant due to the lack of financial resources.</td>
<td>1.73</td>
<td>0.40</td>
</tr>
<tr>
<td>Our plant is inadequate for founding the innovation.</td>
<td>1.91</td>
<td>0.49</td>
</tr>
<tr>
<td>R &amp; D studies are not adequate at our plant for innovation</td>
<td>1.88</td>
<td>0.50</td>
</tr>
<tr>
<td>I think the personal trainings are not adequate for the innovation studies.</td>
<td>1.94</td>
<td>0.50</td>
</tr>
<tr>
<td>The working experience of the employees have a negative effect on our innovation studies.</td>
<td>1.86</td>
<td>0.47</td>
</tr>
<tr>
<td>The communication issues between our units constitutes an obstacle for innovation.</td>
<td>1.93</td>
<td>0.47</td>
</tr>
<tr>
<td>Our employees have a negative attitudes towards innovation.</td>
<td>1.90</td>
<td>0.45</td>
</tr>
<tr>
<td>Previously made innovation studies considered to be enough for our plant.</td>
<td>1.96</td>
<td>0.45</td>
</tr>
<tr>
<td>Innovation is not applied at our plant due to short term focused strategies.</td>
<td>1.85</td>
<td>0.42</td>
</tr>
<tr>
<td>There is no team to follow the innovation studies at our plant.</td>
<td>2.11</td>
<td>0.59</td>
</tr>
<tr>
<td>Since decision making process goes very slow at our top and middle management level, it results with very slow going</td>
<td>2.02</td>
<td>0.52</td>
</tr>
</tbody>
</table>

When the arithmetic average of the authorities views, who involved the survey, regarding to innovation barriers have been examined, the top statement with the 2.47 average is ‘We are lack of information regarding to production for making innovation’. The least statement is ‘Innovation is not applied at our plant due to unsufficient organizational structure.’ When the average values have been examined it can be said that innovation is generally made and many issues are not seen as an obstacle for innovation at enterprises.

It is tested via One-Way Anova test that whether the innovation strategies followed by the companies shows a significant difference according to the activity year or not. Analysis results are shown at Table 6.

**Table 6. Comparison of the Innovation Strategies Applied by the Enterprises According to Activity Years**

<table>
<thead>
<tr>
<th>Variance Source</th>
<th>Squares Total</th>
<th>sd</th>
<th>Squares Average</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intergrups</td>
<td>57,614</td>
<td>6</td>
<td>9,602</td>
<td>2.486</td>
<td>0.023</td>
</tr>
<tr>
<td>In-group</td>
<td>1131,623</td>
<td>293</td>
<td>3,862</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1189,237</strong></td>
<td><strong>299</strong></td>
<td></td>
<td><strong>2.486</strong></td>
<td><strong>0.023</strong></td>
</tr>
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</table>

Innovation strategies applied by the enterprises have shown a significant difference according to activity years (p=0.023<0.050). In order to determine which groups the difference originated from Tamhane’s T’ test was done and it is understood that the originated from...
the enterprises which have been operating for 6-15 years and the ones for 56 years and over (p=0.02, <0.05). Arithmetic average of the enterprises which have been operating for 6-15 years is 2.63 and for the ones which have been operating for 56 years and over is 4.08. Accordingly, while the enterprises which have been running for longer mostly prefer the traditional and following the opportunities strategies, the younger ones follow defensive strategies.

4. Conclusion

During the research done with the aim of examine the innovation activities and the innovation barriers at 1000 big industrial company in Turkey, the datas were collected via survey method from 300 companies choosen via sampling method from the first 1000 enterprises determined by ISO in 2014.

%24,3 of the enterprise’s authorities who involved the survey, are Sales Executive and %23,3 of them are Marketing Executive. %74,7 of the enterprise’s authorities who involved the survey are man and %38,7 of them aged between 26-34, %36,3 of them aged between 35-44 and 56 of them have a postgraduate degree, 206 of them have a bachelor's degree, 18 of them have associate degree and 20 of them have a high school or under level of degree.

138 of the enterprises out of 300 that are negotiated in the scope of research are take place in the first 500 list and 162 of them take place in the second 500 list. 239 enterprises have private equity, 22 of them have foreign capital, 39 of them have mixed capital. %20 of the enterprises have been operating for 26-35 years, %18 of them have been operating for 36-45 years. %48,3 of the enterprises have 100-499 employees, %29,3 of them have 500-999 employees, %17,7 of them have 1000 and over employees.

It is determined that, innovation is usually made within the enterprises and many issues are not seen as an obstacle for innovation, mostly Offensive (%34) and traditional (%26) strategies are followed. There is a significant differences between the strategies followed by the enterprises who have been operating for a long time (56 years and over) and the ones that operating for a shorter time (6-15).

This study is done towards the industrial companies. It is possible to reach different results if the enterprises from different sectors are involve the research.

It can be suggested for the upcoming studies in this area to search for new innovation barriers and creating models with variables that effect innovation and renewal of the research for different sectors.

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The Relation Between Financial Innovation And Banking Sector In Turkey

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Abstract

The need of financial resources for developed countries to prosper and grow and the lack of financial resources needed by developing countries for investment during development process have both crossed national borders thus revealing the need for free circulation. Particularly in 1970’s and 1980’s, when improvements in information and communication technologies gained momentum, liberalization of financial markets resulted in an increasingly competitive environment. Raising the funds necessary to finance development in such a competitive environment created the need to generate new financial products and services. Innovations in financial products and services rapidly gained place and became prevalent both in its own body and banking sector that is in competition with nonbank financial institutions.

The purpose of this study is to present the development of financial innovations in Turkish banking sector. Under this framework, this study will include the concept of financial innovation, development of financial innovation in Turkey and the change caused by financial innovations on banking products and processes.

Keywords: Financial Innovation, Credit Cards, Banking, Internet Banking, Financial Instruments

1. The Concept of Financial Innovation

Although the concept of financial innovation has been defined differently, financial innovations have come into existence for a thousand years. It is proved that the most primitive kind of financial agreements entailing the use of funds in our days was used by early civilizations. This case is a natural development to provide risk sharing from the point of loan institution parties. History of more complicated financial agreements date back to the Babylon and Assyrians. Bankers in Ancient Greece also used to trade money [2].

The underlying reason of financial innovation efforts from past until today is imperfection of...
financial markets and ineffective operation of financial intermediaries. In order to rule out such negativities caused by this case and to create profit opportunities, financial institutions benefit from technological advancements to generate new financial products or processes [7].

Lerner and Tufano suggest that the concept of financial innovation consisting of new financial technologies, institutions and markets is actually the dissemination of financial instruments created. On the other hand, innovations in finance sector are divided into two as innovations for products and processes. Examples to such innovations are new derivative agreements, new corporate securities or pool investment products. Typical examples to process improvements are pricing transactions and securities allotment instruments [12].

Frame and White define financial innovation as development of a new product, service or instrument to fulfill participants’ demands in financial system. Frame and White similarly suggest in their study that financial innovations may both be grouped as new product (subprime mortgage) or services (internet banking) and new productions or new forms of organizations. In general, financial innovations may differentiate from each other by purpose [6]. Although there are different approaches to categorization of financial innovations, the difference between correlated product innovations and process innovations is not clear [12].

Instrument such as exchange rate and swaps, currency and interest options, interest rate and share index futures markets, life assurances, money market mutual funds as examples to product innovations have been developed against changes in economic conditions. On the other hand, innovations defined as processes are instruments of payments such as bank cards, automatic teller machines (ATM), point of sale (POS) terminals, electronic banking, electronic fund transfer system and internet transactions (digital wallet) generated due to technological advancements [11-4].

Reviewing the emergence of new financial products and services that became difficult to be examined due to increasing sophistication with derivative instruments while facilitating financial transactions such as e-banking, ATM will provide insight on this active process which dates back to ancient civilizations.

2. Reasons of Emergence of Financial Innovations

Different opinions have been suggested as to the reasons of emergence of financial innovations. Nevertheless, the desire to boost profit is an important source of motivation for banks in implementation of financial innovations. Behavior pattern of a business that is developing products to boost profit in real sector is similar to that of a bank in financial sector from this aspect. Banks’ improvement of products to meet customer requirements manifests itself as a profit spike. A change in financial conditions constitutes the resource of quests for financial innovations to create profitability in financial sector [14].

Financial innovation wave influenced U.S. and other developed countries in 1960’s and affected financial conditions to create a great change. Although it varies from country to country, such change spread through developing countries. Nevertheless, many countries shared common change processes during such period such as liberalization, globalization, competition, securitization and financial innovations [13].

a. Liberalization: A trend towards abolishing restrictions on national financial markets was initiated during this period.

b. Globalization: Following the liberalization of financial markets, national borders of countries were abraded and financial markets become more integrated to each other which case increased infectiousness of economic problems in a certain country throughout other countries.

c. Competition: An increasing competitive environment emerged between financial institutions. The reason was the failure to traditionally discriminate between commercial banks, investment banks and securities companies due to lack of available regulations. Eliminating the barriers on banking activities and nonbank institutions’ activities made various financial institutions such as banks, brokerage houses and insurance companies operate almost in the same manner [11-13].

d. Innovation: Developing new financial products and markets happened to be a significant change.

e. Securitization: An increasing trend occurred towards marketable financial instruments where interest rates are specified on market’s end instead of credit. Enabling
purchase and sale of financial receivables through securitization, this method has also influenced financial intermediation [13].

The purposes of removing the obstacles on capital movements as the borders that discriminate the national financial markets from each other are eliminated and specifying interest rates, removing restrictions on loan distribution amount and removing pressures on financial system as compulsory reserve amounts deducted from deposits are reduced are to better operationalize financial markets [15]. Since the collapse of Breton Woods system, fixed rate system was replaced by flexible exchange rate. With liberalization trends in financial systems of countries after 1970’s, the difficulty to estimate inflation and interest rates increased risks in financial markets which case directed financial institutions in need of protection against fluctuations in inflation and interest rates towards a quest for innovation [11]. Derivatives and options markets (futures, forward, option), interest and foreign exchange swaps, emergence of adjustable-rate debt instruments (short term and adjustable-rate funds), interest rate and share indexed bonds and bills, government debt securities are results of such a quest for innovation [8-9].

Another reason triggering financial innovations is the cost-cutting influence of technological advances on financial services and transactions. As technological advancements enable financial institutions produce more profitable products and services, the amount of products and services dependent on technology also swiftly arose. Development and diversification of banking services may be exemplified with use of electronic banking services along with the decrease in telecommunication costs, credit cards and cash withdrawal cards, emergence of virtual banks and people’s preference on telephone and computer for banking transactions.

There are certain cost elements required to design a new product, train market participants and due to legal regulations while financial institutions create a financial innovation. In designing a new financial product, economic contribution less such costs are expected to be positive. The ability of a permanent financial innovation to increase the effectiveness of financial system is associated with the “complementary” quality of resultant product or service. ATM’s are permanent financial innovations to increase effectiveness of payments system [1].

Frequent regulations on financial system, new taxes levied on financial products and services as well as incremental costs incurred by variable investor profiles encourage banks to develop new products [1]. Therefore, Silber defines financial innovations as a result of restrictions on financial system. The relation between regulations on financial system and finance system is remarkably important as it urges a trend towards increasing financial innovations. Tightened regulations and taxes by governments on financial system cause financial institutions develop new products to evade from regulations. Banks transform gaps in current legal regulations to profit through financial innovations. For example, ATM’s that have an important role in development of electronic banking is a result of restrictions on banks to open branches in the U.S. [14].

Sparked as a reaction against financial regulations, financial innovations may have negative influences on financial sector besides its positive effects. Financial innovations came under question along with financial crises in 2007-2008. Asymmetric information problem in credit scoring period, agent problem in housing market and financial innovations are indicated as one of the essential reasons of crisis [14]. The increasing use of information and communication technologies especially in finance sector also swiftly amplified the spreading rate of crisis to other countries. Developing new financial products with financial engineering leads to structured credit products. Such financial products stem from asset cash flows and address to various preferences of investors regulated by certain risk properties. [14]. Securitization, a product of financial engineering, has been effective during recent financial crisis of 2007-2008 as it enable trading financial receivables. Banks could obtain an opportunity for a new financing and domestic credit volume redoubled thanks to securitization.

Substantial amount of shares owned by European banks in an asset-backed securities market in the U.S. increased contagiousness of crises in real estate market to other countries [15]. While diversification in banking activities helped financial institutions collect funds, it is obvious that so created financial products increased risks of banks and were abused.
3. Influence of Financial Innovations on Banking Sector in Turkey

The main function of banks as financial intermediaries is to finance long term investments through short term funds. The role of banks as traditional financial intermediary has changed in competitive environment created in banking sector by financial innovations. Banking activities has decreased with financial innovations. The main reason for this is the decrease of profits earned related to cost and income relation in services offered by the banks. This case directed banks towards newer and more profitable areas [14]. Recent innovations in financial system are essentially reflected as the proliferation of off-balance implementations in banking system [5].

In concurrence with the influences of technological advancements in financial sector, commercial banks have entered into an important process of change for the last 35 years. Advancements in telecommunication changed information technologies, finance theory and implementations, mentality of risk management and financial intermediary [6]. Such transformation period in banking sector accelerated with the effects of liberal fiscal policies after 1980. During such period, liberalization of banking activities enabled diversification in products and services offered by the banks thereby leading to an increasing competition between banks and nonbank financial institutions [15]. The ability of banks to boost their power to compete is correlated with the importance they attach on research and development (R&D) activities. Banks may increase their financial capacities and create financial innovations by supporting research and development activities. R&D activities are rather performed by large-scale banks in Turkish banking sector and share of research and development costs within non-interest expenses are generally confined to a limited level [16].

3.1. Financial Innovations On Product Basis

New markets and new financial instruments surfaced in Turkey after 1980’s along with liberal policies also applied in other developing countries. Fast technological advancements predominantly in finance sector facilitated the introduction of products such as Electronic Fund Transfer (EFT), credit card, bank card, Point of Sale (POS) machine, Automatic Teller Machine (ATM) and financial instruments such as capital market and derivative products and personal banking products such as internet banking.

This section hereof will discuss the recent development of aforementioned products and services in Turkey and interpret the share of incomes gained from such services and products within bank assets.

Enacted after April 1992 and began to be used as a new financial innovation in Turkey, EFT survived until today as an inevitable product of fund transfer [8]. As indicated in Graph 1, the amount of total payments made through EFT between 1992 and 2015 increased by 28% on annual basis in real terms. As of the end of 2015, 291.801.933 units of EFT payment messages were realized in Turkey.

Graph 1: EFT Payment Message Unit and Change in Percentages


Sound, reliable and fast functioning of payment systems are of great importance both for financial institution and individual in an economy. Any fault in payment systems will affect banks and production sector and overall the entire country. Investments can be fast diverted thanks to EFT system that enables banks and customers make payments in electronic environment and instantly see money actions [9].

Graph 2 demonstrates total amount of payment transactions made through EFT system in Turkey. Total amount of transactions made through EFT system between years 1992 and 2015 increased by 65 percent in average on annual basis. This is an indicator that EFT system is becoming popular in banking sector.
Another instrument of payment becoming increasingly popular in Turkey is bank cards and credit cards. Widely used around the world, these cards have the effect to increase domestic demand. The use of credit cards have extremely become widespread for recent 15 years in Turkey. While the number of credit cards in use was around 10 million in 1999, it reached 58.2 million in 2015. The number of credit cards increased around six fold in last 15 years. The reason of such increase may include the possibility for installment shopping, shopping bonuses and etc. In addition, credit card owners are also offered the opportunity to pre-own a product that is possibly to be more expensive in the future as credit card owners are enabled to spend their future incomes today. On the other hand, this case also refers to an increase in indebtedness level of individuals.

As demonstrated in Graph 4, 13 millions of active credit cards were available in Turkey where population was around 64 million in 2000. In addition, number of credit cards per person was 0.21. While population of Turkey reached 78 million in 2015, number of active credit cards reached 58 million and number of credit cards per person hit 0.74 to a record increase.

Graph 5 shows developments on total number of bank cards in Turkey. While the number of active bank cards in 2000 was 29.5 million, it reached 112.3 million in 2015 and increased by 9.5 in average in real terms per year.
Graph 5: Total Number of Bank Cards and Change in Percentages


Graph 6 indicates developments in number of bank cards per person in Turkey. While the number of active bank cards per person was 0.46 in 2000, it exceeded population in 2015 resulting in the conclusion that each individual has bank cards at rate of 1.43 in their wallet.

Graph 6: Number of Bank Cards per Person


Development of ATM machines and POS devices that are rapidly increasing in number particularly after 2000’s and helping reducing the cost and workload of banks at branches are shown in the graphs below. Graph 7 below highlights that while the number of POS machines was 188k in 1999, it reached up to 2,1 million in 2015. In parallel with proliferation of use of credit card and bank card, individuals’ payment habits have also changed. As consumers prefer shopping at businesses supporting credit card and bank card application, businesses increased their requirements to use POS device in order to prevent any loss of customer. Banks also turned businesses’ demands for POS devices into opportunity in consideration of a certain amount of commission and therefore all factors from consumer to producer, producer to banks, benefited from such case.

Graph 7: Total number of POS and Change in Percentages


The increase in use of POS machine is clearly demonstrated in Graph 8. While the number of consumers per each POS device was 337 in 1999, it regressed down to 36 per POS in 2015. However, regression here actually means the increase in proliferation of technologic innovation.

Graph 8: Number of Person per POS Machine

Graph 9 below indicates total number of ATM’s in Turkey during the period between 1999 and 2015. It is observed that the number of ATM devices dropped down to 48,000 in 2015 while it was around 10,000 in 1999. The change in number of ATM’s put into operation each year seems to be 10% in average on annual basis. The reason of such increase is two-way namely bank and consumer. Banks tried to make ATM use attractive with either no commission or low interest and costs from such devices in order to cut down transaction costs at branches. On consumer side, change in individuals’ habit to use money and possibility to make individual payments (loans, invoices and etc.) through such devices increased demands for such devices.

**Graph 9: Total Number of ATM’s and Change in Percentages**

Throughout Turkey, in particular in metropolitans, it is possible to access ATM device of more than one bank in almost each and every quarter. Graph 10 demonstrates that while the number of individuals benefiting from ATM device in 1999 was 6,409, it dropped down to 1,630 in 2015. Here, such decrease shall be considered as a financial innovation rather than a negative situation.

**Graph 10: Number of Person per ATM**

Turkish banking system can be considered as a country where trend to use advanced technology and banking product and services is higher than other banking sectors of developed economies. Central Office of Record was established in order to provide and fortify an infrastructure compatible with such advanced technology and thereby to make money observable in electronic media. In a similar manner, credit office was established to provide a database on consumer credit and credit card accounts. Interbank Card Center was functionalized for the purpose of preventing credit card fraud.

### 3.2. Financial Innovations On Service Basis

Financial innovations has multiple functions such as to complete shortages in financial markets and to ensure depth and efficiency in financial markets. Depending on technological advancements, such shortages were tried to be removed through various products such as bank card, credit card, POS and ATM device. Insufficiency of conventional investment instruments to fulfill individuals’ requirements and failure to appease risk appetite were tried to be removed through possibilities for capital market transaction, transaction at derivatives markets as offered by investment institutions to individuals.

Banks and intermediaries especially serve to act as intermediary for instruction transfer, for transaction intermediary, portfolio intermediary, investment consulting, intermediation for public offering and depositing capital market instruments. In consideration of such services, investment institutions demand certain rate of commissions and costs from their customers...
which are reflected as profit to balance sheet of investment institution.

Graph 10 below indicates the ratio of profit and loss due to capital market transactions realized by banks to net profit for the year. Continuous profit was yielded from capital market transactions, which is still a new financial product for banking sector in Turkey, except for the year of 2007. The ratio of profit gained from capital market transactions since 2002 to net profit for the year was realized as 23% on annual basis. In particular following the periods such as 2001 and 2008 crisis, investors invested in capital market instruments for the purpose of hedging risks and increased their profits from these activities in the sector.

Graph 10: Profit/Loss from Capital Market Transactions


Inflation pressure and high interest rate observed in the recent past in Turkey are the greatest factors in non-development of markets. Hence, as shown in Graph 11, banks mostly made loss from derivative transactions. The ratio of profit from derivatives to net profit for the year for the last seven years was 2.5% in average in real terms on annual basis.

Graph 11: Loss/Profit from Derivate Transactions


3.3. Internet Banking and Development

Survival of banks in competitive environment depends on their ability to develop new strategies to gain customer loyalty. With this respect, banks started using alternative distribution channels as financial innovations. Considering the advantages provided as to transaction cost and time for banks and customers, development in internet banking can be accepted as the most significant financial innovation for recent periods.

Reviewing the influence of financial innovation on banking sector, our study determines that internet banking is the most important distribution channel both for present day and future as to bank employees and customers. A virtual branch at disposal to fulfill any possible customer expectations can be considered that banks are innovative and open for development aside from concept of conventional branching.
Having achieved a structural recovery in banking sector in 2000’s, developments at technical aspect of banking found a scope of application as to information and communication technologies and thereby a new type of service named internet banking was born.

As shown in Graph 12 demonstrating the number of internet and mobile banking in Turkey, such technologies date back to the recent past in Turkey. While the number of internet banking customers was 3.1 million in 2005, it increased by 5.5 times until 2015 to reach 14.4 million users. Mobile banking increased by 52 times to around 12 million from its start in 2010 to 2015. In case the increase in number of mobile banking users continues at this speed, it is expected that the number of mobile banking users in Turkey will exceed the number of internet banking customers within next two years.

**Graph 12: Number of Internet and Mobile Banking Customers**

![Graph 12](image_url)

**Gray Columns:** Internet Customers  
**Black Line:** Mobile Customers  
**Source:** The Banks Association of Turkey, https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59. (Date of Access: May 18th, 2016).

Such an increase in use of internet and mobile banking can be explained in many ways. The first and the foremost is the ease of access and use. Second is the facility for payment and financial transactions and possibility to control. In addition, other reasons of preference may be listed as additional benefits of internet banking with abundance of transactions, adoption of websites as a lifestyle and ease to learn how to use [10].

4. Overview

Operations aiming at providing a competitive superiority and advantage by utilizing financial innovations in banking sector increased after 1970 in Turkey, like all around the world. Upon transition from conventional branch banking to contemporary information and telecommunication technology, major changes were experienced both in payment systems and financial instruments used. This case also caused substantial decrease in transaction costs of both banks and individuals trading through banks.

The ratio of incomes earned from conventional banking transactions to total assets between 2000 and 2010 was around 11% while it recessed to 7% despite the fact both assets and incomes of the banks increased in the last five years. Therefore, it can be concluded that the
ratio of non-interest incomes of banks (credit card, bank card, EFT, POS, ATM, capital market transactions, derivative and internet banking) to total assets had increased along with technological advancements and progresses. However, one should not deny that interest rates are still the most important source of income for banks in Turkish banking system.

Services offered by the banks as realized at capital markets and derivatives helped initiating the processes with new financial instruments in parallel with global financial developments. This case also contributed to rapid development of secondary markets. However, the influences of emergence of such a new monetary transfer mechanism on macroeconomic magnitudes such as inflation, money supply and multiplier should also be taken into consideration.

Finally, it is concluded that financial innovations influenced banking sector in Turkey in two ways: first, financial innovations help banks and markets correlate with each other and operate as a whole and second, reduce financial service costs to make market more effective on transaction basis. One should also remember that financial innovations in banking sector may case some negative results in the present or in the future along with its advantages. Whereas, the high amount of increase in number and volume of credit card users also result in default risk thereby creating an element of risk for countrywide economy. Likewise, the increase in number of devices such as ATM, POS machine and the number of internet and mobile banking users cause frequent incidents of abuse and fraud. On the other hand, financial innovations are considered as one of the most important actors in 2008-2009 crisis and therefore it is displayed that financial innovations may also be abused besides its benefits. The problem of auditing financial innovations as a dynamic concept is also attention-grabbing. Besides the ability of financial innovations to find scope of application in short time in Turkey, a suitable infrastructure and supervision on innovations play great role as to sound functioning of financial system.

References


An Evaluation of the Volume of Loans in the Banking System and Economic Growth in Turkey

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Abstract. Banks have an important place in the financial system. It is important that banks are fulfilling their functions completely for the overall economy of a country to grow. Therefore, it is necessary for realizing the economic growth that the banking system to perform deposit credit flow substantially. The fundamental difference between developed countries and developing countries is the contribution of banking system to the economy of the country. While developed countries have a strong financial system and producing plus value proportional to their economy, fragility of financial system in developing countries cause its contribution to the economy be minimal. Herewith, it is thought that there is a relationship between credit expansion and economic growth. The main aim of this study is to analyze the loans given by the banking system and economic growth in Turkey. In the direction of this main aim, the relationship between total loans and receivables and economic growth is analyzed by Toda-Yamamoto Causality analysis.

Keywords: Financial development, Economic growth, Banking, Volume of loans, Causality analysis.
1. Introduction

Banks have an important place in the financial system. Therefore, it is necessary for realizing the economic growth that the banking system to perform deposit credit flow substantially. The fundamental difference between developed countries and developing countries is the contribution of banking system to the economy of the country. While developed countries have a strong financial system and producing plus value proportional to their economy, fragility of financial system in developing countries cause its contribution to the economy be minimal. Herewith, it is thought that there is a relationship between credit expansion and economic growth. The basic problem like the decrease in the credits given by banking system, increase in non-performing loans and maturity conflict in crisis periods affects the economy negatively.

In this study, the development of bank loans and the GDP in Turkey, and the change in the share of loans in GDP are tried to be explained. Also, the change in non-performing loan share in total loans is mentioned because it is important how much of the loans let used become non-performing loans; and the relationship between the loans and receivable which are important in the banking and aggregate output is analyzed.

2. Financial Markets and Economic Growth

Financial market is defined as a market in which the ones demanding and supplying funds come together. The elements of financial markets consist of ones demanding and supplying funds, financial institutions, financial instruments and administrative and legislative regulations for enabling the financial market to function properly. Economic agents become who demand funds or who supply funds on occasion according to their income and expenditure status. The said economic agents meet their financial needs through these institutions with the existence of financial markets.

Ultimately, the existence of financial institutions has an effect on economy. The fund quantity, increasing through coming together of small, idle and dispersed funds, has a reducing effect on market interest rate. Decrease in interest rates have an increasing effect on investments. Thereby, increasing investments enable economic growth and affect employment positively.

Financial institutions ensure the development of markets, because of the roles they have in financial markets. Adjustment of maturity, quantity, interest and risk, and financial advisory are some of the important benefits financial institutions provide.

The financial development level of countries are different from each other. In the developed and developing countries, financial systems of the countries are differentiated by some criteria like fulfillment of duties by financial institutions, diversity of financial instruments, turnover rate of savings to financial assets, the degree of legislative and administrative regulations in financial markets, existence of government interference in financial system, the degree of compliance with the international standards.

In literature, it is pointed out that financial development has an effect on economic growth process, however, it is argued about which comes first in a causal relationship. While there is a view about development in financial markets causing economic growth, there is also a reverse view. These views are referred as supply predecessor hypothesis and demand following hypothesis. According to supply predecessor hypothesis, financial development causes economic growth. However according to demand following hypothesis, economic growth leads financial development.

Beside these hypotheses, there is development phase hypothesis. This hypothesis explains the situation caused by alternating of the hypothesis stated before. According to this hypothesis, in the early phases of economic growth, the opportunities provided by financial development affects the economic growth positively. Depending the diversity of financial instruments, savings outside are attracted to financial system causing the investments to increase, and supply predecessor phase comes out. Financial development increases the real capital accumulation and economic growth increases. While financial and economic development advances, the position of financial development in supply predecessor will decrease and demand following situation will appear [10].

Real interest rate, savings, investments and growth rate are some of the determinants of financial growth. There are numerous factors
effecting economic growth. Endogenous growth models assume that economic factors in markets determines the economic growth endogenously. These models deal with population growth and human capital accumulation. On the other hand, there are approaches using technologic development and public investments endogenously. Besides, exogenous growth models argue that savings and capital accumulation are important determinants of the economic growth, and technology is the main source of growth in the long run. However, technology variable defined exogenously. In the exogenous growth theories, the effect of trade openness on growth is positive depending on spread of information and technology [2].

Financial development means increase in divergence of financial instruments and used in a widespread manner. In several studies financial development and financial deepening are used as synonymous, but financial deepening signifies the share of money supply in gross national product. Financial deepening means the channels transforming savings to investments becoming widespread in the process of financial innovations. Financial development and financial deepening gives an information about development of financial sector. Generally, two basic rates are used as financial development indicator: Money Supply/ GDP and Bank Loans/ GDP.

Financial deregulation is diversification of financial institutions and services. Financial deepening increases as a result of deregulation policies. It is assumed that economic growth rate will increase as the financial deepening meaning the rate of transference of funds created in financial sector to real sector rises.

According to Kar and Pentecost (2000), “when financial development is measured by the money to income ratio the direction of causality runs from financial development to economic growth, but when the bank deposits, private credit and domestic credit ratios are alternatively used to proxy financial development, growth is found to lead financial development. On balance, however, for Turkey, growth seems to lead financial sector development” [8].

Güven (2002) studied 1988:Q1-2001:Q1 period analyzing loans and GDP by variance decomposition and Granger causality tests. There is found no causality from real percent rate of bank loans to growth, but it is found that growth leads loans [7].

Yılmaz and Kaya (2006) used M2/ GDP, Deposits/ GDP, Sectoral Credits/ GDP and Financial Savings/ GDP rates; and found there is no long run relationship between financial development and economic growth, but there is a one way causal relationship from economic growth to financial development [19].

Demir, Öztürk and Albeni (2007) analyzed the relationship between real output, total stock market capitalization and total bank loans given to private sector; also real output, industrial market capitalization and total bank loans given to industry in different models for 1995-2005 period. It is found that there is a long run relationship between all variables in both models [18].

Ceylan and Durkaya (2010) analyzed the causality relationship between Turkish domestic credit volume and economic growth for 1998-2008 period. After using Granger causality test and vector error correction model, they found there is a one way causal relationship from credits to economic growth [15].

Chang et al. (2010) analyzed the relationship between bank funds and economic growth in China. They found that there is a positive relationship between bank deposits and economic growth [12].

Dişbudak (2010) analyzed 1961-2008 period for Turkey through ARDL boundary test and found that the bank credits have a positive effect on economic growth [6].

Demirhan et al. (2011) analyzed the relationship between financial development and economic growth in Turkey for 1987-2006 period by using the bank loans given private sector and GDP variables. They used Vector Error Correction Model (VECM) and found that there is a two way causal relationship between variables [5].

Lu and Shen (2012) analyzed the effect of bank loans on China’s economic growth. They found that there is a positive and strong effect of loans given by foreign banks on economic growth in [3].

and Granger causality methods were used and they found that financial markets affect economic growth and real sector significantly [1].

Vurur and Özen (2013) analyzed the relationship between deposits, bank loans and economic growth in Turkey for 1998:Q1-2012:Q1 period by using Granger causality test. They found that there is a causality from deposits to economic growth and loans; and there is a causality from economic growth to loans [11].

Hassan et al. (2011) and Levine (1997) have found credits have a negative effect on economic growth in their respective studies. Similarly, Aghion et al. (2005, 2011) found a relationship between domestic loans and economic growth in their studies. The results showed that level of household debt negatively affects the economic growth. Increase in domestic loans discourages the savings, and this results in a negative relationship between loans and economic growth [9, 13-14].

3. The Evaluation of Loans in Banking Sector and Economic Growth in Turkey

Banks have an important share in financial sector in Turkey. Thus, the structure of banking sector and regulations have a significant importance with regards to competition in the sector. Also, the effects of process of creating representative money by deposit banks on economy is of capital importance. In banking sector, after gathering deposits and sparing required reserves, giving out the remaining as credits make banking sector the locomotive of real sector. Banks do this role more easily in the economic stability periods. Though, banks strays from their traditional roles if there is instability in economy. Because of economic and financial uncertainty, banks become more selective and give out limited loans to not have a problem retrieving the credits.

Banking sector in Turkey was affected by 1994 crisis, November 2000, February 2001, and 2008 global crisis in the 1990-2015 period. In these years, there made decisions about restructuring the banking sector. Within the scope of restructuring to strengthen the fiscal and operational structure, there are regulations in public and private banks, and decisions about regulations and supervisions.

<table>
<thead>
<tr>
<th>Years</th>
<th>Loans and receivables/ Total assets</th>
<th>Public sector/ Loans and receivables</th>
<th>Private sector/ Loans and receivables</th>
<th>Foreign banks/ Loans and receivables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>47</td>
<td>47,6</td>
<td>43</td>
<td>48,2</td>
</tr>
<tr>
<td>1991</td>
<td>43,9</td>
<td>44,8</td>
<td>39,8</td>
<td>45,2</td>
</tr>
<tr>
<td>1992</td>
<td>41,8</td>
<td>41,1</td>
<td>39,8</td>
<td>34,5</td>
</tr>
<tr>
<td>1993</td>
<td>41,4</td>
<td>39,9</td>
<td>40,5</td>
<td>30,9</td>
</tr>
<tr>
<td>1994</td>
<td>39</td>
<td>37,6</td>
<td>37,9</td>
<td>23,8</td>
</tr>
<tr>
<td>1995</td>
<td>42,5</td>
<td>44,2</td>
<td>39,1</td>
<td>27,9</td>
</tr>
<tr>
<td>1996</td>
<td>43,1</td>
<td>39,5</td>
<td>43,6</td>
<td>25,3</td>
</tr>
<tr>
<td>1997</td>
<td>45,5</td>
<td>45,6</td>
<td>44,7</td>
<td>26,3</td>
</tr>
<tr>
<td>1998</td>
<td>38,3</td>
<td>31,9</td>
<td>41,4</td>
<td>25,6</td>
</tr>
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<td>24,3</td>
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<td>16,5</td>
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<td>25,8</td>
<td>37,7</td>
<td>17,1</td>
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<td>16,4</td>
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<td>26,8</td>
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<tr>
<td>2002</td>
<td>26,5</td>
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<td>39,9</td>
</tr>
<tr>
<td>2004</td>
<td>33,7</td>
<td>20,1</td>
<td>39,6</td>
<td>46,3</td>
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<td>38,6</td>
<td>25,3</td>
<td>43,6</td>
<td>50,6</td>
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<tr>
<td>2006</td>
<td>45</td>
<td>32,8</td>
<td>48,1</td>
<td>56,3</td>
</tr>
<tr>
<td>2007</td>
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<td>62,6</td>
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<tr>
<td>2008</td>
<td>52</td>
<td>42</td>
<td>54,1</td>
<td>61,8</td>
</tr>
<tr>
<td>2009</td>
<td>47,7</td>
<td>41,5</td>
<td>47,6</td>
<td>59,8</td>
</tr>
<tr>
<td>2010</td>
<td>52,9</td>
<td>49,2</td>
<td>52,7</td>
<td>60,1</td>
</tr>
<tr>
<td>2011</td>
<td>57,2</td>
<td>54,2</td>
<td>57,9</td>
<td>58,9</td>
</tr>
<tr>
<td>2012</td>
<td>59,2</td>
<td>54,7</td>
<td>60,1</td>
<td>63,3</td>
</tr>
<tr>
<td>2013</td>
<td>62,1</td>
<td>58,5</td>
<td>63,3</td>
<td>61,9</td>
</tr>
<tr>
<td>2014</td>
<td>64,1</td>
<td>62,1</td>
<td>64,6</td>
<td>63,3</td>
</tr>
</tbody>
</table>

Source: TBB, 2015 [17].

As it is shown in Table 1, loans and receivables of all banks in banking sector decreased in crisis periods. It is seen that after 2008 crisis, this decrease is more in private
capital banks than public and foreign capital banks.

Table 2: Share of Deposits in Total Liabilities and Sector Shares (%)

<table>
<thead>
<tr>
<th>Years</th>
<th>Deposits / Total liabilities</th>
<th>Public sector / Deposits</th>
<th>Private sector / Deposits</th>
<th>Foreign banks / Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>56</td>
<td>61</td>
<td>63.6</td>
<td>38.6</td>
</tr>
<tr>
<td>1991</td>
<td>56.2</td>
<td>61.5</td>
<td>63.4</td>
<td>34.3</td>
</tr>
<tr>
<td>1992</td>
<td>55.1</td>
<td>63.6</td>
<td>58.3</td>
<td>25.9</td>
</tr>
<tr>
<td>1993</td>
<td>52</td>
<td>61.5</td>
<td>54.6</td>
<td>21.9</td>
</tr>
<tr>
<td>1994</td>
<td>63.1</td>
<td>69.9</td>
<td>69.4</td>
<td>40.1</td>
</tr>
<tr>
<td>1995</td>
<td>65</td>
<td>74.5</td>
<td>67.4</td>
<td>61</td>
</tr>
<tr>
<td>1996</td>
<td>68.6</td>
<td>79</td>
<td>69.5</td>
<td>58.5</td>
</tr>
<tr>
<td>1997</td>
<td>64.7</td>
<td>74.7</td>
<td>66.3</td>
<td>47</td>
</tr>
<tr>
<td>1998</td>
<td>65.7</td>
<td>76.5</td>
<td>64.5</td>
<td>40.2</td>
</tr>
<tr>
<td>1999</td>
<td>66.9</td>
<td>76.3</td>
<td>62.7</td>
<td>34.8</td>
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<tr>
<td>2000</td>
<td>65.8</td>
<td>77.3</td>
<td>60.3</td>
<td>39.3</td>
</tr>
<tr>
<td>2001</td>
<td>70.4</td>
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<td>76.2</td>
<td>47.6</td>
</tr>
<tr>
<td>2002</td>
<td>67</td>
<td>72.1</td>
<td>69.7</td>
<td>52.2</td>
</tr>
<tr>
<td>2003</td>
<td>64.4</td>
<td>72.6</td>
<td>64.7</td>
<td>51.1</td>
</tr>
<tr>
<td>2004</td>
<td>64.4</td>
<td>77.1</td>
<td>61.7</td>
<td>59.9</td>
</tr>
<tr>
<td>2005</td>
<td>63.9</td>
<td>76.8</td>
<td>61.4</td>
<td>59.1</td>
</tr>
<tr>
<td>2006</td>
<td>64.5</td>
<td>77.9</td>
<td>61.6</td>
<td>63.1</td>
</tr>
<tr>
<td>2007</td>
<td>63.6</td>
<td>78.2</td>
<td>60.5</td>
<td>61</td>
</tr>
<tr>
<td>2008</td>
<td>64.2</td>
<td>77.6</td>
<td>62.8</td>
<td>57.5</td>
</tr>
<tr>
<td>2009</td>
<td>63.5</td>
<td>74.9</td>
<td>61.6</td>
<td>60.8</td>
</tr>
<tr>
<td>2010</td>
<td>63.9</td>
<td>76.6</td>
<td>62</td>
<td>57.8</td>
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<tr>
<td>2011</td>
<td>60.2</td>
<td>70.5</td>
<td>59</td>
<td>58.9</td>
</tr>
<tr>
<td>2012</td>
<td>59.3</td>
<td>70.8</td>
<td>57.6</td>
<td>59.6</td>
</tr>
<tr>
<td>2013</td>
<td>57.7</td>
<td>67.1</td>
<td>57.6</td>
<td>56.2</td>
</tr>
<tr>
<td>2014</td>
<td>56</td>
<td>62.1</td>
<td>56.9</td>
<td>58</td>
</tr>
</tbody>
</table>

Source: TBB, 2015 [17].

According to Table 2, the share of total deposits in total liabilities in sector is affected by crisis periods. After the 1994 crisis, because of the 100% state assurance given to deposits there is an increase in the share of deposits in total liabilities, wherein the other crisis periods the share of deposits in total liabilities decreased.

Table 3: Shares of Deposits and Loans and Receivables in GDP (1998 fixed prices) (%)

<table>
<thead>
<tr>
<th>Years</th>
<th>GDP growth rate</th>
<th>Deposits / GDP</th>
<th>Loans and receivables / GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>na</td>
<td>34.5</td>
<td>20.1</td>
</tr>
<tr>
<td>1999</td>
<td>-3.4</td>
<td>46.1</td>
<td>20.8</td>
</tr>
<tr>
<td>2000</td>
<td>6.8</td>
<td>41.1</td>
<td>20.5</td>
</tr>
<tr>
<td>2001</td>
<td>-5.7</td>
<td>48.8</td>
<td>17.1</td>
</tr>
<tr>
<td>2002</td>
<td>6.2</td>
<td>40.6</td>
<td>16.1</td>
</tr>
<tr>
<td>2003</td>
<td>5.3</td>
<td>35.4</td>
<td>15.4</td>
</tr>
<tr>
<td>2004</td>
<td>9.4</td>
<td>35.3</td>
<td>18.5</td>
</tr>
<tr>
<td>2005</td>
<td>8.4</td>
<td>39.1</td>
<td>23.6</td>
</tr>
<tr>
<td>2006</td>
<td>6.9</td>
<td>41.2</td>
<td>28.8</td>
</tr>
<tr>
<td>2007</td>
<td>4.7</td>
<td>41.8</td>
<td>32.9</td>
</tr>
<tr>
<td>2008</td>
<td>0.7</td>
<td>47.7</td>
<td>38.6</td>
</tr>
<tr>
<td>2009</td>
<td>-4.8</td>
<td>53.3</td>
<td>40</td>
</tr>
<tr>
<td>2010</td>
<td>9.2</td>
<td>55.9</td>
<td>46.3</td>
</tr>
<tr>
<td>2011</td>
<td>8.8</td>
<td>53.9</td>
<td>51.2</td>
</tr>
<tr>
<td>2012</td>
<td>2.1</td>
<td>54.3</td>
<td>54.3</td>
</tr>
<tr>
<td>2013</td>
<td>4.2</td>
<td>60.2</td>
<td>64.8</td>
</tr>
<tr>
<td>2014</td>
<td>2.9</td>
<td>60.4</td>
<td>69.1</td>
</tr>
</tbody>
</table>

Source: TBB, 2015 [17].

After 2000 crisis, with the negative GDP growth rate, it is seen that share of deposits in GDP increased. Also, a decrease in the share of loans and receivables in GDP is seen. Following 2001, the share of deposits and loans in GDP increased despite the negative growth rate with the help of practices concerning regulation and supervision.

In Table 3, it is seen that while the rate of deposits to GDP is 41.1% in 2000 decreasing in comparison with the previous year, with an increase it became 48.8% in 2001. After the decrease in 2003 and 2004, Deposits/GDP continued to increase to date.

Also, a decrease in the rate of loans and receivables to GDP is seen in 2001 and 2002.
As it can be seen in Table 4, the share of loans and receivables in total liabilities decreases in the periods of crisis. The share of deposits in total assets decreases in 1993 and increases after the crisis in 1994. Following 2011, the decrease in the share of deposits in total liabilities seen again.

Because of high uncertainty and distrust in the crisis periods, savings owners don’t transfer their savings to banking sector and opt for alternative investment instruments. In this period, increase in borrowing costs and non-performing loans cause a decrease in loans and receivables. However, decrease in deposits is more than the decrease in loans and receivables, so a decrease seen in the rate of loans and receivables/deposits in crisis periods.

As seen in Graph 1, after 2008 crisis period, depending on the decrease in the loans given, a fall in the quantity of non-performing loans is observed, but loans reached 45 billion TL in September 2015 with increase of loans starting from 2012.

Graph 2: Rate of Credit Difference to GDP (Nominal, (ACI) Adjusted for Currency Impact, Percent)

Source: TCMB, 2015:31 [16].

As it can be seen in Table 4, the share of loans and receivables in total liabilities decreases in the periods of crisis.
show decreasing trend after 2008. It reaches its minimum in 2009 and later it increases and shows a fluctuating development. This development is in line with economic growth.

Graph 3: Yearly Credit Growth (Percent)

Source: TCMB, 2015:32 [16]

Note: In the credits adjusted for currency impact, a basket value of 70% dollars and 30% euros is used.

In Graph 3, the 2010-2015 period yearly credit growth is seen. Depending on the medium-term program, economy policies and developments in financial markets, it shows a decreasing trend.

4. Empirical Analysis

In this study the causality relationship between the economic growth and the change of loans and receivables as an indicator of financial development is analyzed for Turkey 1961-2014 period by employing Toda-Yamamoto Causality analysis.

The variables are defined as follows:
- growth: economic growth rate (source: Worldbank).
- crgtotal: total loans and receivables % change (source: TBB (Turkish Banking Association)).
- crgpri: private bank loans and receivables % change (source: TBB).
- crgfor: foreign bank loans and receivables % change (source: TBB).
- crgpub: public bank loans and receivables % change (source: TBB).

Toda-Yamamoto causality analysis is a developed Granger causality analysis which lets us use the level values of the variables regardless of their stationarity levels. Sound usage of level values in an econometric analysis keeps the information loss minimal. Also, this test is not sensitive to the cointegration between variables, so we can determine the existence of pure causality relationship. Toda-Yamamoto test uses \( \text{VAR}(p+d_{\text{max}}) \) model. “\( p \)” is the number of constraint in a VAR model between variables and “\( d_{\text{max}} \)” is the maximum unit root degree of the variables. In a model of \( \text{VAR}(p+d_{\text{max}}) \), Toda-Yamamoto test calculates a Wald statistic to test the causality.

The model is as follows:

\[
y_t = \alpha + \sum_{j=1}^{p+d_{\text{max}}} \alpha_j y_{t-(p+d_{\text{max}})} + \sum_{j=1}^{p+d_{\text{max}}} \beta_j x_{t-(p+d_{\text{max}})} + \epsilon_t. \tag{1}
\]

\[
H_0: \quad \beta_1=\beta_2=\ldots=\beta_p=0 \\
H_1: \quad \beta_j \neq 0.
\]

\[
w = \frac{(\text{RSS}_R - \text{RSS}_{UR})}{\text{RSS}_{UR}} (T-k) \tag{2}
\]

In our analysis, we done two by two analysis between variables to get direct causality results. Firstly, unit root tests are done to find the “d_{max}” value and VAR test to find the “\( p \)” value. For the unit root test, we used Phillips-Perron unit root test as it considers autocorrelation issues internally.

Table 5: Phillips-Perron (PP) Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Constant with Trend</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>growth</td>
<td>-1.5153</td>
<td>-10.913*</td>
</tr>
<tr>
<td></td>
<td>(-3.497)</td>
<td>(-3.499)</td>
</tr>
<tr>
<td>crgtotal</td>
<td>-3.502*</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>(-3.497)</td>
<td></td>
</tr>
<tr>
<td>crgpri</td>
<td>-3.032</td>
<td>-15.823*</td>
</tr>
<tr>
<td></td>
<td>(-3.497)</td>
<td>(-3.499)</td>
</tr>
<tr>
<td>crgpub</td>
<td>-4.413*</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>(-3.497)</td>
<td></td>
</tr>
<tr>
<td>crgfor</td>
<td>-4.151*</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>(-3.497)</td>
<td></td>
</tr>
</tbody>
</table>

Note: * denotes rejection of the null hypothesis of unit root the at 5% level. Critical values at 5% are in parenthesis.

As it can be seen from Table 5, growth and crgpri variables are I(1) while crgpub, crgfor and crgtotal variables are I(0). Because we are analyzing the relationship between growth and loans, growth is always at the one
side of equation; therefore the highest level of integration is I(1) and our “dmax” is 1.

To determine the “p” we run a VAR analysis for each causality check group and done a lag length selection test. The selected lags need to be free of autocorrelation and the inverse roots must be inside the unit circle thus, AR roots and autocorrelation check is performed for the selected lags. Finally, after the consideration of autocorrelation issues, it is decided to use p=3 for “growth-crgtotal” and “growth-crgpri” models, p=2 for “growth-crgpub” model and p=1 for “growth-crgfor” model.

Table 6. Lag Length Selection Test

<table>
<thead>
<tr>
<th></th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>growth and crgtotal</td>
<td>0 NA</td>
<td>4267.</td>
<td>14.03</td>
<td>14.1*</td>
<td>4.06*</td>
</tr>
<tr>
<td></td>
<td>1 5.2482</td>
<td>4483.</td>
<td>14.08</td>
<td>14.31</td>
<td>14.17</td>
</tr>
<tr>
<td></td>
<td>2 13.8*</td>
<td>3858.</td>
<td>13.93</td>
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<td>14.07</td>
</tr>
<tr>
<td></td>
<td>3 1.808</td>
<td>4362.</td>
<td>14.05</td>
<td>14.59</td>
<td>14.25</td>
</tr>
<tr>
<td>growth and crgpri</td>
<td>0 NA</td>
<td>5458.</td>
<td>14.28</td>
<td>14.35</td>
<td>14.31</td>
</tr>
<tr>
<td></td>
<td>1 5.950</td>
<td>5648.</td>
<td>14.31</td>
<td>14.54</td>
<td>14.40</td>
</tr>
<tr>
<td></td>
<td>2 25.05*</td>
<td>3767.</td>
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<td>14.29</td>
<td>14.05</td>
</tr>
<tr>
<td></td>
<td>3 5.846</td>
<td>4362.</td>
<td>14.05</td>
<td>14.59</td>
<td>14.25</td>
</tr>
<tr>
<td>growth and crgpub</td>
<td>0 NA</td>
<td>10964.</td>
<td>14.97</td>
<td>15.05</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>1 22.292</td>
<td>7953.</td>
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<td>14.74</td>
</tr>
<tr>
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<td>3 2.7346</td>
<td>8223.</td>
<td>14.68</td>
<td>15.22</td>
<td>14.89</td>
</tr>
</tbody>
</table>

Note: * indicates lag order selected by the criterion.

Table 7. Toda-Yamamoto Causality (modified WALD) Test Result

<table>
<thead>
<tr>
<th>Test</th>
<th>Chi-sq</th>
<th>Prob.</th>
<th>Granger causality</th>
</tr>
</thead>
<tbody>
<tr>
<td>growth→crgtotal</td>
<td>19.0</td>
<td>0.00</td>
<td>caus.</td>
</tr>
<tr>
<td>crgtotal→growth</td>
<td>0.73</td>
<td>0.86</td>
<td>no caus.</td>
</tr>
<tr>
<td>growth→crgpri</td>
<td>31.3</td>
<td>0.00</td>
<td>caus.</td>
</tr>
<tr>
<td>crgpri→growth</td>
<td>1.94</td>
<td>0.58</td>
<td>no caus.</td>
</tr>
<tr>
<td>growth→crgfor</td>
<td>0.22</td>
<td>0.63</td>
<td>no caus.</td>
</tr>
<tr>
<td>crgfor→growth</td>
<td>0.41</td>
<td>0.51</td>
<td>no caus.</td>
</tr>
<tr>
<td>growth→crgpub</td>
<td>11.7</td>
<td>0.00</td>
<td>caus.</td>
</tr>
<tr>
<td>crgpub→growth</td>
<td>2.19</td>
<td>0.33</td>
<td>no caus.</td>
</tr>
</tbody>
</table>

5. Conclusion

There is a great number of studies analyzing the relationship between the financial system size and economic growth in literature. While there is relatively smaller number of studies researching the loans-economic growth relationship, there is almost no econometric study researching the bank deposit volume and loan volume.

Similar to Güven (2002) and Yılmaz and Kaya (2006), it is found in the Toda-Yamamoto Causality analysis done for 1961-2014 period for Turkey that economic growth (GDP growth) is the Granger cause of the financial development (total loans and receivables growth) but the reverse is not true. Also, when the loans and receivables divided to their sectors the results show that there is a one way causal relationship between GDP growth and private and public bank loans and receivables growth. However, no causal relationship found between GDP growth and foreign bank loans and receivables.

2000-2001 period is defined as financial instability years in Turkey. With the stability policies adopted starting from 2001, reforms took place in all sectors, particularly in banking sector. From 2001 to the 2008 global...
In this period, the loans given by resident banks in Turkey grew six fold. The rate of total loans to GDP reached 52% in 2008. However, 2008 global crisis affected the real and financial markets in Turkey. There occurred -4.8 growth rate in GDP growth in 2009. With the decrease in credit demand, the rate of credits given to GDP decreased after the prudent credit loaning behavior. The growth rate occurring after crisis decreased in 2012. Despite the low growth rates, the share of loans and deposits in GDP continued to increase.

KAYNAKÇA

Are Economic Activities the Engine of Environmental Pollution? An Application of Cointegration Analysis for Selected Developing Countries¹

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Abstract. The aim of this study is to examine the relationship among economic growth, foreign direct investment, manufacturing industry and CO$_2$ emissions that cause climate change. For this purpose, panel FMOLS and panel DOLS methods are used for selected developing countries and the data covering the period 1990-2011 is employed. According to panel FMOLS results, while economic growth and manufacturing industry have positive impacts on CO$_2$ emissions, foreign direct investment affects CO$_2$ emissions negatively. In addition, panel DOLS results show that while there is a positive relationship between economic growth and CO$_2$ emissions, foreign direct investment has a negative impact on CO$_2$ emissions. However, the coefficient of manufacturing industry is statistically insignificant. Finally, in the light of this information, the policy implications are discussed in the conclusion.

Keywords: Carbon Dioxide Emissions, Economic Growth, Environmental Economics, Panel FMOLS and DOLS

1. Introduction

Climate change has been attracting attention as one of the most important issue in our planet. In this regard, researchers have aimed to investigate the relationship among economic growth, energy consumption and greenhouse gases that lead to climate change. Most studies confirmed that there is a strong relationship between the variables.

Foreign direct investment inflows have been rising since 1980s in almost every region of the world. In fact, foreign direct investment inflows may supply direct capital financing and generate positive externalities. In addition, it may contribute economic growth through technology transfer, spillover effects, productivity gains and new management skills [15]. Graph 1 shows development of foreign direct investment inflows in the selected developing countries.

Graph 1: Foreign Direct Inflows for Selected Countries (2001-2011)

There is a strong relationship between manufacturing industry and energy intensity. The higher energy intensity in manufacturing industry leads to higher greenhouse gases in countries. Graph 2 indicates the share of manufacturing industry in GDP for the year of 2011 in selected countries.

Graph 2: Share of Manufacturing Industry in GDP by Selected Countries (2011)

<table>
<thead>
<tr>
<th>Country</th>
<th>Share of Manufacturing Industry in GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>13.33</td>
</tr>
<tr>
<td>Turkey</td>
<td>18.18</td>
</tr>
<tr>
<td>Thailand</td>
<td>34</td>
</tr>
<tr>
<td>Malaysia</td>
<td>7.19</td>
</tr>
<tr>
<td>Mexico</td>
<td>17.04</td>
</tr>
<tr>
<td>Brazil</td>
<td>13.87</td>
</tr>
<tr>
<td>Indonesia</td>
<td>22.2</td>
</tr>
<tr>
<td>India</td>
<td>18.08</td>
</tr>
<tr>
<td>China</td>
<td>31.1</td>
</tr>
</tbody>
</table>


Graph 3 focuses on CO$_2$ emissions by selected developing countries in 2011. South Africa has the highest CO$_2$ emissions followed by Malaysia and China. According to World Development Indicators, average per capita CO$_2$ emissions is 4.96 in the world. Considering this data, these countries are emerging as having energy intensive production structure.
In this study, we examined the relationship among foreign direct investment, manufacturing industry, economic growth and CO₂ emissions in selected developing countries. We examined these countries for the reason that they are emerging as “Newly Industrialized Countries”. In introduction part, we will submit general information about foreign direct investment, manufacturing industry, economic growth and CO₂ emissions in selected developing countries. In the second chapter, we will make a literature review that focuses on the relationship between economic growth and CO₂ emissions. Finally, the third chapter will focus on econometric model and analysis results.

### 2. Literature Review

In the literature review part of this study, surveys that focus on the relationship between CO₂ emissions, energy consumption, economic growth, foreign direct investment and manufacturing industry were summarized based on the date.

#### Table 1: Literature Review

<table>
<thead>
<tr>
<th>Author</th>
<th>Sample</th>
<th>Period</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiwinyo and Arminen (2014)</td>
<td>6 African Countries</td>
<td>1971-2009</td>
<td>ARDL</td>
<td>All variables move together in the long term (CO₂, FDI, economic growth, energy)</td>
</tr>
<tr>
<td>Aksoy (2014)</td>
<td>12 Countries (High Income Group)</td>
<td>1970-2012</td>
<td>Dynamic Panel Data</td>
<td>There is a negative relationship between FDI and CO₂. There is a positive relationship between energy consumption and CO₂. Per capita income decreases CO₂ emissions.</td>
</tr>
<tr>
<td>Omri, Nguyen, Radzi (2014)</td>
<td>54 Countries</td>
<td>1990-2011</td>
<td>Dynamic Panel Data</td>
<td>FDI ↔ Economic growth (All countries) CO₂ ↔ FDI (Apart from Europe and North Asia)</td>
</tr>
<tr>
<td>Chandran and Tang (2013)</td>
<td>ASEAN-5</td>
<td>1971-2008</td>
<td>Cointegration</td>
<td>The long-run elasticity estimation suggests that income and transport energy consumption significantly influence CO₂ emissions whereas FDI is not significant.</td>
</tr>
<tr>
<td>Mahmood and Chaudary (2012)</td>
<td>Pakistan</td>
<td>1972-2005</td>
<td>ARDL</td>
<td>Foreign direct investment, manufacturing value added and population density have positive impact on carbon dioxide emissions.</td>
</tr>
<tr>
<td>Al-Mutlaqi (2012)</td>
<td>12 Middle East Countries</td>
<td>1990-2009</td>
<td>Panel Data</td>
<td>GDP ↔ CO₂ FDI ↔ CO₂ Energy Consumption ↔ CO₂ Total trade ↔ CO₂</td>
</tr>
<tr>
<td>Arouri et al. (2012)</td>
<td>12 Countries in MENA Region</td>
<td>1981-2005</td>
<td>Panel Data</td>
<td>Energy consumption has a positive significant impact on CO₂ emissions.</td>
</tr>
</tbody>
</table>
| Wang et al. (2011) | 28 States in China | 1995-2007 | Panel Cointegration, VEC | CO₂ emissions, energy consumption and economic growth are
3.1 Model and Dataset

Relationship between CO2 emissions, economic growth, foreign direct investment and manufacturing industry were examined. A linear regression model in panel data format was set up as follows:

\[
\text{CO}_{2i} = \alpha_0 + \alpha_1 \text{gdp}_{it} + \alpha_2 \text{fdi}_{it} + \alpha_3 \text{manu}_{it} + u_{it} \\
i = 1, \ldots, n \text{ and } t = 1, \ldots, T
\]

Here, “\(\text{CO}_2\)” represents carbon dioxide emissions, “\(\text{gdp}\)” represents gross domestic product, “\(\text{fdi}\)” represents foreign direct investment and “\(\text{manu}\)” represents manufacturing industry. The data set used in the analysis covers the period between 2000-2013 and includes 9 countries. These countries are China, India, Indonesia, Brazil, Malaysia, Thailand, Mexico, Turkey, South Africa. All variables were obtained from World Bank Development Indicators.

3.2 Panel Unit Root Tests

It is necessary to test the stationarity of the variables before proceeding to the empirical analysis. If data pertaining to the variables is stationary then regression analysis will be used to determine the relationship among the variables, if it is not stationary then, spurious regression issue will arise. In this case existence of cointegration relationship among the variables will be tested. In this context, Im, Pesaran and Shin test [13] and Levin et al. [16] test will be used to test panel unit root presence.

It is necessary to estimate this model for LLC panel unit root test:

\[
\Delta y_{it} = \mu_i + \rho \Delta y_{it-1} + \sum_{j=1}^{m} \alpha_j \Delta y_{it-j} + \delta_{it} + \theta_{it} + \varepsilon_{it}
\]

\(\Delta\) is the first difference operator; \(m\) is lag length, \(\mu_i\) and \(\theta_{it}\) constant and time effect for unit. \(\rho < 0\) for all \(i\) hypothesis is testing with \(\rho < 0\) for all \(i\) hypothesis. Rejecting the null hypothesis means that the data set is stationary.

IPS test which was developed by Im et al. specifies LLC test and calculates \(t\) statistics for each section in the panel and then averages the results. This test provides \(p\) values to differ for each unit composing the panel. Equality (2):

\[
\Delta y_{it} = \mu_i + \rho \Delta y_{it-1} + \sum_{j=1}^{m} \alpha_j \Delta y_{it-j} + \delta_{it} + \theta_{it} + \varepsilon_{it}
\]

Null hypothesis \(\rho = 0\) for all \(i\) is testing with the hypothesis \(\rho < 0\) at least for one \(i\). Rejecting the null hypothesis means that the data set is stationary. Table 1 shows the result of panel unit root test.

The empirical results obtained from panel unit root test are shown in Table 1. Variables are generally stationary in first difference, namely I(1), while they are not stationary in level value according to the unit root test results. In this case the presence of long term cointegration relationship between the variables should be tested. If there is cointegration between the variables then the obtained regression will not be misleading.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Country</th>
<th>Panel Data</th>
<th>Panel Unit Root Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halacoglu (2009)</td>
<td>Turkey</td>
<td>1960-2005</td>
<td>ARDL, Income is the most significant variable in explaining the carbon emissions in Turkey which is followed by energy consumption and foreign trade.</td>
</tr>
<tr>
<td>Pao and Tsai (2011)</td>
<td>BRIC Countries</td>
<td>1980-2007</td>
<td>Panel Data, There is a strong relationship between CO2 emissions and FDI. Output → FDI.</td>
</tr>
<tr>
<td>Jalil and Mahmud</td>
<td>China</td>
<td>1975-2005</td>
<td>ARDL, Economic Growth →CO2 Energy consumption and income level are significant variable in explaining CO2 emissions.</td>
</tr>
<tr>
<td>Annicchiarico et al. (2009)</td>
<td>Italy</td>
<td>1861-2003</td>
<td>Panel Data, Cointegration, VEC, CO2 Economic Growth</td>
</tr>
<tr>
<td>Mercan et al. (2007)</td>
<td>ASEAN 5</td>
<td>1970-2001</td>
<td>ARDL, While FDI increases CO2 emissions in Malaysia, Philippines and Thailand, there is no impact in Indonesia and Singapore.</td>
</tr>
<tr>
<td>Azomahou (2006)</td>
<td>1960-1996</td>
<td>100 Countries</td>
<td>Non-parametric panel, There is a positive relationship between economic development and CO2 emissions.</td>
</tr>
</tbody>
</table>

Table 1: Panel Unit Root Test Results
The cointegration relation was defined as there is no long run cointegration relationship between the variables included to the analysis.

### 3.3 Panel Cointegration Test

In this study, the cointegration relation was examined with the panel cointegration test which was developed by Pedroni. Pedroni developed 7 different test statistics to test null hypothesis which was defined as there is no cointegration relation. Pedroni obtained this statistics from the plusses in panel cointegration regression. Four of these tests are composed of intra-group statistics (panel-v, panel-p, non-parametric panel-t and parametric panel-t), other three of the tests are composed of inter-group statistics (group- ρ statistic, non-parametric group-t statistics and parametric group-t). These statistics are calculated as follows:

i) Panel v-Statistic:

\[ T^N \frac{1}{T} N \sum_{i=1}^{T} (\beta_i - \epsilon_{i,t-1})^2 \]

ii) Panel p-Statistic:

\[ T^{\frac{1}{2}} \sqrt{N} Z_{\rho} \]

iii) Panel t-Statistic:

\[ Z_{\rho} = \left( \frac{1}{N} \sum_{i=1}^{N} \sum_{t=1}^{T} L_{11i} \epsilon_{i,t-1} \right) \left( \frac{1}{N} \sum_{i=1}^{N} L_{11i} \right) \]

iv) Panel t-Statistic:

\[ Z_{\rho} = \left( \frac{1}{N} \sum_{i=1}^{N} \sum_{t=1}^{T} L_{11i} \epsilon_{i,t-1} \right) \left( \frac{1}{N} \sum_{i=1}^{N} L_{11i} \right) \]

v) Group t-Statistic:

\[ T^{\frac{1}{2}} \sqrt{N} Z_{\rho} \]

vi) Group t-Statistic:

\[ T^{\frac{1}{2}} \sqrt{N} Z_{\rho} \]

These 7 statistics may be accepted or rejected by comparing them with critical values. If Pedroni test statistics are bigger than critical values, the null hypothesis is rejected which means that there is no long run cointegration relationship between the variables included to the analysis.

### Table 2: Pedroni Panel Cointegration Test Results

<table>
<thead>
<tr>
<th>Test</th>
<th>Fixed</th>
<th>Fixed and Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel v-Statistic</td>
<td>0.59</td>
<td>-0.44</td>
</tr>
<tr>
<td>Panel rho-Statistic</td>
<td>-0.52</td>
<td>0.12</td>
</tr>
<tr>
<td>Panel PP-Statistic</td>
<td>-2.05</td>
<td>-2.80</td>
</tr>
<tr>
<td>Panel ADF-Statistic</td>
<td>-2.05</td>
<td>-3.38</td>
</tr>
<tr>
<td>Group rho-Statistic</td>
<td>0.60</td>
<td>1.64</td>
</tr>
<tr>
<td>Group PP-Statistic</td>
<td>-1.74</td>
<td>-1.17</td>
</tr>
<tr>
<td>Group ADF-Statistic</td>
<td>-2.07</td>
<td>-2.22</td>
</tr>
</tbody>
</table>

* and **; indicate 1% and 5% significance level respectively.

According to the test result, in the fixed model, four of seven statistics show that null hypothesis is rejected at 1% significance level. These results strengthen that variables are cointegrated in the long run.

### 3.4 Estimation of Panel Cointegration Coefficients

The second step after estimation of panel cointegration relationship is the estimation of long term cointegration coefficients. For this purpose, panel fully modified ordinary least squares (FMOLS) and panel dynamic ordinary least squares (DOLS) methods developed by Pedroni [20-21] will be used. FMOLS and DOLS estimators were developed after deviated results were seen in estimation of series having long term relationship among them, through least squares method. FMOLS method corrects the autocorrelation and endogeneity problem through a non-parametric approach, whereas in the DOLS method, the autocorrelation is eliminated and estimation is made by taking variables with their lag values.

### Table 3: Panel Cointegration Coefficients (CO₂ is dependent variable)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Panel FMOLS</th>
<th>Panel DOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>0.99</td>
<td>0.66</td>
</tr>
<tr>
<td>FDI</td>
<td>-0.02</td>
<td>-0.09</td>
</tr>
</tbody>
</table>
According to the test results, economic growth (gdp), and manufacturing industry (manu) have positive effects with 1% significance level and foreign direct investment (fdi) has a negative effect on carbon dioxide emissions (CO₂) in FMOLS estimations. Besides, while economic growth has a positive impact at %1 significance level, foreign direct investment has a negative impact on CO₂ emissions. However, coefficient of manufacturing industry is statistically insignificant.

### Conclusion

In this study, we investigated the relationship between economic growth, foreign direct investment, manufacturing industry and CO₂ emissions. For this purpose, we used panel FMOLS and panel DOLS methods for selected developing countries and employed the data covering the period 1990-2011. According to the panel FMOLS results, while economic growth and manufacturing industry have positive impacts on CO₂ emissions, foreign direct investment affects CO₂ emissions negatively. In addition, panel DOLS results show that while there is a positive relationship between economic growth and CO₂ emissions, foreign direct investment has a negative impact on CO₂ emissions. However, the coefficient of manufacturing industry is statistically insignificant.

The other important result from the analysis is that foreign direct investment reduces CO₂ emissions in selected developing countries. The reason is that, foreign direct investment leads to technology transfer from developed countries to developing countries and contributes productivity. CO₂ emissions have the largest share in greenhouse gases that cause climate change issue. However, manufacturing which has the largest share in economic growth increases CO₂ emissions. For this reason, it is necessary to reduce energy intensity of industrial production of these countries. Many developed countries have succeed low-carbon production applying clean energy policies and incentive mechanisms. In this context, incentive mechanism that supports low-carbon production should be established in developing countries.

### References


[18] Pao H., Tsai C., Multivariate Granger causality between CO2 emissions, energy consumption, FDI (foreign direct investment) and GDP (gross domestic product): Evidence from a panel of BRIC (Brazil, Russian Federation, India, and China) countries”, Energy, (36), 2011, 685-693.


Green Marketing: A Semiologic Analyse on Green Advertisements

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Abstract. Marketing is a need for all organizations, which focuses on a target audience. Especially till “Industrial Revolution”, the importance of marketing is on the rise. Residual production, correspondingly rivalry, stimulates marketing activities. In last years there are many marketing forms came out. Green marketing is one of these marketing forms, which can be thinking as social marketing. People who are concerned about environment, makes attention and also takes attention on the organizations for the contributions, which are planned for ‘green’ activities. Accordingly organizations make efforts on “green” activities. Depending on the increasing importance of green marketing, this study focuses on green marketing term. In this study, emergence and phases of green marketing; purposes of green marketing; effects of green marketing on organizations, society and people; relations of green marketing and advertising are the subjects that handled. In the last section of this study there is a semiological analyze, so as to provide having an idea of peoples’ thoughts onto green marketing term and attitudes onto green marketing application.

Keywords: green marketing, green advertisement, semiology.

1. Introduction

Marketing is a part of an economy that includes wide variety of activities and it uses products, services and ideas, which intertwines with each other. In addition to this, marketing is especially occur with the effect of massive production because there is a need to marketed products for massive and this is the reason why marketing is important for transmitting products from sellers to consumers. According to American Marketing Association (AMA), ‘Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners and society at large’ [5].

There are different strategies to manipulate consumer behaviours’ to pull them into the market. In order to realize these strategies, different kinds of marketing variations, like Direct Marketing, Indirect Marketing, Cause-Related Marketing, Relationship Marketing, Niche Marketing etc., which do organizations, firms and communities use. In this study, it will be explained one of the most popular one, which is called as ‘Green Marketing’. The term will be explained from different perspectives:

- Charter (1992): ‘green marketing is defined as ‘greener marketing is a holistic and responsible strategic management process that identified, anticipates, satisfies and fulfil stakeholder needs, for reasonable reward, that does not adversely affect human or natural environmental well being’ [7].

- The United Nations Environment Programme: ‘a marketing, which encompasses all communication operations undertaken to promote a product on the basis of its environmental properties or of its social qualities. It is about selling products on an ethical platform.’ [19].

- Al-Bakri (2006): ‘Green marketing: a systematic and integrated process that aims to influence the details of customers driving them to ask for products that are not harmful to the environment and adjust their consumption habits in line with it. Furthermore, such process aims to provide the products that satisfy this trend so as the final outcome would be maintaining and
keeping the environment, protecting consumers and achieving profitability for the company.’ [1]

- Polonsky (1994): ‘All activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and desires occurs, with minimal detrimental impact on the natural environment. [9]

2. Literature Review

2.1. Green Marketing

Even though environmental problems started in 1960s, green marketing concept revived in the conference of AMA under the discussion titled ‘Ecologic Marketing’ and it took place in literature in 1975. Many reasons behind the emergence of green marketing but the most important them is creating healthy environment whereby using marketing activities.

It is understandable that green marketing evolves due to arising awareness about environmental life. Individuals, who make a point of living environment friendly, prefer organizations’ that become internalized social and ecological sensitivity [17]. Elden underlines that people realized disappearance of living space and resources, or begin to think insufficient of these, which are vital to continue life condition [8]. If people continue their life in an unhealthy environment, their life condition will become worsen so the crucial outcomes of emergence of green marketing provides people, organizations, and opinion leaders to take responsibility and take an action for healthy environment.

Green marketing is a concept, which have been holding a place in marketing literature since end of the 1960s. Green marketing was appeared in the West at the end of 1960s and beginning of 1970s according to result of general lack of confidence toward industry, modern technology and partially it is by-product of petrol crises [10]. Green marketing is a sub-set of all marketing and which is a discipline about marketing activities on pollution, energy consumption, and investigation of positive and negative sides of consumption of resources. It involves large scaled environmental phenomenon [11]. According to Makover, he defines environmentalism ‘awakening’ in 1960s, ‘activation’ in 1970s, and ‘power into market’ in 1990s [16].

Generally, green marketing is investigated under three phases. These are ‘Ecological’, ‘Environmental’ and ‘Sustainable’. Ecological green marketing were concerned to resolve environmental problems and provide uncovering factors which cause environmental problems. These problems create anxiety among people and which are sequenced transparently. These environmental problems are air pollution, decreasing oil reserves, contamination etc. There are some firms and organizations help to identify these problems but automobiles, chemical sectors are discussed in a limited scope. Keleş states that, the amount of laws about environment increased in this period. Keleş underlines some activities of well-known brand onto Ecological phase. These are Body Shop, Ben and Jerry’s and 3M [3]. Environmental green marketing is the second phase. This period occurs at the end of 1980s. This phase focused on clean technology that involved designing of innovative new products, which take care of pollution and waste issues [12]. Aslan notices that some environmental disasters, like Bhopal disaster in 1984, discovering of ozon layer depletion in 1995, Chernobly disaster in 1986, and pushes organization to take an action for these environmental disasters. Due to these problems, people gather around boycotts [3]. According to these conditions, some terminological things enter to the Environmental Green Marketing phase. These are called clean technology, eco performance, environmental quality etc.

Sustainable green marketing is the third phase of Green Marketing. It came into prominence in the late 1980s. What the characteristic of this phase is to prevent using of resources in an unnecessary way and to create healthy environment for next generations. The term sustainable development, which is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" [18]. In addition to this, sustainable green marketing tries to prevent environmental system from any damages so the visible characteristic of this phase vaccines not only taking an action with procedures in a proper way but also thinking about what should be done for future generations.

There are many reasons shaping of green marketing. Green marketing is investigated under an environment issue. Last (2001) defined the environment for the International Epidemiological Association as: "All that which is external to the human host. Can be divided into physical, biological, social, cultural, etc., any or all of which can influence health status of populations …"[20]
Many authors, scholars, academicians make a consensus on environmental problems. Keleş divides factors on green marketing into two categories, which are environmental problems and global warming; beside, Kuduz classifies environmental problems into three factors. The first one is environmental problem. She represents sub categories of environmental problems. The first one is local environmental pollution. This type of pollution is investigated under some titles. These are air pollution, water pollution, sea pollution, soil pollution, plants pollution, solid waste pollution, nuclear contamination and noise pollution. The second one is global environment pollution such as global warming, climate change, ozone layer depletion, acid rains, and erosion. She underlines these factors should be investigated under environmental problems. “Natural resources” is the last factor of environmental problems. This type of environmental problem composes of material resources and energy resources (Renewable energy, Insurmountable energy) [12]. So environment involves multifactor and each of them have important place to sustain our lives. In addition to this, to know about these factors clearly, environmental problems emerge with the effect of people and there are some specific reasons above-mentioned factors. One of them is increasing of population. If we think that intensity of relationship between environment and population increase, the natural resources will be decrease because many people demand many things from the nature and its resources, so there is non-equivalent relation exists between peoples’ needs and natural resources. On the other hand, with the population increase, people consume many things and this situation rebounds nature negatively. The second specific reason is irregular urbanization. We firstly think urban life and rural life discrimination because industrialization hastens aspects of urban life because people gain money, they have a good life standard and it doesn’t resemble what rural life is. So rural people started to migrate these area and there is a problematic situation to locate their place. It isn’t planned and people define their location without any directory and according to this situation they damage environment. For example, they cut trees, damage to plants, and pollute them exceedingly. The last reason is tourism. All countries have some specific history and people who lived ancient time established historical places, like museums, theatres and historical structures. And these are attracting peoples’ attention to see and waste their time to have knowledge about them. But this situation used for bad intention because people behave conflictingly and historic beauty fell over by people so tourism became one of the reason to pollute and damage environment.

Some reasons and environmental factors are mentioned in order to understand appearance of green marketing. People are the most important part of an environment. Undoubtedly, even though they are part of it, they damage it both consciously or unconsciously. Opinions are diversified. People have different opinion on environmental pollution. The most crucial thing about this concern is to create more greener environment not only for future generations but also for us and healthy environment.

The different characteristic of green marketing focuses on environment. What green marketing firstly do is informing people to use resources in an appropriate way. The marketing activities are formulated for green environment and all products tried to produce under green product quality. Secondly, green marketing has a societal dimension because it produces solutions for healthy environment. And thirdly, as green marketing makes an effort for environment, it provides to stimulate people through to take an action.

In conclusion, green marketing differs from other marketing activities as using natural resources in its marketing messages and people can create healthier environment by way of green marketing.

2.2. Green Marketing and Advertising

Advertising is a component of the marketing mix. Advertising helps to conduct marketing activities so we can say green advertising is a kind of green marketing activities. In order to understand the relationship between green marketing and advertising, it must be known what green advertising is. According to Hartmann and Apaolaza–Ibanez [14] the definition of green marketing or green advertising varies, but it can simply be explained (for this study) as the marketing or advertising of a product or brand through the use of environmental claims (such as environmentally-friendly, eco-safe, recycled, biodegradable, etc.)

Undoubtedly, green advertising was formulated according to discussion onto green marketing term in 1975. Easterling, Kenworthy and Nem-
zoff [4] found an upward trend of green advertising in the 1970s, with stabilization in the 1980s, followed by another upward swing in the 1990s [4]. Today, the green trend continues. In addition to this, Ayyıldız underlined that the reason behind engendering green marketing was impacted by green movement and it reflected directly to marketing and it reflected directly to marketing and advertising sector. Advertising agencies started to formulate green messages as a result of wishes of advertisers.

3. Methodology

The aim is to reflect the environmental problems; and the best way of this is advertising the effects on green marketing. By the way to understand green marketing activities analyzing green advertisements is an appropriate method.

Visual advertisements can be analyzed by semiotic analysis method. Semiotics, or the science of signs, provides a set of assumptions and concepts that permit systematic analysis of symbolic systems [2]. It is hard to understand how the semiotician (or the semologist) can presume to analyse, decode and interpret absolutely any message, in any medium, without the slightest recourse to any evaluation by the public for whom the message is intended [13].

In this study semiotic analysis method was used because it is useful for analyzing visual advertisements and their ideologies.

To analyze the advertisements, it has been chosen Green Advertisements on TV, which is one of the improbable sampling method, called availability sampling. This sampling method is useful to collect data whenever to find adequate sample difficulty. A deeply internet research had been applied by searching engine sites.

The main research question is “How the brands use TV advertisements in the aim of Green Advertising?” According to the research question, six television advertisements that broadcasted in Turkiye has been analyzed.

4. Semiologic Analysis of Green Advertisements in Turkiye

Indicator, signifiers, signified, myths, metaphors are the components of a semiotic analysis. By explaining these elements, it can be unveiled the ideology of the advertisement.

4.1. Sofia Toilet Paper TV Advertisement

Indicator: ‘Sofia Ormanları Yok Etmez’ (Sofia does not destroy forests)

Signifiers: Children, actor, trees, forest

Signified: Sofia is a toilet paper and paper towel brand, which takes care about environment. In the aim of producing toilet paper and paper towel, Sofia does not cut down trees.

Myths: Eco-friendly, environmental protection and importance of forestation.

Metaphor: In the advertisement cutting a tree by a saw machine is related to destroying forest.

Analyse: In the television advertisement of Sofia, children have the main role. This is crucial point because being respectful to environment starts with the childhood period. In this advertisement, it can be seen that children announce that forest and trees should be protected. On the other hand, Ediz Hun, who is a well-known actor in Turkish Cinema, has the main role in this advertisement. Thus, advertising strategy of Sofia is formulated by using celebrity in advertisement. There are important reasons behind using this strategy. One of them is to take the attention of individuals and to persuade them to buying behaviour. Jones underlined that “Celebrities have often, though not always, been found to be more persuasive in advertising than other endorsers. In most instances, the attitude toward the product is more favourable when the product is associated with the celebrity” [6]. This is the reason why Sofia uses Ediz Hun in its advertisement. His explanations are more credible than other people is the one reason of the effectiveness of the advertisement. The second reason is that Ediz Hun graduated from ecological sciences, so this represents how he is knowledgeable on environmental issues. Also, as Ediz Hun talks about Sofia, he takes place an area, which includes trees. This is one point that trees connote forest. In addition to this connotation, his body language reminds to target audience their grandfathers because many children
had listened tales from their grandfathers. Ediz Hun who takes place between two children and seems telling a story about Sofia to their grandchildren. In Turkey, a Turkish person give importance to elder people of society, and takes consideration to their recommendation so this represents how advertising content is shaped and how it is understood by using these signifiers. Particularly, Sofia reveals how it gives importance to environment while it is producing its toilet paper, sanitary towels etc. This is the reason how advertisement myth relies on environmentalist messages and formulates Sofia brand as ‘Eco Friendly’.

4.2. Bonus Credit Card TV Advertisement

![Image](image.png)

**Picture 2 Bonus Card Advertisement Screen Shot**

**Indicator: ‘Çevreye duyarlı Bonus’ (Environment-friendly Bonus)**

**Signifiers: World, iceberg, ice pole, forest, droughtfull.**

**Signified: “The card material is nature-friendly”, “card letters are recycled”, “a part of its bonus points are spent for environmental protection projects”**

**Myths: Being respectful to the nature.**

**Metaphor: A hand that holds the world like a ball.**

**Analyse: The Eco Friendly Bonus card ad was broadcasted in 2007, which aims to aware people about dangers of the world. The hall advertisement is like a cinematographic film trailer. This different format takes audiences’ attention on to the ad. In the advertisement, before Bonus identifies itself as an eco friendly card, it shows real problems of the world. Particularly, the most attracting thing in the advertisement is that Bonus shows a world from a huge scene in order to understand how different problems reveals in all around the world. Bonus encourages people to take attention to their environment, and also push them to take an action. The advertisement indicates dangerous elements like icebergs, which melts continuously and swiftly in the pole, lands which turns to deserts and the environment of pole which destroys.

All of them connote to dangerous conditions that people encounter in their life and how people damage eco system. These are the reflections of peoples’ behaviours to the environment. Unfortunately, if environment perishes people neither will have healthy life standards nor will be able to breath in the nature; and also animals will be extincted because they won’t have any space left for living. Particularly, the world is represented as an image in ones’ hand that includes connotations onto representation. The hand, which is holding a world image, is symbol of protecting environment because people start to move for protecting society. Bonus supports people to take an action and gives an idea onto how they do this. Life conditions are circulated with consumption matter and whatever we consume, it includes some chemicals, which are dangerous for society. Bonus gives one solution to prevent environment from dangers. It eliminates itself from its competitors because it initiates a program onto bank statements. This program acknowledges people about their bank statement through Internet and their e-mail and this prevents loggings with a view to decrease a number of trees. We need oxygen to breath and this can be provided via forests so the more oxygen people have, the healthier life they pursue. This advertisement is one of a good example for an eco friendly brand. Thus, this advertisement provides people to rethink their environment and manipulate them to protect their environment by using Bonus card. Even if people make small things, it reflects to the environment resplendently. The messages, symbols and signifiers of advertisement are formulated to become eco friendly people and respect other creatures in the environment. The main point to become eco friendly people is that people are the main actors of life that they are superior onto other living creatures in environment and this represents that how they have power to do something so Bonus neither creating positive images to aware people about environmental problems that they face, nor its advertising content includes horrifying items to evoke them to take an action directly and so all scenario which is created are so persuasive to use Bonus card and satisfy people to fulfil the responsibilities toward environment.
4.3. Damla Plant Bottled Water TV Advertisement

![Picture 3 Damla Plant Bottle Advertisement Screen Shot]

**Indicator:** Damla ‘Bitki Şişe’ (Damla ‘Plant Bottle’)

**Signifiers:** Waterfall, forest, mountainous area, men, plant bottle.

**Signified:** “The first water bottle produced from plants”

**Myths:** Individualization of plant bottle

**Metaphor:** A bottle like plant

**Analyse:** Generally most of the bottle water brand advertisements give recommendations to people to drink water individually for becoming healthy. Nowadays, Damla is getting ahead of its competitors with its advertising. Damla brand strategy changes because it takes a responsibility for humanity and nature. The advertisement of Damla has a different content that it represents social responsibility of a brand. It is known that plastic is a big threat for nature because it damages plants and trees. This is a crucial problem of humanity which people try to find a solution of using plastic. Today, people are consuming things, which are produced from plastics. Through this advertisement, Damla finds a solution to this problem. Every advertisement has a concept that it creates its advertising messages to communicate with audiences. The effect of advertisement changes whether advertising message is sensitive or logical. The advertisement is narrative. A man, who is shown at natural outdoor places, tries to tell about “Damla plant Bottle”. Actually, the advertisement content processes into realistically. It is fictionalized an adventure of a man. The most important thing is that Damla makes an effort for nature and for people to live in a healthy environment. This thing establishes sensitive connections with a brand to give importance ones health. In this advertisement, it is seen that signifiers are circulated around waterfall, forest and mountainous area. What it expresses is that all items connotations are composed of nature. This proves us that advertising is fictionalized naturally. This point provides people to become persuade that Damla brand makes an effort for both human and nature. The most important thing is the slogan, which will permanently remain at peoples’ mind. The slogan expresses that Damla invests nature with producing plant bottles. The green colour of bottle also connotes environment and health. As consumers see it in the market, they can connote easily why this green colour is put on the bottle. It gives a message to consumers that if they buy and consume Damla, they will contribute to humanity. So this advertisement doubtlessly creating good images about Damla in consumers’ mind.

4.4. Bosch Nature Friendly Technology TV Advertisement

![Picture 4 Bosch Advertisement Screen Shot]

**Indicator:** Bosch Doğası Dostu Teknoloji (Bosch Nature Friendly Technology)

**Signifiers:** Fifteen bamboo trees in rainforests, four baby caretta caretta in Mediterranean, hundred Caucasians in the Macahel, twenty small common terns in Tasmania, Refrigerator, washing machine, bakery.

**Signified:** “Bosch – Technology for life”, “Nature friendly technology”

**Myths:** Importance of every living creature on earth.

**Metaphor:** Many metaphors are used in order to empathize with life conditions of other living creatures in Bosch advertising. Cold water part of refrigerator turned to iceberg, gate of washing machine turned to the ocean, inner side of an washing machines is shown as a bee hive, inner side of an dishwasher is shown as a bamboo trees, the bakery turned to beach where caretta caretta live. All these metaphors provides consumer to associate living environment.

**Analyse:** This advertisement was broadcasted as a television advertisement. This brand in-
cludes technology. Even though technology includes different facilities, it carries some reasonability for people as a conclusion the more technology improves, the less protection to the green environment. This is the reason why this advertising content explains importance of green environment. In the advertisement it shown that all living creature has its own living area on earth. This advertisement is like a same concept with Bonus advertising but this advertisement of Bosch tries to provide empathy and remember how our behaviour to the environment affects each living creature on the earth. According to this advertisement content, it is possible to see that it is complementary. Once we look at advertising visual, we think how other organisms of the world impact or not impact. Actually, the main message of this advertisement is that whatever people do, their actions look forward to their environment. The meaning of this is people have to take responsibility to the environment for a healthy life. Each product of Bosch represents not only production of technological white appliances, but also gives importance to people and other living creatures on the world.

### 4.5. Ipragaz Autogas Eco-Friendly Fuel Oil TV Advertisement

![Picture 5 Ipragaz Advertisement Screen Shot](image)

**Indicator:** Çevreci Otogaz (Environmentalist Autogas)

**Signifiers:** four men, green area and flowers.

**Signified:** “Eco friendly fuel oil”

**Myths:** Clean fuel oil, clean air

**Metaphor:** Four pistons are personalized and resembled to human.

**Analysis:** Today, many people have a car or have a potential to buy a car. This is the reason why number of cars increases in the world day by day. Cars not only used individually or private but also it includes public transportation and other vehicles. Undoubtedly, cars are a need of people to reach from somewhere to anywhere and it prevents transportation problem. As the rising of car user means rising need of petrol and autogas appears. This advertisement defends autogas, also Ipragaz Autogas is a fuel, which is nature-friendly. The advertisement was broadcasted in 2010 and it shows a simulation of pistons of a car motor by four men. These men tell about how Ipragaz Autogas is nature-friendly fuel.

### 4.6. Cappy Fruit Juice Fruit Garden TV Advertisement

![Picture 6 Cappy Advertisement Screen Shot](image)

**Indicator:** Cappy Meyve Bahçesi (Cappy – Fruit Garden)

**Signifiers:** Children, trees, soil, water.

**Signified:** “People are part of the nature.”

**Myths:** Encouraging children for becoming nature friendly people, people and nature are subsidiary.

**Metaphors:** Child resembles to sky, and tree

**Analysis:** This advertisement of Cappy was broadcasted in 2010. What the main message of this advertisement is ‘People are part of a nature.’ Children represent this message. Advertisement message is built for explaining social responsibility project to children. The main purpose of this campaign is providing children to love the nature. This is the reason why Cappy gives an opportunity to grow children’s own fruit garden. Although this advertisement is produced for children, it makes to think people what they will do without nature. The signifiers of this advertisement encircle around messages of this social responsibility project. Actually, this advertisement message includes denotations but advertising content mostly shaped by connotation. For example; the off voice asks a question ‘What will people do if they don’t see glance of water?’, then an invisible boy emerge. After then, he starts to fade in. Undoubtedly,
this advertisement takes place for gaining good reputation of Cappy. Cappy’s attitude is so sensitive because it uses children for explaining importance of nature. In addition to this, Cappy shows consumers how people and nature intertwine to each other. Both nature and people obliged to each other. It means that if nature damages, the life will be worsen and vice versa. Nature and people are involved in an interaction. On the other hand, the advertisement uses sensitive music, which protects to listen advertisement messages uncuriously. The advertisement of Sofia resembles to this advertisement in some ways but this advertisement is more effective than Sofia because it is permanent. Because growing a tree is an experience for children and they remember whatever he or she does in their life. So this advertising provides Cappy a good image; Cappy not only make people realize the social responsibility but also shows them how the company acquires natural products for its’ juices which are made of fruit.

5. Evaluation

Advertising is an effective way to establish a communication bridge between brands and consumers. Today, there are different kinds of brands, which have some qualifications. Though their qualification doesn’t adequate. What we see through these advertisements that analysed is all of them are from different brand categories. They formulate their communication style through advertisement and they find a solution for societal problem. Brands are not only meet human satisfaction for consuming something, but also they take responsibility and try to aware people to take an action mutually. This only realizes through brands.

Advertisements that analysed are differentiated according to their scenario. Sofia emphasizes protection of forests; Bonus tries to manipulate people to use less paper through using e-mail system. In addition to this, Damla is a water brand that tries to decrease plastic damages on nature. Ipragaz indicates how air pollution emerges through using fuel. Cappy tells about the importance of nature by their social responsibility project. Bosch takes attention to using importance of nature friendly items by “Every time using nature friendly technology, every living creature can use its’ right to life” sentence. The common point of all these six advertisements represents that brands make an effort not only strengthens images of themselves but also invest to the future by using these brands.

6. Conclusion

As life changes, people face with more problems in their daily life. One of the problems is about nature. Natural disasters and peoples’ harm, which increases to the nature, causes the environment to be damaged badly. The intensity of life pushes them to work and consume and as they fulfil their roles, they forget and they don’t pay attention to the problems, which they encompass around their surroundings. At this point, enterprises, associations, or firms must behave to find a solution to these problems. Because producing a product and then representing to massive doesn’t enough. Problems of people and society give these enterprises new roles. It means that as they organize their marketing plans, conditions manipulate them to show solutions with showing products to society. And green marketing is one of the marketing activities that marketers should apply. The difference of this marketing activity represents people to solve their problems and arise their awareness toward problems, which they confront. All these conditions facilitate people’s life because organizations take responsibility and put creative green projects for public welfare. What their new roles bring them is contribution to society, and creating more green landscape. It isn’t easy to formulate project, but what they firstly think that they establish project for long term because nature is a fragile thing and it is getting destroyed, polluted at any moment. Green marketing focus more issues. It isn’t an easy task. There is diversity in the pollution area, which green environment composed of many elements like sea pollution, air pollution, water pollution, industrialization problem and population increase. It isn’t possible to solve this entire problem with only one project. Marketers, enterprises, firms should sequence where they should be start from where and then how manipulate people to take an action collectively because people can’t protect the entire environment individually. When they prepare project, they acknowledge the problem, which people don’t see integrally. There is a survey result, which was conducted in 2008 by the National Geographic Society and GlobScan, on consumer choice and the environment reported on current behaviour in fourteen countries (including Canada, China, France, Germany, India, Mexico, Russia, the UK and the
The study found signs that consumer in all countries “feel empowered when it comes to the environment and are taking some action in their daily lives to reduce consumption and waste.” A global Synovate survey conducted in 2007 in association with Aegis, and repeated in 2008 in association with BBC World, also found that consumers in most countries are becoming more aware and willing to act on environmental concerns.” [15].

In Türkiye, environmental consciousness has been arisen since 90’s. As a reflection of this awareness marketing efforts became more nature friendly. In this study, green TV advertisements from the beginning of 90’s had been analysed. According to the analysed ads, brands used “green marketing” issue as their product categories. Sofia, which produces paper, indicates forests; Bonus Card, which is a credit card, indicates taking receipt by e-mail means using less paper; Damla, which is a bottled water brand shows not using plastic in their bottles; Ipragaz is a fuel gas brand which indicates nature and Bosch produces household appliances, positioned itself as nature-friendly technology. So every brand in Türkiye, which are using green marketing strategy, uses strategy for own products. According to advertisements, it can be said that they use green marketing strategy not only for being nature-friendly but also to provide added value for their products.

References


Advertisements Video Links:

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https://www.youtube.com/watch?v=NOly3VMUo
[26] Sofia Ormanları Yok Etmez
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RELATIONSHIP AMONG RENEWABLE ENERGY CONSUMPTION, ECONOMIC GROWTH AND CO2 EMISSIONS: AN EMPIRICAL STUDY ON G7 COUNTRIES

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Abstract. The aim of this study is to examine the relationship between CO2 emissions, renewable energy consumption and real GDP for G7 countries which are have been classified as developed countries. Within the scope of the empirical model, primarily heterogeneity of variables is tested by using delta test. Then cross-sectional dependence has been analyzed with CDLM tests, stationary of the series has been tested by CADF panel unit root test, co-integration relationship between series has been tested by LM Bootstrap panel co-integration test. Finally, long-term regression coefficients have been estimated CCE-MG method. As a result of econometric studies, a co-integration relationship between variables and statistically significant long term parameters has been achieved. Besides, while effect of reducing the CO2 emissions of renewable energy has been just seen in Italy and Japan, the overall panel, enhancer effect of the real income on CO2 emissions have been identified.

Keywords: Renewable Energy, Economic Growth, CO2 Emissions, Panel Data Analysis.
1. Introduction

After 1970s energy crisis, the consumption of energy sources increased rapidly as parallel with the economic growth. Nowadays consumption of energy has become very necessary to economy which is obtained from non-renewable (fossil fuels) sources. Environmental and pollution disadvantages of fossil fuels (non-renewable), makes renewable (clean) energy resources more preferable.

Especially countries which have been fast growing have big energy demand in recent years. Increasing industrial production and welfare in developing countries are also feeding this demand. But due to fossil sources in the world are both expensive, geopolitically instability and environmental problems, these sources cannot respond to demand completely and safely. This situation generates many opportunities for the countries to become larger producer and consumer of renewable energy.

In the developed countries, both governments and private sector institutions has invested in renewable energy in the last decade. G7 countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) and Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) have big share in renewable energy investments.

The aim of this study is to examine the relationship between CO2 emissions, renewable energy consumption and real GDP for G7 countries which have been classified as developed countries. For this reason, we firstly give related literature which has investigated the relationship among CO2 emissions, renewable energy consumption and economic growth by using cointegration technique after this point in this section.

The linkage between energy consumption and GDP by undertaking a co-integration analysis for Turkey with annual data over the period 1970-2003 is analyzed by Lise and Montfort. Their analysis shows that energy consumption and GDP are co-integrated. This means that there is (possibly bi-directional) causality relationship between the two variable [26].

Narayan and Smyth examine the relationship between capital formation, energy consumption and real GDP in a panel of G7 countries using panel unit root, panel cointegration, Granger causality and long-run structural estimation. They find that capital formation, energy consumption and real GDP are cointegrated and that capital formation and energy consumption Granger cause real GDP positively in the long run [17].

An empirical model of renewable energy consumption for the G7 countries is tested by Sadorsky [18]. His panel cointegration estimates show that in the long term, increases in real GDP per capita and CO2 per capita are found to be major drivers behind per capita renewable energy consumption. In the other paper, Sadorsky estimates two empirical models of renewable energy consumption and income for a panel of emerging economies[19]. His panel cointegration estimates show that increases in real per capita income have a positive and statistically significant impact on per capita renewable energy consumption.

Two paper investigate case of twenty OECD countries in almost same period. Apergis and Payne examine the relationship between renewable energy consumption and economic growth for a panel of twenty OECD countries over the period 1985–2005 within a multivariate framework [15]. Their heterogeneous panel cointegration test reveals a long-run equilibrium relationship between real GDP, renewable energy consumption, real gross fixed capital formation, and the labor force with the respective coefficients positive and statistically significant. Wong et al. focus on the contributions of energy consumption and energy R&D on economic growth for twenty OECD countries over the period of 1980–2010. Their results show that the role of energy R&D should not be overlooked and fossil fuel R&D is found to drive economic growth more than fossil fuel consumption. The findings also show that while capital stock and fossil fuels are the key factors driving economic growth, renewable energy promotes real output, specifically in the countries without oil reserves [24].

The long and the short-run relationships between disaggregate energy consumption and total factor productivity growth in the Turkish economy for the period 1970-2011 is
investigated by Tugcu [2]. Results showed that disaggregate energy consumption is cointegrated to total factor productivity growth and there exists bi-directional causal relationships among the variables in consideration. Beside this paper, Dogan analyze the short and long run estimates as well as the causality relationships between economic growth, electricity consumption from renewable sources and electricity consumption from non-renewable sources for Turkey. The results show that the variables are cointegrated[3].

Altıntaş investigates cointegration and causality between primary energy consumption, CO2 emissions, per capita gross domestic product and investments for Turkey using ARDL bounds testing approach complemented by Johansen–Juselius cointegration framework for time span 1970-2008 [4]. Empirical results indicate that there is an evidence of a long-run relationship between the variables in Turkey. The results indicate that uni-directional causality exists from economic growth and primary energy consumption to carbon dioxide emission both in the short-run. It has also been found that energy consumption, economic growth and investment are the long-run causes for CO2 emissions.

Salim et al. investigate the dynamic relationship between renewable and non-renewable energy consumption and industrial output and GDP growth in OECD countries using panel cointegration technique in the period of 1980–2011. Their results show that there is a long-term equilibrium relationship among non-renewable and renewable energy sources, industrial output and economic growth[21].

The relationship among energy consumption, carbon emissions and economic growth by using cointegration test in China from 1952 to 2012 is investigated by Long et al. They find that coal has dominant impact on economic growth and carbon emissions. GDP has bi-directional relationship with CO2 (carbon dioxide) emission, coal, gas, and electricity consumption[27].

In 2016, there are three important papers about the subject. Bhattacharya et al. investigate the effects of renewable energy consumption on the economic growth of major renewable energy consuming 38 countries between 1991 and 2012 in the world[9]. Their results confirm that the evidence of long-run dynamics between economic growth, and traditional and energy related inputs. Findings from long-run output elasticities indicate that renewable energy consumption has a significant positive impact on the economic output for 57% of our selected countries. Destek examines the relations between renewable energy consumption and economic growth in newly industrialized countries for the period from 1971 to 2011[8]. This study employs the asymmetric causality approach and the results reveal that negative shocks in renewable energy consumption causes positive shocks in real GDP for South Africa and Mexico; negative shocks in renewable energy consumption causes negative shocks in real GDP for India. Beside of these two papers, Aslan examines the causality relations among economic growth, biomass energy consumption, employment and capital in the U.S between 1961 and 2011[1]. In this paper using the ARDL bounds testing approach to cointegration, long and short run relationships among the variables are estimated. Long run and short run coefficients indicate that biomass energy consumption has positive impacts on economic growth for the U.S.

After the literature review, the second section is about data and methodology. In the third section, we give empirical findings. The conclusions are in the last section.

2. DATA AND METHODOLOGY

2.1. The Model and Data

The data set is a balanced panel of G7 countries followed over the years 1988-2014 and includes annual data on renewable energy consumption (REN), economic growth (GDP), and CO2 emissions (CO2) to reduce the heterogeneity converted into natural logarithms. Renewable energy consumption is measured in metric tons of oil equivalent. GDP is measured in constant 2005 US$ and CO2 emissions is measured in metric tons per capita. The G7 economies included in the samples are: Canada, France, Germany, Italy, Japan, United Kingdom and United States. These data are obtained from the World Bank Development Indicators (WDI) [5] and BP Statistical Review of World Energy 2015 Workbook [28]. In this case, the long-run relationship between CO2 emissions, GDP and
renewable energy consumption will be given by the following equation:

\[ CO_{2,i} = \alpha_i + \beta_i GDP_{i,t} + \gamma_i REN_{i,t} + \epsilon_{i,t} \]

where \( i, t \), \( \alpha_i \) and \( \epsilon_{i,t} \) denote the country, the time, the fixed country effect and the white noise stochastic disturbance terms, respectively. \( \beta_i \) and \( \gamma_i \) are the renewable energy consumption elasticities of GDP and REN, respectively (all variables are in natural logs).

### 2.2. Homogeneity Test

The first studies to determine the homogeneity of the slope coefficient in the cointegration equation Swamy begins with[20]; Pesaran and Yamagata have further developed its Swamy test[12]. In this test,

\[ Y_{it} = \alpha + \beta_i x_{it} + \epsilon_{it} \]

in this general equation cointegration, \( \beta_i \) slope coefficients are tested whether they are different between the horizontal sections. The hypothesis of this test:

\( H_0 : \beta_i = \beta \)  
Slope coefficients are homogeneous.

\( H_1 : \beta_i \neq \beta \)  
Slope coefficients are not homogeneous.

The Pesaran and Yamagata [11] has developed two different statistics to be able to test these hypotheses:

For large samples:

\[ \hat{\Lambda} = \sqrt{N} \left( \frac{N^{-1} \hat{S}_{1,k}}{2k} \right) : \chi^2_k \]

For small samples:

\[ \hat{\Lambda}_{adj} = \sqrt{N} \left( \frac{N^{-1} \hat{S}_{1,k}}{\nu(T,k)} \right) : N(0,1) \]

Here \( N \); the number of horizontal cross-section, \( S \); Swamy test statistics, \( k \); the number of explanatory variables and \( \nu(T,k) \) standard error represents

### 2.3. Cross Sectional Dependence and Panel Unit Root Tests

In order to test to Cross Sectional Dependence in panel date analysis tests which are developed by Breusch-Pagan[25] CDLM1, Pesaran [10] CD LM, Pesaran CDLM2 and Pesaran, Ullah ve Yamagata CDLMADJ are used [11].

CDLM1 test which is developed by Breusch and Pagan are calculated like this[4]:

\[ CD_{LM1} = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij}^2 \]

This test is derived from the sum of correlation coefficient squares among cross section residuals which are obtained from OLS. This test which has N (N-1)/2 degree of freedom, is used when N is constant and T→∞ Null hypothesis and alternate hypothesis are expressed below.

\( H_0 \): There isn’t relations between cross sections.

\( H_1 \): There is relations between cross sections

CDLM2 test which is other test to examine cross-sectional dependency is calculated as below.

\[ CD_{LM2} = \frac{1}{N(N-1)} \left[ \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij} \right] N(0,1) \]

In this equation, \( \hat{\rho}_{ij}^2 \) shows the estimation of the sum of cross section residuals. The test which is used when N and T are great (T→∞ and N→∞) is asymptotically normal distribution.

CDLM test which is also another test to examine cross-sectional dependency is calculated with the formula is expressed below.

\[ CD_{LM} = \frac{2T}{N(N-1)} \left[ \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \right] N(0,1) \]

This test is derived from the sum of correlation coefficient squares among cross section residuals. This test which is asymptotically standard normal distribution is
used when \( T > N \) and \( N > T \). The null and alternative hypothesis of this test is similar with CDLM1 and CDLM2 tests.

Lastly, CDLM\(_{\text{adj}}\) test is modified version of CDLM1 test which is developed by Pesaran et al. [11]. This test is formulated as below:

\[
CD_{\text{LMadj}} = \frac{1}{CD_{\text{LM}}} \left[ \frac{(T-k)\rho^2_{ij}u^2_{ij}}{\sqrt{\nu^2_{ij}}} \right], N(0,1)
\]

CADF test is another test which considers cross-sectional dependency. This test which could be used when \( N > T \) also gives strong results when \( T > N \). In CADF test which is developed by Pesaran, bootstrap method is not used to calculate critical values but Monte Carlo simulation is applied [13]. Because of this, the critical values for CADF test is obtained from table values of Pesaran. Other difference of this test from other tests is that it is able to apply unit root test for every unit category panel. In order to create a result from CADF test for panel, CIPS test is examined.

The critical values in CIPS test are taken from table values of Pesaran [13]. CADF test be calculated like this:

\[
\Delta Y_t = \alpha_t + h Y_{t-1} + \sum_{j=1}^{\infty} \phi_j e_{t-j} + \varepsilon_t,
\]

in this equation, \( \alpha_t \) is constant, \( t \) is trend, \( \Delta Y_{t-1} \) is lags of differences and \( Y_{t-1} \) is the value of one term lag of \( Y_t \), respectively. Null and alternative hypotheses for CADF testing are as follows:

- \( H_0 = \beta_1 = \beta_2 = \ldots = \beta_n \) (Series include unit root)
- \( HA = \) At least one is different than zero (Series are stationary)

### 2.4. Panel Cointegration Test

In this study Westerlund and Edgerton [6] LM Bootstrap Panel Co-integration tests are applied. Advantage of this test according to other tests is that it could be used both in existence and non-existence of cross-sectional dependency. This test allows autocorrelation differ from cross section to another cross section. In this test, bootstrap method is used in existence of cross-sectional independency while McCoskey and Kao are used in non-existence of it [22].

When it is assumed that there is a panel data model as follows:

\[
y_{it} = \alpha_i + x'_i\beta + Z_{it},
\]

\[
z_{it} = u_{it} + v_{it},
\]

\[
v_{it} = \sum_{j=0}^{\infty} n_{ij} w_{it} = \sum_{j=0}^{\infty} \alpha_{ij} e_{it-j},
\]

After explaining the model above, in case of non-existence of cross-sectional dependency, hypothesis test could be done by LM test as below:

\[
LM^{*}_{NT} = \sum_{t=1}^{T} \sum_{t=1}^{N} \hat{\sigma}^2_{it} S_{it}
\]

Sit is part of Zit process which is an full modified estimation of Zit, while \( \hat{\sigma}^2_{it} \) is an estimation of long term variance (Uit). In case of existence of cross-sectional dependency, LM test gives deviations in results. It is also detected that asymptotically standard normal distribution is very sensitive to serial correlation. To overcome this problem, bootstrap method is used instead of asymptotically standard normal distribution. Bootstrap method follows autoregressive process as follows: \( \hat{\phi}_{ij} \) is estimated using \( \hat{\sigma}^2_{ii} \) of \( W_{it} \) in equation using \( \hat{\phi}_{ij} \) and \( \rho^i_j \) lags. We can then to compute the residuals: \( \hat{e}_{it} = \sum_{j=0}^{\infty} \hat{\phi}_{ij} w_{it-j} \). At the second stage,
\[ \hat{e}_i = \frac{1}{T} \sum_{j=1}^{T} \hat{e}_{ij} \]

is obtained from empirical distribution on residuals. After that, instead of \( \hat{W}_{it} \) and \( \hat{e}_{it} \) in the equation ( ), \( \hat{e}_i^* \) and \( \hat{W}_{it}^* \) are used in order to obtain \( \hat{e}_i^* \) and \( \hat{W}_{it}^* \). And at the last stage, \( \hat{W}_{it}^* \) is separated as \( \hat{W}_{it}^* = (z_{it}, \Delta x_{it}^*)' \) and bootstrap samples which are \( x_{it}^* \) and \( y_{it}^* \) formed by following the process mentioned below:

\[ y_{it}^* = \hat{\alpha}_i + x_{it}^* + z_{it}^* \]

1.1. CCE-MG Estimation

In order to estimate the long term coefficients CCE (Common Correlated Effects) method is used. This method is developed by Pesaran and considers the cross-sectional dependence [14]. It is assumed the long-term co-integration parameters of panel homogeneous and is valid for the whole panel. It is calculated by CCE-MG (Common Correlated Mean Group Effects) method developed by Pesaran [14]. The long-term co-integration coefficient which is valid for the whole panel is calculated by CCE-MG method that developed by Pesaran [14]. CCE-MG by taking the arithmetic mean of the values of the group estimates the long-term co-integration coefficient.

3. EMPIRICAL FINDINGS

Firstly in dynamic panel data analyses should be examined whether variables are homogeneous. Being homogeneous or heterogeneous variables, changes the format of the root and cointegration tests that to be applied. In this study, homogeneity of variance test has been investigated with the delta test.

Table 1. Homogeneity Test Results

<table>
<thead>
<tr>
<th>Test</th>
<th>t-statistics</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Delta )</td>
<td>3.758</td>
<td>0.000</td>
</tr>
<tr>
<td>( \delta_{adj} )</td>
<td>3.977</td>
<td>0.000</td>
</tr>
</tbody>
</table>

According to the results in Table 1 the variables that make up the panel data set are heterogeneous. The estimated probability value is significant at the 1% level and the null hypothesis is rejected.

Table 2. Cross Section Dependence Test Results

<table>
<thead>
<tr>
<th>CD_{LM1}</th>
<th>CO2</th>
<th>GDP</th>
<th>REN</th>
</tr>
</thead>
<tbody>
<tr>
<td>199.58***</td>
<td>519.72***</td>
<td>279.11***</td>
<td></td>
</tr>
<tr>
<td>CD_{LM2}</td>
<td>26.47***</td>
<td>75.87***</td>
<td>38.74***</td>
</tr>
<tr>
<td>CD_{LM}</td>
<td>5.13***</td>
<td>22.78***</td>
<td>15.99***</td>
</tr>
<tr>
<td>CD_{LM, Adj}</td>
<td>26.34***</td>
<td>75.74***</td>
<td>38.61***</td>
</tr>
</tbody>
</table>

Note: *** Denotes statistical significance at 1%.

For dynamic panel data analysis test of horizontal cross correlation of panel forming series is important. Horizontal section of the units whether depends on each other and from a shock whether affected to the same degree should be investigated.
According to the results in table 2, probability values are significant at the 1% level and the null hypothesis is strongly rejected. In series and models it has been decided that there is a horizontal section dependence. This result indicates that, the environmental problems arising in one of these countries, an energy or negative growth shock also affects the others. Hence, when these countries determine policies for environmental issues, energy consumption and economic growth, must keep in mind policies of other countries and shocks affecting this country.

Estimation tests of homogeneity and the horizontal section independence, provide important clues about the structure which should be applied the unit root tests before panel co-integration test. It is not a realistic situation that assuming horizontal section units forming the panel, in the face of a shock, may be affected by each other. Unit root tests must be applied that these tests take into account the horizontal section dependency for the effectiveness of forecast results [23].

Table 3. Panel Unit Root Test Results

<table>
<thead>
<tr>
<th></th>
<th>CADF</th>
<th></th>
<th>CIPS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>Δ</td>
<td>Level</td>
<td>Δ</td>
</tr>
<tr>
<td>CO₂</td>
<td>-0.879</td>
<td>-3.391***</td>
<td>-1.013</td>
<td>-4.459***</td>
</tr>
<tr>
<td>GDP</td>
<td>-2.839</td>
<td>-2.825***</td>
<td>-1.980</td>
<td>-2.782***</td>
</tr>
<tr>
<td>REN</td>
<td>-1.705</td>
<td>-4.137***</td>
<td>-2.709</td>
<td>-5.817***</td>
</tr>
</tbody>
</table>

Notes: *** Statistical significance at 1% level. Δ denotes for the first differences. The critical values for the CIPS test were obtained from Pesaran [13].

In table 3, when it is looked t-statistics and probability results of the panel's variables in level of intercept and intercept trend, all variables except the variable LGDP contains a unit root problem. Therefore, the first difference of the series have been investigated. It seems to have become stable when the series received the first notice of variables for panel.

Series which is being subject to analysis includes both heterogeneous and dependence horizontal section. Because of this in this study Westerlund and Edgerton [6] LM Bootstrap Panel Co-integration tests have been used. Cointegration test results are given in Table 4.

Table 4. LM Bootstrap Cointegration Test Results

<table>
<thead>
<tr>
<th>LM Statistic</th>
<th>Asymptotic p-value</th>
<th>Bootstrap p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.097</td>
<td>0.018</td>
<td>0.693</td>
</tr>
</tbody>
</table>

Notes: The bootstrap p-value was generated with 10,000 replications. This model was arranged as a constant and trend mod.

As shown in table 4 when there is horizontal section independence asymptotic probability value indicates no cointegration. But horizontal section dependence requires the using of bootstrap values possibility that according to this value, null hypothesis was accepted which states that there is cointegration relationship. In other words, there is a long-term relationship between CO₂ emissions, renewable energy consumption and economic growth. For it is accepted that there is the presence of long-term relation in the study after this stage it has been estimated long-term's coefficients.
Table 5. CCE-MG Estimation Results

<table>
<thead>
<tr>
<th>Country</th>
<th>Coefficient</th>
<th>T-Statistic</th>
<th>Coefficient</th>
<th>T-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>0.71065***</td>
<td>4.13</td>
<td>0.18831</td>
<td>1.79</td>
</tr>
<tr>
<td>France</td>
<td>1.82247***</td>
<td>3.40</td>
<td>0.02598</td>
<td>0.71</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.28881</td>
<td>-1.14</td>
<td>0.04598</td>
<td>1.13</td>
</tr>
<tr>
<td>Italy</td>
<td>2.29948***</td>
<td>4.14</td>
<td>-0.12996***</td>
<td>-2.84</td>
</tr>
<tr>
<td>Japan</td>
<td>0.85669***</td>
<td>5.71</td>
<td>-0.12378***</td>
<td>-2.37</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.11027</td>
<td>0.49</td>
<td>0.07569</td>
<td>1.48</td>
</tr>
<tr>
<td>United States</td>
<td>1.02323***</td>
<td>4.01</td>
<td>0.02533</td>
<td>0.94</td>
</tr>
<tr>
<td>General Panel</td>
<td>0.93342***</td>
<td>2.74</td>
<td>0.01536</td>
<td>0.36</td>
</tr>
</tbody>
</table>

Notes: *** Denotes statistical significance at 1%. The dependent variable is CO₂.

In Table 5 when CCE-MG estimation results are considered in terms of panel, the sign of GDP is positive and statistically significant at the 1% level across the panel. Panel long-term coefficient was calculated as 0.93 in general. According to the results a 1% increase in economic growth in the long term increases 0.93% of carbon emissions. When the results are analyzed in some countries in all countries except the United Kingdom and Germany an increase in economic growth also increases environmental pollution. Besides REN variable there were no statistically significant in the overall panels. When considered in some countries, only an increase in renewable energy consumption in Italy and Japan has the effect of reducing the carbon emissions.

4. CONCLUSIONS

Due to environmental problems has increased in recent years, the demand for renewable energy has raised. This situation has led to changes in national energy policy of countries. In this study, the relationship among carbon emissions, economic growth and renewable energy by using panel data 1988-2014 period taking into consideration the horizontal section dependence with data analysis for G7 countries were analyzed in four stages.

Firstly, the presence of the horizontal cross correlation among the series have been determined. This result shows that the environmental problems, energy supply issues or negative growth shocks which are arising in a G7 member country affects negatively the others. Hence, countries which has been developing policies about environmental issues, energy consumption and CO2 emissions should take into consideration the other countries.

Secondly, heterogeneity and stability of the series are tested. According to the results of these tests, the series are heterogeneous and stable.

In the third stage of the analysis, long-term relationship between the variable was investigated by Westerlund and Edgerton [6] LM Bootstrap test and the test results seen that the variables in the relationship between the cointegrated.

In the fourth and final stage of the analysis, the long-term prediction of coefficients was also investigated with CCE-MG test. According to the findings, economic growth in the long term has increased 1%, carbon emissions have increased 0.93%. In addition, an increase in renewable energy consumption has reduced carbon emissions in Italy and Japan.
The obtained empirical results in this study are consistent with the results founded by Sadorsky[18], Apergis et al. [16] and Menyah and Wolde-Rufael [7].

Nowadays, countries which has been living the problems of fossil fuels has been switching to more efficient technologies that less damage to the natural environment. The best policy suggestion for the countries is to increase renewable energy consumption, if the countries don't want to give up fast economic growth and don't want to live environmental problems.

References


The Relationship between Real Sector Volatility and Financial Sector Volatility

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Karadeniz Technical University
The Departments of Econometrics and Business Administration

Abstract. The aim of this study is to investigate the possible relationship between real sector volatility and financial sector volatility for Turkish Economy. The data used in this study were quarterly and cover the period of 2003:Q1-2015:Q2 for Turkish economy. Real gross domestic product and private sector domestic credit capacity were used as the macro-economic indicator and financial indicator, respectively. Due to the fact that volatility series were not directly observable, real sector volatility and financial sector volatility series were obtained by using moving standard deviation. The probable relationship between the real sector volatility and financial sector volatility was investigated by using Engle-Granger Co-integration test. Box-Jenkins models of both variables were statistically estimated and the future values of both variables were predicted until 2018. Consequently, the results identify strong long-run and short-run relationships between real sector volatility and financial sector volatility in Turkish economy.

Keywords: Box-Jenkins methods, Engle-Granger co-integration test, Real sector volatility, Financial sector volatility

1. Introduction

Economic instability creates a negative impact on economic decisions of economic units. Economic instability may reduce production, increase unemployment and demolish income. Economic instability negatively affects finance markets. Instability in financial markets may lead to financial crisis and macroeconomic imbalance. Minsky (1985) defined the volatility process of capital and financial assets as financial instability and defended that economic stability will lead to financial instability and accordingly economic instability with “Financial Instability Hypothesis”. Under these circumstances, financial instability may cause financial crisis and thus disrupting macroeconomic balance.

Within this framework, the aim of this study is to analyze the probable relationship between volatilities in real sector and financial sector for Turkish economy within the period of 2003:Q1-2015:Q2. Real gross domestic product and private sector domestic credit capacity are used as the macro-economic indicator and financial indicator, respectively. The volatility series for both variables are calculated, by using moving standard deviation. The probable long-run relationship between the real sector volatility and financial sector volatility is examined by using Engle-Granger co-integration test. Box-Jenkins models of both variables are statistically estimated and the future values of both variables were predicted until 2018. The study is organized as follows: Firstly, the empirical literature is discussed in terms of the relationship between real sector volatility and financial sector volatility. Secondly, data and methodology are described. Thirdly, the relationships between real sector volatility and financial volatility are analyzed and the future values of both series are predicted. Finally, econometric findings are summarized and the results are discussed.

2. Literature Review

In the empirical literature, there are few studies that examine relationship between real sector and financial sector directly. The large number of studies in this area, unfortunately,
have not focused the relationship between real sector volatility and financial sector volatility. For example, Gunther et al. (1995) investigated the relationship between bank credits and economic activities for Texas. Pholphirul (2008), in his study, examined the relationship economic growth for Thailand economy by using system of simultaneous equations and between financial instability, banking crisis and least squares methods. Erdem and Yamak (2014) investigated the causality relationship between financial instability and economic instability for Turkish economy.

<table>
<thead>
<tr>
<th>Table 1: Literature Review</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AIM OF THE STUDY</strong></td>
</tr>
<tr>
<td>Gunther et al. (1995)</td>
</tr>
<tr>
<td>Jeong et al. (2003)</td>
</tr>
<tr>
<td>Yüncü et al. (2008)</td>
</tr>
<tr>
<td>Pholphirul (2008)</td>
</tr>
<tr>
<td>Moshirian et al. (2012)</td>
</tr>
<tr>
<td>Samii et al. (2012)</td>
</tr>
<tr>
<td>Jokipii and Moonin (2013)</td>
</tr>
<tr>
<td>Kaya et al. (2013)</td>
</tr>
<tr>
<td>Ahmed et al. (2015)</td>
</tr>
<tr>
<td>Erdem and Yamak (2014)</td>
</tr>
<tr>
<td>Korkmaz and Yamak (2015)</td>
</tr>
</tbody>
</table>
3. Data and Methodology

The data used in this study are quarterly and cover the period of 2003:Q1-2015:Q2 for Turkish economy. Real gross domestic product and private sector domestic credit capacity were used as the macro-economic indicator and financial indicator, respectively. Both variables were obtained from Electronic Data Delivery System, the Central Bank of the Republic of Turkey (TCMB_EVDS). Both variables were seasonally adjusted and were used in the form of logarithm. The econometric process used in this study is as follows: First of all, real sector volatility and financial sector volatility variables were obtained by using Moving Standard Deviation. Then, we dealt unit root tests procedures to determine whether real sector volatility and financial sector volatility variables were stationary: developed by Dickey and Fuller (1979) (Augmented Dickey-Fuller (ADF)) and by Phillips and Perron (1988) (PP). After then, the probable relationships between the real sector volatility and financial sector volatility were investigated by using Engle-Granger Co-integration. Finally, Box-Jenkins models of both variables were statistically estimated and the future values of real sector volatility and financial sector volatility were predicted until 2018. The details of all variables are given in Table 2.

### Table 2: Symbols Used for Variables

<table>
<thead>
<tr>
<th>RS</th>
<th>FS</th>
<th>RSV</th>
<th>FSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Sector</td>
<td>Financial Sector</td>
<td>Real Sector Volatility</td>
<td>Financial Sector Volatility</td>
</tr>
</tbody>
</table>

4. Empirical Findings

In Figure 1, the volatilities of real sector and financial sector were shown. According to Figure 1, the financial sector volatility is higher than the real sector volatility.

![Figure 1: The Volatilities of Real Sector and Financial Sector](image)

In Table 3, descriptive statistics were given. As seen in Table 3, the standard deviation of financial sector volatility is 0.04, the standard deviation of real sector volatility is 0.01. Financial sector volatility is less stable than real sector volatility.

### Table 3: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>RSV</th>
<th>FSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.023343</td>
<td>0.094903</td>
</tr>
<tr>
<td>Median</td>
<td>0.021594</td>
<td>0.092207</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.059427</td>
<td>0.189384</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.002894</td>
<td>0.015108</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.013038</td>
<td>0.040700</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.685149</td>
<td>0.167422</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.92744</td>
<td>2.470204</td>
</tr>
</tbody>
</table>

We summarize results of unit root tests (ADF and PP) for the level and first difference of both variables in Table 4. The null hypothesis for ADF and PP tests indicate the existence of a unit root. According to the unit root test results, FSV and RSV are stationary in the first difference. So, ADF and PP tests reject the null hypothesis of a unit root in the series at the 0.01 level, indicating that the both series are stationary in the first differences.
Table 4: The Results of ADF and PP Unit Roots

<table>
<thead>
<tr>
<th></th>
<th>Intercept</th>
<th>Intercept-Trend</th>
<th>None</th>
<th>Intercept</th>
<th>Intercept-Trend</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSV</td>
<td>-4.1769***</td>
<td>-4.8053***</td>
<td>-1.2832</td>
<td>-2.1628</td>
<td>-2.6172</td>
<td>-1.1575</td>
</tr>
<tr>
<td>RSV</td>
<td>-2.5561</td>
<td>-2.7072</td>
<td>-1.5284</td>
<td>-2.5707</td>
<td>-2.7533</td>
<td>-1.4209</td>
</tr>
<tr>
<td>ΔRSV</td>
<td>-6.2663***</td>
<td>-6.1895***</td>
<td>-6.3382***</td>
<td>-7.2108***</td>
<td>-7.67012***</td>
<td>-6.8767***</td>
</tr>
</tbody>
</table>

Note: ***, **, * denote significance levels of 1%, 5% and 10% respectively.

Table 5: The Results of Engle-Granger Co-integration

<table>
<thead>
<tr>
<th>Equations</th>
<th>Error Terms</th>
<th>ADF</th>
</tr>
</thead>
<tbody>
<tr>
<td>$FSV_t = 0.09^{***} + 0.38RSV_{t-1} + RES_{1,t}$</td>
<td>RES1</td>
<td>$-4.2461^{***}$</td>
</tr>
<tr>
<td>$RSV_t = 0.02^{***} + 0.04FSV_{t-1} + RES_{2,t}$</td>
<td>RES2</td>
<td>$-2.5832^{**}$</td>
</tr>
</tbody>
</table>

Note: ***, ** denote significance levels of 1% and 5%, respectively.

According to the ADF and PP unit root tests results, all variables are found to be stationary in their first differences. Thus, Engle-Granger co-integration test\(^1\) can be easily employed to examine the possible long-run relationship between real sector volatility and financial sector volatility. As required by Engle-Granger co-integration approach, firstly two equations were estimated and then, error terms of the equations were obtained. For the error terms of equations unit root test (ADF) were applied to determine the presence of long-run relationship between the variables. The results of the Engle-Granger co-integration test are shown in Table 5. According to the ADF unit root test results, the error terms of equations are found to be stationary in their levels. According to the Engle-Granger test results, real sector volatility and financial sector volatility are co-integrated.

Error correction models can be applied to time series for determining causality and showing short-run dynamics (Miller and Russek, 1990, Yamak and Abdioğlu, 2012). Equations (1) and (2) are error-correction models:

\[
\Delta FSV_t = \alpha_1 + \lambda_1 RES_{1,t-1} + \sum_{j=1}^{p} \beta_j \Delta FSV_{t-j} + \sum_{j=1}^{q} \gamma_j \Delta RSV_{t-j} + \sum_{j=1}^{m} \delta_j \Delta FSV_{t-j} + \epsilon_t \quad (1)
\]

\[
\Delta RSV_t = \alpha_2 + \lambda_2 RES_{2,t-1} + \sum_{j=1}^{p} \beta_j \Delta FSV_{t-j} + \sum_{j=1}^{q} \gamma_j \Delta RSV_{t-j} + \sum_{j=1}^{m} \delta_j \Delta RSV_{t-j} + \epsilon_t \quad (2)
\]

Note: $\beta$, $\lambda$, $\gamma$ and $\pi$ are coefficients; $\alpha$ are constant term; $p$, $q$, $m$ and $n$ are optimal lags; $RES_{1,t}$ and $RES_{2,t}$ are error correction terms, $\lambda_1$ and $\lambda_2$ are adjustment coefficients.

Table 6 presents the results of error correction model. As seen in this table, error correction terms ($RES_{1,t}$) are statistically significant at least at the 10% level and have also expected signs. So, there are two-sided relation between real sector volatility and financial sector volatility in Turkish economy in short-term.

Table 6: The Results of Error Correction Models

<table>
<thead>
<tr>
<th></th>
<th>$k$</th>
<th>$F$</th>
<th>$RES_{1,t}$</th>
<th>$R^2$</th>
<th>$LM$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)$\Delta RSV \rightarrow \Delta FSV$</td>
<td>(6,3)</td>
<td>1.88</td>
<td>-0.17(\ast)</td>
<td>0.75</td>
<td>1.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0.16]</td>
<td>[0.2]</td>
<td>[0.2]</td>
<td></td>
</tr>
<tr>
<td>(2)$\Delta FSV \rightarrow \Delta RSV$</td>
<td>(2,1)</td>
<td>0.11</td>
<td>-0.22(\ast)</td>
<td>0.18</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0.74]</td>
<td>[0.28]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: \(\ast, \ast\) denote significance levels of 5% and 10%, respectively.

Before we estimate future values of real sector volatility and financial sector volatility until 2018, we must determine the best ARIMA model for real sector volatility and financial sector volatility. We decided the best model as ARIMA (2,1,2) and ARIMA (3,1,1) for financial sector volatility and real sector volatility, respectively. In Table 7, the future values of financial sector volatility and real sector volatility are given. Table 7 reveals that financial sector volatility takes on its highest value at the first period of 2016 and on its lowest value at the first period of 2017 and real sector volatility takes on its highest value at the third period of 2015 and on its lowest value at the last period of 2015.

---

Table 7: The Future Values of Real Sector Volatility and Financial Sector Volatility

<table>
<thead>
<tr>
<th>Year</th>
<th>FSV</th>
<th>RSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015Q3</td>
<td>-0.001876</td>
<td>-0.000460</td>
</tr>
<tr>
<td>2015Q4</td>
<td>-0.001282</td>
<td>-0.000497</td>
</tr>
<tr>
<td>2016Q1</td>
<td>-0.000953</td>
<td>-0.000463</td>
</tr>
<tr>
<td>2016Q2</td>
<td>-0.001029</td>
<td>-0.000493</td>
</tr>
<tr>
<td>2016Q3</td>
<td>-0.001409</td>
<td>-0.000466</td>
</tr>
<tr>
<td>2016Q4</td>
<td>-0.001844</td>
<td>-0.000491</td>
</tr>
<tr>
<td>2017Q1</td>
<td>-0.002089</td>
<td>-0.000469</td>
</tr>
<tr>
<td>2017Q2</td>
<td>-0.002040</td>
<td>-0.000489</td>
</tr>
<tr>
<td>2017Q3</td>
<td>-0.001766</td>
<td>-0.000471</td>
</tr>
<tr>
<td>2017Q4</td>
<td>-0.001449</td>
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<td>2018Q1</td>
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<tr>
<td>2018Q2</td>
<td>-0.001297</td>
<td>-0.000485</td>
</tr>
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</table>

5. Conclusions

In this study, the long-run relationship between real sector volatility and financial sector volatility were examined for Turkish Economy. In addition, in this study, the future values of the both volatilities were predicted until 2018. The data used in this study were quarterly and cover the period of 2003:Q1-2015:Q2 for Turkish economy. Real gross domestic product and private sector domestic credit capacity were used as the macro-economic indicator and financial indicator, respectively. Due to the fact that volatility series was not directly observable, real sector volatility and financial sector volatility series were obtained by using Moving Standard Deviation. This study had two important process: First of all, real sector volatility and financial sector volatility variables were obtained by using moving standard deviation. After then, the probable long-term relationships between the real sector volatility and financial sector volatility were investigated by using Engle-Granger Co-integration. Secondly, Box-Jenkins models of both variables were statistically estimated and the future values of real sector volatility and financial sector volatility were predicted until 2018. Consequently, the results identify strong long-run and short-run relationships between real sector volatility and financial sector volatility in Turkish economy.

References


The Effect of 2008 Global Crisis on European Banking Sector and the Applied Policies

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Abstract. The goal of this academic paper is to evaluate the global finance crisis that started in the US and later spread throughout Europe in 2007’s effect especially on the banking sector, the cost that it caused, and the precautions in order to ease the crisis’ effect on the banking sector and its results. The financial problems which started with mortgage in 2007 in the US has evolved into a crisis and started to affect the European countries as well. Countries and the European Central Bank has started to take precautions to stop the crisis and to decrease the effects. These precautions were: to provide capital injection and liquidity, to guarantee debt and deposit, to nationalize banks, the merging of banks, lowering interest rates, to ban or limit open sales.

Key Words: 2008, Crisis, Global Crisis, European Union, Banking In European Union

1. Introduction

The goal of this study is to evaluate the global finance crisis that started in the US and later spread throughout Europe in 2007’s effect especially on the banking sector, the cost that it caused, and the precautions in order to ease the crisis’ effect on the banking sector and its results. The term of crisis involves different incidents that depress the economy, increase unemployment rate and effect the price of services and goods [9]. Economic crisis can be defined as sudden and unexpected changes in behaviors and operations of decision units in economy due to internal and external conjuncture. Economic crises might unexpectedly be arisen as macroeconomic depressions in certain times because of wrong or inadequate administrative choices. Chronical inflation and hyperinflation, devaluation, radical monetary policy implementations, unbalance of foreign trade, and increasing internal and external debt can be regarded as factors causing crises [3]. When the root causes of economic crises are investigated, it has been revealed that the problem is generally concentrated on finance part and balance of payments. Financial crisis can be defined as circular breakdown of all or most of financial indicators – price of short term interests and assets such as stock, real estate or land, commercial bankruptcy, and sharp, short or ultra failures of financial institutions [10]. Problems about forex are excluded from this definition.

The financial problems which started with mortgage in 2007 in the US has evolved into a crisis and started to affect the European countries as well. Countries and the European Central Bank has started to take precautions to stop the crisis and to decrease the effects. These precautions were: to provide capital injection and liquidity, to guarantee debt and deposit, to nationalize banks, the merging of banks, lowering interest rates, to ban or limit open sales. Our findings and conclusions that EU countries showed a similar reaction to the crisis as developing countries showed in the 2008 crisis.

2. Impact of the crisis on the U.S. Banking System

On 27 February 2007, Freddie Mac (Federal Home Loan Mortgage Corporation) announced that it would no longer buy subprime mortgages (subprime mortgages are those made to borrowers with poor credit histories and financial profiles [5]) and mortgage related securities [14]. HSBC announced that its loss was related to the U.S. subprime mortgages. On
17 May 2007, Ben Bernanke, president of the Federal Reserve stated that increasing number of mortgage breakdowns would not damage the US economy. However, it did not result in as he predicted. Subprime mortgage hedge funds run by Two Bear Stearns caused substantial losses and assets being sold out, and the problem spread to big firms of Wall Street such as Merrill Lynch, JPMorgan Chase, Citigroup and Goldman Sachs [8]. The crisis that burst out with the bankruptcy of Lehman Brothers, fourth biggest investment bank in the US, in September, 2008 spread over the world and turned into a global financial and real sector crisis [1].

The number of bankrupt banks in the US has reached 19 between August 2007 and 2009 that is considered the beginning of the financial crisis and 14 banks went bankrupt just in 2008. The total assets of bankrupt banks has exceeded 200 billion dollars in the first quarter of 2009. If the first crisis in the US is considered to be equal to the cost of the first rescue package, it was $ 850 billion. Banks bankruptcy, purchase, merger and transfers, capital structures was changed in the US that has five major investment banks before the crisis [6].

3. Situation in the European Union

Many developed and developing countries benefited from capital surplus in the period of 2002-2007 as the global economy progressed quite positive. This situation caused rapid rise in asset prices, economic growth and increasing demand has been the source of capital flows and debt. House prices have increased sharply in countries such as Italy and Spain; or consumption in Greece as ‘explosion’ has emerged because of the cheapening of loans in Euro zone.

The debt crisis that triggered the crisis in the euro zone is not only high levels of public debt; actually it is the private sector’s debt which turned into public debt in times of crisis. As of the end of 2009, the total public debt of southern European countries reached 2.9 billion Euros. In case of failure about the payment of Southern European countries’ debt, particularly France and Germany, plus other European countries and bank of these countries had the greatest impact and. As of early 2010, total amount of French banks' lending to Southern Europe is 550 billion Euros; 420 billion Euros to Germany, 260 billion to UK and 60 billion Euros to Ireland [4,7,13].

Financial systems of the European Union Countries rapidly integrated with each other and financial assets distributed to all member countries. The ratio of banking assets to GDP reached dramatic size in the European Union. (370%, 760%, 379% and 290% for Austria, Ireland, Spain and Portugal respectively). In the euro zone 'everyone was indebted to everyone' in the rapid financialization system and no one was able to “isolate” themselves in a system which based on trust. This situation created a financial system which is an inadequately audited, uncontrolled and vulnerable for a domino effect [13].

3.1. Debts for each of the European countries

By the end of 2009, Spain owed 238 billion dollars to Germany, 220 billion dollars to France and 114 billion dollars to United Kingdom. At the same time, Italy owed 190 billion dollars, 77 billion dollars and 511 billion dollars to Germany, United Kingdom and France respectively. In addition, Spain owed 31 billion dollars to Italy, 28 billion dollars to Portugal and Portugal owed 86 billion dollars to Spain, 6.7 billion dollars to Italy and Italy owed 47 billion dollars to Spain and 5.2 billion dollars to Portugal. Greece totally owed 236 billion dollars and Portugal owed 286 billion dollars to Euro zone while Spain owed 1.1 trillion dollars and Italy owed 1.4 trillion dollars [4,13].

3.2. Reliability of the Country Risk Rating Agencies

In a period of rapid rise of the level of risk there were no available financial cooperation mechanisms which can measure the risk. During this period, global credit rating agencies are the main reference point for the European Commission and European Central Bank which were not able to establish their own rating agencies. However, it became clear in the global crisis that these institutions are working with unreliable methods. These organizations declared much lower risk for European Union countries such as Greece before the global crises. Some EU member countries borrowed excessively due to the low risk premium
however during the global crisis credit rating agencies went to extreme series of downgrades of rating which led to enter into a liquidity bottleneck of countries that need credits [13]. It is indicated that Greece and Goldman Sachs had 50 million dollars valued agreement in order to hide the accounts and so the country can receive high ratings from institutions. In 2009, the budget deficit of Greece was announced as 12.7% but then it is understood that the real budget deficit is 15.4% and it became a country that was not able to pay its debts in the beginning of 2010. So, it caused the deepening the crisis in the Euro Zone [2].

3.3. Sources of the crisis in European Union Countries

Considering the EU member countries in crisis, it is seen that the reasons for the crisis differ for each countries. While the main reason for the crisis was originated from public sector for Greece, weaknesses in the banking and real estate sectors were reasons for Ireland. Plus, high levels of deficit and risks in banking sector were the reasons in Portugal. Considering the Spain, the main source of the crisis was low levels of economic activity due to insufficient domestic and foreign demand. In addition, poor state of public finances can be considered as main source of crisis for Italy and Belgium [4,1]. Apart from these, it is defined that the basis of the crisis of euro zone is “economic integration/political fragmentation” [11].

Moreover, economic and monetary implementations in some European Union countries and monetary policies that are conducted by European Central Bank tied the Euro members’ monetary policies’ to the one authority but the authorities implemented their fiscal policies without connecting to the top authority of the country which revealed the mismatch between the monetary and fiscal policy [13].

4. Developments in Banking Sector in the European Union Countries

The European Central Bank has released 95 billion euros in the banking market on 9 August 2007. After a few days it has added 108.7 billion euros [8].

After loss of investor confidence about financial strength of Fortis Bank, it has fallen into financial difficulties and the market value of the shares have depreciated by up to 35%. In September 2008, Belgium, the Netherlands and Luxembourg governments have decided to make a capital injection of 11.2 billion euros to the bank. In the wake of this inadequate support, the Dutch government has bought the bank’s operations in this country 16.6 billion euros on 3 October 2008. French bank BNP Paribas took over the majority stake of Fortis operations in Belgium and Luxembourg in exchange for 14.5 billion euros on 6 October 2008. On September 29, 2008 France, Belgium and Luxembourg Governments have decided to make a capital injection of 6.4 billion euros to the Dexia bank that has total assets of 605 billion euros by the end of 2007. In addition, after 10 days it was announced that the bank’s entire debts were guaranteed for 1 year [4,12].

Crisis started to show its effect in Europe starting from October. In Germany 11 billion dollar worth funds of IKB Deutsche Industrybank has collapsed. In France, BNP Paribas one of the biggest banks in the country froze 3 funds worth 1.6 billion dollars. European countries followed a policy of nationalization and decreasing interest rates. Germany set up a fund of 670 billion dollars to save the banks. The banks were guaranteed to get loans worth 133 billion dollars. A fund of 41 billion dollars were established in order to reignite the sectors against the recession in addition to the nationalization of the banks. Also new laws were passed effective on 18th of February, 2009 which will be in effect until 31th of October, 2009 that allowed the banks to be nationalized. By February 2009, the US has spent 1.7 trillion dollars whereas European countries spent 2 trillion dollars [2].

The supervision of the banks were given to European Central Bank in the EU because the problems in the banking sector. European Central Bank has started to investigate the biggest 128 banks of Europe in the second quarter of 2014. The trust in banking sector was shaken because of the banks not being able to get back the grants and loans and hiding them with accounting cheats and using these accounting cheats also to cover up their inability to cover their losses [2].

4.1. Situation in England
In 13th of September, 2007 BBC has declared that Northern Rock has withdrawn its support from British Central Bank. Northern Rock’s credit sources has dried because the funds from the market were much more then the depositors money. Moreover, the depositors withdraw a record 1 Billion Pounds from Northern Rock and this rush continued until the English government gave a guarantee for the safety of the bank deposits [8].

World’s 9th biggest bank, according to the actives, Bradford and Bingley has been nationalized by the English government and in order to provide liquidity to the banks a new fund of 87.2 billion dollars was announced. Later, new plans were introduced: 685 billion dollars for the reestablishment in confidence in the finance industry, new loans were supported with a guarantee of 438 billions, biggest three banks were injected with 60 billion dollars, deposit guarantee limits were increased and 88 billion dollars worth equity was the goal to be reached [4,12]. Halifax Building Society, the biggest Mortgage provider of England has been purchased, as a result of mortgage loan losses and liquidity problems as a result of the global financial crisis, was purchased by Lloyds Bank for 18.9 Billion dollars [7].

4.2. Situation in Germany

In 28th of August 2007, German Sachsen Landesbank had to go to a shrinking after investing in the not so good market. The bank was saved by its competitor Baden-Wuerttemberg Landesbank. IKB German Credit Company has declared, because of the subprime market in the US and the investments with regards to that market, that it lost around a billion dollars [8].

In order to save the banks a 670 billion dollars worth fund was put together. Moreover, a guarantee of 133 billion dollar debt was added. A law was passed and it came into affect in 18th of February 2009 and is valid until 31th of October 2009 and allowed banks to be nationalized. Commerzbank was helped 8.2 billion dollars by the government. Hypo Real Estate the mortgage company was to get (in addition to its debt) 12 Billion Euros from the German government [7].

4.3. Situation in Other Countries

Union Bank of Switzerland which suffered an influx of withdrawal was supported by the government of Switzerland with 6 billion Swiss Francs in addition to depositing problematic actives worth up to 60 billion Swiss Francs to a special fund supported by the Swiss Central Bank. Swiss government has declared that it would support the finance sector by giving 152 million Euros and has increased deposit protection limits and also has reported to help the banks with 6 billion dollars in order for the banks to issue new loans. Irish Government put aside 45 billion Euros to save the banks. It gave unlimited guarantees to private, interbank and trade accounts, gave 10 billion Euros to the banks as a help for capital support and finally purchase a majority share of Anglo Irish Bank whilst supporting the biggest three banks with a fund of 5.5 billion Euros. In Spain, after 16 years in the March of 2009, a bank (Caja Castilla La Mancha) was nationalized and the state assured to pay its 9 billion Euros worth of debt and all of its responsibilities to its creditors and customers. Icelandic government purchased three quarters of the shares of the third biggest bank of Iceland, Glitnir Bank and nationalized the second biggest bank Landsbanki. After it has announced that it was to provide the biggest bank Kaupthing with a loan of 683 million dollars, instead this bank was also nationalized with the guarantees to every customer. Denmark prepared a bail out plan of 18 billion dollars for banks and mortgage firms. Dutch banking tycoon Ing has announced that the Dutch government is going to purchase problematic assets worth 27.7 billion Euros and this would constitute the vast majority of the problematic assets [7].

Conclusion

The main sources of the crisis in EU member countries may be governmentally caused issues, banking, reasons caused by weakness in real estate, current account deficit and inadequacy of domestic and foreign demand. The reasons for the influence of the crisis in all Euro member countries can be the use of common currency, finance and the integration of yhe real economy and the control of currency policy via Central bank of European Union and the high rate of the economic dependency of the countries to one another. During the crisis The central bank of EU mostly
focused on financial dimension whereas European commission and IMF mostly met the function of accounting the financial needs.

The central bank of EU focused on its funding program's banking and finance issues and carried on actions against the protection of its clients. The precautions taken by the responsible country governments and their central banks during the crisis can be summarized as the flow of capital to the banks, providing liquidity, providing guarantee for the debts and deposits, the nationalisation of banks and the merge of the banks. EU countries showed a similar reaction to the crisis as developing countries showed in the 2008 crisis.

References

Determinant Factors of Modified Audit Opinions in Turkey

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Abstract. This paper investigates important factors influencing modified audit opinions on industry companies listed in the Istanbul Stock Exchange. The study uses logistic regression method to identify the effects of firm-specific and audit-related factors on modified opinions based on the randomly selected 116 firm-years data for the years 2011 through 2014. The empirical results reveals that prior audit opinion and audit report lag are the significantly effective audit-related variables on modified opinions. The effect of other factors including audit firm size, company size, financial distress, liquidity, leverage and profitability on the qualified opinions are not statistically significant. Additionally, the accurate prediction of the logistic model is find as 87.9% for the unqualified opinion, 79.3% for the modified opinions and 83.6% for the total classification success.

Keywords: audit reports, modified audit opinions, auditing, logistic regression

1. Introduction

As known, audit reports are one of the important financial information resources that provide information on the accuracy and reliability of financial statements. Especially, after the Enron event, discussions of whether audit reports that accurately reflects appropriate audit opinions, has led to an increase in studies which identifying modified audit opinions. In the studies, generally, discriminant and logit models are being used as multivariate models and in some recent studies also have been used data mining techniques for identifying modified opinions. 

Dopuch (1987) indicated that identification of audit qualification have been useful for auditors and researchers due to audit qualifications are systematically related to financial and market variables. Prediction of audit qualification ise useful for auditors in decision making to identify clients that are likely to receive modified opinions or evaluating potential clients, as a criteria in peer review commitees, in debates about ‘audit opinion shopping’, to control quality procedures within firms, and in lawsuits containing auditor negligence for not issuing modified opinions [1].

The aim of this study is to examine the determinant factors of modified audit opinions in the emerging economies of Turkey. The paper complements the Yaşar (2015) [2] study that examines the qualified audit opinions using financial ratios. In this context, the hypotheses is tested by analyzing industry companies listed on the Istanbul Stock Exchange during the period 2011-2014. Consistent with the expectations of the study, the empirical results show that prior audit opinion (PRIOP) and audit report lag (ARLAG) are the important determinant factors of modified audit opinions. However, there is no
find any statistically significant association between modified audit opinions and other factors including audit firm size, company size, financial distress, liquidity, leverage and profitability. In addition, the classification success of logistic regression model show that the accurate prediction of the logistic model is 87.9% for the unqualified opinion, 79.3% for the modified opinions and also 83.6% for the total classification success.

This paper contributes to the auditing literature by identifying determinant factors of modified audit opinions by using logistic regression model in an emerging market of Turkey.

The remainder of the paper is organized as follows. The next section contains development of research hypotheses on the effect of audit-related and firm-specific variables on the modified audit opinions. In section 3, research methodology of the study is discussed. Empirical results are presented in section 4. Conclusion are presented in the final section of the paper.

2. Research Hypotheses

The previous literature provide evidence of audit-related and firm-specific factors that affecting modified audit opinions for both developed and emerging markets. The researchers have been used some financial (e.g., ratios of liquidity, activity, profitability, and debt) and non-financial (e.g. audit firm size, audit report lag, prior audit opinion) variables to identify modified audit opinions. In this study, the potential effects of audit-related variables (audit firm size, prior audit opinion, audit report lag) and firm-specific variables (firm size, financial distress, current ratio, liquidity ratio, net working capital to total assets, leverage, earnings before interest and taxes to total assets) that have been widely used in the literature, on modified audit opinions. Thus, the research hypotheses is discussed below.

2.1. Audit Firm Size

DeAngelo (1981) [3], in her pioneering research, find that there is an positive association between audit quality and audit firm size. Because large auditors have less incentives to behave opportunistically due to the loss of client and reputation risk [3]. Following DeAngelo’s (1981) [3] research, audit firm size (Big Four versus Non-Big Four) is used as a measure of audit quality in many studies [4,5,6,7]. In addition, numerous studies in the literature provide evidence for the effect of audit firm size on audit opinions [7,8,9,10,11,12]. For example, Francis and Krishnan (1999) [7] show that only the Big Six auditors show evidence of reporting conservatism. Keasey et al.(1988) [8] find that companies audited by large audit firms are more likely to receive qualified audit opinions than other companies. Habib (2013) [13] indicate that audit firm size are positively related with modified audit opinions. On the contrary, some studies find that Big Four (Five/Six) audit firms are less likely to issue a qualified audit opinion to their clients [14,15]. However, some other studies suggest that audit firm size does not affect the audit opinion type [11,16,17,18]. Thus, based on above arguments, the first hypothesis of this study is:

*H1:* Ceteris paribus, modified audit opinions is positively associated with audit firm size.

2.2. Prior Audit Opinions

In the literature, prior audit opinions have been used as an important determinant factors to identify qualified audit opinions. Ireland (2003) [10] state that audit opinions are persistent over time and companies which had a qualified opinions one year are more likely to receive qualified opinions in the following year than other companies, and vice versa. The persistency of qualified audit opinions may result from unobserved problems in the audited companies, auditor litigation or reputation threats, absence of credible switch threat from the client companies [10]. Previous studies show that companies receiving a qualified audit opinions in one year, are more likely to receive qualified opinions in the subsequent year
Based on these arguments, the second hypothesis is developed:

**H2:** *Ceteris paribus*, modified audit opinions is positively associated with prior qualified opinion.

### 2.3. Audit Report Lag

The audit report lag is defined as the length of the time period between the end of accounting year and the audit report date [10,25]. In previous studies, audit report lag included as a variable for predicting the qualified audit opinions and find a positive association between audit report lag and qualified opinions [8,10,13,26,27]. Ireland (2003) [10] explained this relationship for several reasons. Firstly, the lengthy negotiations between the auditor and client can be effective on the length of the audit report lag. Secondly, a long lag in audit report may result from additional audit work to be fulfilled by auditors when any problems occurred in the auditing process. Thirdly, a long audit report lag may reflect high inherent and/or control risk of the audited company and thus requires more audit work. Finally, a long lag may result if the auditors hope that identified problems will be fulfilled and thus qualified opinions can be avoided [10]. Thus, based on the above arguments, the third hypothesis is developed:

**H3:** *Ceteris paribus*, modified audit opinions is positively associated with audit report lag.

### 2.4. Company Size

Client size is one of the most commonly studied factors to explain the relationship between company characteristics and qualified opinions [10]. Keasey et al. (1988) explains the use of size measure with larger companies’ formal and developed internal financial control systems [10]. McKeown et al. (1991) indicate that it may be difficult for auditors with clients large relative to the total clients base to issue the going-concern audit opinion because of client or audit fee pressures [28].

In this context, prior research reveal that probability of receiving qualified audit opinions is greater for smaller companies than larger companies [10,13,22,24,28]. For example, McKeown et al. (1991) [28] find inverse relationship between client size and the going-concern qualification. Carcello and Neal (2000) [22] indicate that the likelihood of a going-concern audit report declines with company size. Habib (2013) [13] show that the effect of company size on qualified audit opinions is negative. Based on these arguments, using log of total assets and net sales to total assets as a measure of company size, the following hypothesis is developed:

**H4:** *Ceteris paribus*, modified audit opinions is negatively associated with company size.

### 2.5. Financial Distress

Several studies indicate that companies with higher financial distress receive more likely to qualified audit opinions [23,28,29,30,31]. In the literature, generally, probability of bankruptcy and financial distress is used interchangeably and many researchers used the models of Altman (1968) [32] Z-Score and some studies used Ohlson (1980) [33] and Zmijewski (1984) [34]models as a measure of bankruptcy. However, Pasiouras et al. (2007) [30] specify that the Z-Score model may not be appropriate without the necessary modifications due to the model was developed particular industry, under different economic conditions and for the US. Therefore, to avoid these problems, this article used the criteria including loss for three consecutive years, total liabilities exceed total assets and lost half of the equity as a measure of financial distress that was used in the study of Aktaş et al. (2003) [35]. Thus, the following hypothesis is developed:

**H5:** *Ceteris paribus*, modified audit opinions is positively associated with financial distress.

### 2.6. Liquidity

Numerous prior studies find that companies with poor liquidity are more likely to receive qualified audit opinions than other companies [2,10,12,30,36,37,38]. Spathis (2003) [36] indicate that poor liquidity...
are likely to increase the likelihood of qualified audit reports by disrupting the company’s financial health. However, some studies find no evidence that firms receiving a qualified audit opinions have a lower liquidity \[27,31\]. In this study, like the previous studies \[2,36,37,38\], liquidity is measured by current ratio and working capital to total assets. Based on these arguments, the following hypothesis is developed:

\[ H6: \text{Ceteris paribus, modified audit opinions is positively associated with poor liquidity.} \]

2.7. Leverage

Findings from several studies have suggested that high leverage companies are more likely to receive qualified audit opinions \[1,2,13,17,26\]. On the other hand, some studies \[8,9,39\] find no significant association between qualified opinions and high leverage. Based on these arguments, using total liabilities to total assets that is a most common leverage ratio, the following hypothesis is developed:

\[ H7: \text{Ceteris paribus, modified audit opinions is positively associated with leverage.} \]

2.8. Profitability

Previous studies conclude that companies with low profitability are likely to receive qualified audit opinions \[2,10,12,13,27,40\]. A series of different profitability ratios are used to measure company profitability. In literature, different profitability ratios (such as net profit to sales, loss, earnings before interest and taxes, profit per employee) are used. In this study, similar to the previous some studies \[2,13,41\], company profitability measured as earnings before interest and taxes. Thus, the last hypothesis is developed:

\[ H8: \text{Ceteris paribus, modified audit opinions is negatively associated with profitability.} \]

3. Data and Methodology

To test the eight hypotheses, the data of the study collected from listed in the industry index of Istanbul Stock Exchange (ISE) for the years 2011 through 2014. Financial companies and firms that have an outliers are excluded from sample of the study. After these exclusions, the sample size reduced to 128 firms that contained 58 modified opinions firm-year observations and 454 unqualified opinion observations for the period of 2011 to 2014. The final sample selected by randomly and consists of a total of 116 firm-years data includes 58 modified opinions firm-year observations and 58 unqualified opinions firm-year observations for the years 2011-2014. The data of the study are from annual reports that gathered from the Istanbul Stock Exchange.

In this study, logistic regression model is used in order to identify the determinant factors of qualified audit opinions. To test the eight hypotheses, estimated model is as follows:

\[
AO = \beta_0 + \beta_1 \text{BIG} + \beta_2 \text{PRIOP} + \beta_3 \text{ARLAG} + \beta_4 \ln \text{TA} \\
+ \beta_5 \text{SALES} + \beta_6 \text{FD} + \beta_7 \text{CR} + \beta_8 \text{WC} + \beta_9 \text{LEV} \\
+ \beta_{10} \text{EBIT}
\]

Where:

\[ \text{AO} = \text{audit opinions (1 if company receives a modified opinions; 0 otherwise)}; \]
\[ \text{BIG} = (1 \text{ for Big Four auditors; 0 otherwise}); \]
\[ \text{PRIOP} = \text{prior year audit opinion (1 if prior year opinion is modified; 0 otherwise)}; \]
\[ \text{ARLAG} = \text{number of days between the company’s fiscal year end and the announcement date of its annual report}; \]
\[ \ln \text{TA} = \text{natural logarithm of total assets}; \]
\[ \text{SALES} = \text{net sales to total assets}; \]
\[ \text{FD} = \text{financial distress (1 if company financially distressed; 0 otherwise)}; \]
\[ \text{CR} = \text{current ratio}; \]
\[ \text{WC} = \text{working capital to total assets}; \]
\[ \text{LEV} = \text{total liabilities to total assets}; \]
\[ \text{EBIT} = \text{earnings before interest and taxes to total assets}. \]
4. Empirical Results

4.1. Univariate Results

Table 1 reports the univariate results of the variables by comparing the differences in the independent variables between the companies receiving modified and unqualified opinions. Panel (A) and Panel (B) of Table 1 present the results of parametric t-test (Panel A) and non-parametric Mann-Whitney U-test (Panel B) comparing the mean and median difference of the two groups. Column (C) presents the Chi-Square test results for categorical variables.

The parametric test results in Panel A of Table 1 show that there are significant differences in mean values for all variables, except for the ln_TA variable, between the the firms with unqualified and modified audit opinions. The non-parametric test results in Panel B indicate that all variables are significantly different between companies with modified and unqualified audit opinions. Panel C of Table 1 shows that all categorical variables are significantly differed between the two groups. Thus, the univariate results show that companies receiving modified audit opinions have lower liquidity, lower profitability and higher leverage than companies with unqualified opinion.

Table 2 presents the Pearson and Spearman-rank correlations among the independent variables. The correlations are generally below the 0.4, except for CR, WC and LEV, which are below the 0.75. The relatively high correlations of these three variables may explained by construction [22].

Table 1. Univariate Test Results

<table>
<thead>
<tr>
<th>Panel A: t-Statistic for Mean Difference</th>
<th>Unqualified (n=58)</th>
<th>Modified (n=58)</th>
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<td>ARLAG</td>
<td>61.210</td>
<td>75.570</td>
<td>-4.812***</td>
</tr>
<tr>
<td>ln_TA</td>
<td>18.770</td>
<td>18.310</td>
<td>1.329</td>
</tr>
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<td>SALES</td>
<td>0.863</td>
<td>0.587</td>
<td>3.944***</td>
</tr>
<tr>
<td>CR</td>
<td>2.427</td>
<td>1.708</td>
<td>2.101**</td>
</tr>
<tr>
<td>WC</td>
<td>0.256</td>
<td>-0.026</td>
<td>5.141***</td>
</tr>
<tr>
<td>LEV</td>
<td>0.355</td>
<td>0.588</td>
<td>-4.546***</td>
</tr>
<tr>
<td>EBIT</td>
<td>0.098</td>
<td>0.015</td>
<td>4.462***</td>
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<table>
<thead>
<tr>
<th>Panel B: Mann-Whitney U-Test for Median Difference</th>
<th>Unqualified</th>
<th>Modified</th>
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<tr>
<td>ARLAG</td>
<td>60.000</td>
<td>69.000</td>
<td>-4.999***</td>
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<td>ln_TA</td>
<td>19.395</td>
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<td>SALES</td>
<td>0.842</td>
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<tr>
<td>CR</td>
<td>1.832</td>
<td>1.028</td>
<td>-4.754***</td>
</tr>
<tr>
<td>WC</td>
<td>0.231</td>
<td>0.008</td>
<td>-4.671***</td>
</tr>
<tr>
<td>LEV</td>
<td>0.320</td>
<td>0.542</td>
<td>-4.108***</td>
</tr>
<tr>
<td>EBIT</td>
<td>0.085</td>
<td>0.018</td>
<td>-4.034***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel C: Chi-Square Test for Categorical Variable=1</th>
<th>Unqualified</th>
<th>Modified</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIG</td>
<td>48</td>
<td>16</td>
<td>35.692***</td>
</tr>
<tr>
<td>PRIOP</td>
<td>0</td>
<td>46</td>
<td>76.229***</td>
</tr>
<tr>
<td>FD</td>
<td>2</td>
<td>28</td>
<td>30.394***</td>
</tr>
</tbody>
</table>

***, ** and * indicate significance (two-tailed) at 1%, 5% and 10% levels, respectively.
Table 2. Correlations Between Independent Variables

<table>
<thead>
<tr>
<th></th>
<th>WC</th>
<th>LEV</th>
<th>EBIT</th>
<th>ln_TA</th>
<th>SALES</th>
<th>BIG</th>
<th>PRIOP</th>
<th>FD</th>
<th>ARLAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>.685**</td>
<td>- .515**</td>
<td>.158*</td>
<td>- .067*</td>
<td>.053*</td>
<td>- .017*</td>
<td>- .193*</td>
<td>- .103*</td>
<td>- .156*</td>
</tr>
<tr>
<td>WC</td>
<td>- .747**</td>
<td>.384***</td>
<td>.066</td>
<td>.074</td>
<td>.282***</td>
<td>- .462***</td>
<td>- .480***</td>
<td>- .347***</td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>- .226**</td>
<td>.197**</td>
<td>- .066</td>
<td>.342***</td>
<td>.321***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIT</td>
<td>- .096</td>
<td>.181**</td>
<td>- .170*</td>
<td>- .190*</td>
<td>- .057</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln_TA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SALES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRIOP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*, **, and *** indicate significance at 1%, 5% and 10% levels, respectively.
*a present Pearson correlations for continuous variables; Spearman-rank correlations for continuous variables.

4.2. Multivariate Results

In this study, logistic analysis, which have fewer assumptions, is used to determine the efficient factors on modified audit opinions. In the analysis, SPSS Statistics version 18 is used to analyze the data by using Forward-Stepwise (Conditional) method. In the logistic analysis, firstly, omnibus test of model coefficients are examined. The chi-square and p value of the model (chi-square=64.729, p<0.000) indicate that there is an significant association between dependent and independent variables.

Table 3. Logistic Results of Variables in the Equation

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable(s)</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>PRIOP</td>
<td>-3.330</td>
<td>0.517</td>
<td>41.439</td>
<td>11</td>
<td>0.000</td>
<td>0.036</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>1.683</td>
<td>0.406</td>
<td>21.536</td>
<td>11</td>
<td>0.000</td>
<td>6.571</td>
</tr>
<tr>
<td>2b</td>
<td>PRIOP</td>
<td>-3.213</td>
<td>0.535</td>
<td>36.097</td>
<td>11</td>
<td>0.000</td>
<td>0.040</td>
</tr>
<tr>
<td></td>
<td>ARLAG</td>
<td>0.038</td>
<td>0.015</td>
<td>6.191</td>
<td>11</td>
<td>0.013</td>
<td>1.039</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.827</td>
<td>1.125</td>
<td>0.540</td>
<td>11</td>
<td>0.462</td>
<td>0.438</td>
</tr>
<tr>
<td></td>
<td>Cox &amp; Snell R²</td>
<td>0.428</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nagelkerke R²</td>
<td>0.570</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Variable(s) entered on step (1): PRIOP
b. Variable(s) entered on step (2): ARLAG

The findings of the logistic regression are reported in Table 3. In Table 3, Nagelkerke R² statistics in step 2 indicate that the independent variables explain 57.0% of the dependent variable.

The logistic results in Table 3 show that only the two variables include PRIOP (prior audit opinion) and ARLAG (audit report lag) have the statistically strongest effect on the determination of modified audit opinions. This results provide support for Hypothesis 2 and 3 and consistent with the results of previous studies [8,10,26].

Table 4 reports the classification results of logistic analysis. The classification results in Table 4 indicate that the overall correct prediction success of the logit model is 83.6%. The correct prediction of the model is 79.3% for the modified opinions and 87.9% for the unqualified opinions.
<table>
<thead>
<tr>
<th>Logistic</th>
<th>Predicted</th>
<th>Total</th>
<th>Percentage Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unqualified</td>
<td>Modified</td>
<td></td>
</tr>
<tr>
<td>Observed</td>
<td>51</td>
<td>7</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>46</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>53</td>
<td>116</td>
</tr>
</tbody>
</table>

5. Conclusions

Audit opinions are the final outcome of the audit process and provide important information on the accuracy and reliability of financial statements to users of accounting information. Previous research provide evidence on the associations between some audit-related and firm-specific factors that affecting modified audit opinions. The emerging market of Turkey, there is a limited number of studies on modified audit opinions. Thus, this study investigated firm-specific and audit-related factors on modified opinions by using logistic model in the Turkish context for the years 2011 through 2014.

The univariate results show that companies receiving modified opinions have lower liquidity, lower profitability and higher leverage than companies receiving unqualified opinion. The results of logistic regression show that only the prior audit opinion (PRIOP) and audit report lag (ARLAG) are the statistically significant effect on the modified audit opinions. This results are consistent with the results of Keasey et al. (1988) [8], Ireland (2003) [10] and Chen et al. (2001) [26]. On the other hand, other factors that include audit firm size, company size, financial distress, liquidity, leverage and profitiability are not find statistically significant with the modified opinions. Additionally, overall correct prediction of the logit model is 83.6% and also the model classifies correctly 79.3% of the modified opinions and 87.9% of the unqualified opinions. These results have useful for auditors, clients and other users of accounting information in decision making.

The possible limitation of this study is that audit opinions are classified as modified and unqualified opinions. In future research, modified opinions can be differentiated in going concern modified opinion and non-going concern modified opinion. In addition, different methods can be used in the future research to analyze the modified opinions.

References


Evaluation of The Decisive Criteria of Commercial Lending at Banks Using Fuzzy TOPSIS and Fuzzy TODIM

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Abstract. Nowadays, the importance of working with the right customers for banks to be successful is essential. In the current risk environment, they live in, a stable decision-making mechanism must be established and credit evaluation criteria should be identified well. This study is conducted at the departments responsible for providing commercial loans in a bank branch operating in Eskisehir. These sections of the bank branch, support enterprises by giving the most accurate and rapid response to the needs of firms, with many loan options including advantages of maturity date and price. However, when businesses are being supported by loans, there are some criteria considered by the bank staff. These criteria are grouped under 24 main titles by making a brainstorm with the staff responsible for issuing commercial loans, and then evaluated according to their severity by using Fuzzy TOPSIS and Fuzzy TODIM methods. With this evaluation, both methods gave similar results.

Keywords: Fuzzy TOPSIS, Fuzzy TODIM, Banking

1. Introduction

Struggling businesses in today's business world are being confronted with the brutality of growing competition and trying to survive despite the pressure of scarce resources. Despite the fact that developing logistics and supply chain concepts are giving advantages to companies and providing opportunity to obtain raw materials and other necessary resources any time, yet acquiring necessary financial resources to obtain these resources is becoming increasingly difficult.

In order to acquire financial resources required to solve mentioned resource problems, firms firstly head for internal resources and when they fail to be adequate, getting support from the financing institutions comes to the fore.

On the other hand, when the situation is examined from the frame of financial institutions, providing the support demanded by businesses is not always profitable and problem-free. Therefore, it becomes necessary to detect supportable businesses and giving loans with the appropriate amount. In this study, it's aimed to determine the prominent criteria when issuing commercial loans in banks, by using Fuzzy TOPSIS and Fuzzy TODIM methods.

2. Fuzzy set approach

Fuzzy set has theory been introduced by Zadeh (1965) that is an effective approach referring vagueness and ambiguity of the human decision making process [1]. Real world is full of uncertain data in many technical and eco-
nomical subjects. Fuzzy set approach mainly deals with inherent imprecision while it is also suitable for mathematical programming in the field. In practice the common use are triangular and trapezoidal fuzzy numbers. Triangular numbers are used in this study.

The membership function of a triangular fuzzy number is shown as $\tilde{\mu}$. Basically, a triangular fuzzy number is identified as $(l/m, m/u)$ or $(l, m, u)$. Parameters of $l$, $m$ and $u$ are; least probable value, the most expected value and the most probable value in order. A triangular membership function is shown in Figure 1 [4].

![Figure 1. Triangular membership function, $\tilde{\mu}$](image)

Each triangular fuzzy number has a linear indication of its left and right slide and the indication of membership function is shown as formula 1 [2].

$$
\mu(x|\tilde{M})=\begin{cases} 
0, & x<l, \\
(x-l)/(m-l), & l \leq x \leq m, \\
(x-u)/(m-u), & m \leq x \leq u, \\
0, & x>u 
\end{cases} \quad [1]
$$

3. Fuzzy TOPSIS Method

TOPSIS method can be formulated as; $n$ - dimensional field, $m$ dotted geometric system with $m$ alternative decision making problem. In basis of alternative selection concept, the chosen alternative should have shortest distance to positive ideal solution while longest distance to negative ideal solution. An identified index of maximization of positive ideal solution and minimization of negative ideal solution determine which alternative is more beneficial with the ideal solution [6].

In this study, first two steps of Fuzzy TOPSIS which is only evaluating the criteria were applied.

The steps of fuzzy TOPSIS method as:

Step 1: Determining decision makers and selection of criteria
Step 2: Determining the weights of the criteria.

Assume that in a sum of $K$ decision maker with $\tilde{x}_j^K$'s i. alternative’s criteria value group; the formula for determination of alternative criterion as formula 2:

$$
\tilde{x}_j = \frac{1}{K} \left[ \tilde{x}_j^1 (+) \tilde{x}_j^2 (+)...(+\tilde{x}_j^K) \right] \quad [2]
$$

$\tilde{w}_j^K$'s Formula 3 for weights of importance of the group included j. decision criteria:

$$
\tilde{w}_j = \frac{1}{K} \left[ \tilde{w}_j^1 (+) \tilde{w}_j^2 (+)...(+\tilde{w}_j^K) \right] \quad [3]
$$

Finally, the arithmetic average of each criterion was taken to the defuzzification.

4. Fuzzy TODIM Method

The TODIM method (an acronym in Portuguese of Interactive and Multi-criteria Decision Making) is a discrete multi-criteria method based on Prospect Theory 50 which has awarded the Nobel Prize for Economics in 2002. To prevent the effects of decision makers’ prejudice and bias in the ranking of alternatives,
fuzziness has integrated to the original TODIM. Triangular fuzzy numbers are used for expressing the linguistic variables for the attribute values. Using these fuzzy numbers and according to the concept of the TODIM method, gain and loss of each one of the alternatives relative to another are assessed. Then, by calculating the dominance degree of each alternative over the others, the overall value of each alternative is obtained and alternatives are ranked.

In the Table 2, fuzzy linguistic terms and their values per each criteria in triangular numbers for fuzzy TODIM is given.

Table 2: Fuzzy Linguistic Terms and Their Values per Each Criteria in Triangular Numbers for Fuzzy TODIM

<table>
<thead>
<tr>
<th>Level</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>(0.75, 1.00, 1.00)</td>
</tr>
<tr>
<td>High</td>
<td>(0.50, 0.75, 1.00)</td>
</tr>
<tr>
<td>Medium</td>
<td>(0.25, 0.50, 0.75)</td>
</tr>
<tr>
<td>Low</td>
<td>(0.00, 0.25, 0.50)</td>
</tr>
<tr>
<td>Very low</td>
<td>(0.00, 0.00, 0.25)</td>
</tr>
</tbody>
</table>

After calculating the arithmetic means of the answers that given by the decision makers in the fuzzy TODIM, the following formulas were applied to defuzzification [5].

\[
V(\tilde{A}_j) = m_j \left\{ \alpha \frac{u_j - x_{\min}}{x_{\max} - x_{\min} + u_j - m_j} + (1 - \alpha) \frac{1}{x_{\max} - x_{\min} + m_j - l_j} \right\}
\]

Here:

\[
x_{\min} = \inf S
\]

\[
x_{\max} = \sup S\]

\[
S = \bigcup_{j=1}^{n} S_j
\]

\[
S_j = (l_1, m_1, u_1, \ldots, l_n, m_n, u_n)
\]

In this study index of optimism \( \alpha \) is used as 0.5 as a neutral point of view to balance between optimism and pessimism. Calculated weights with the ordering method are normalized with given formula 5:

\[
w_j = \frac{v(\tilde{A}_j)}{\sum_{j=1}^{n} v(\tilde{A}_j)}
\]

5. Application

It is conducted in a department responsible for providing commercial loans in a bank branch operating in Eskisehir. This branch is in an active region where the density of customers is considerable. The problem discussed is the matter of determining the prominent criteria when considering providing loans to the suitable customers. In this problem 24 criteria are taken into consideration. When determining and weighting these criteria, the views of 5 bank employees responsible for issuing commercial loans, have been used as decision-makers. In the Table 3, the 24 criteria are given set by the decision makers. The criteria given at Table 3 were evaluated using fuzzy TOPSIS method at first. The scale given at Table 1 was used on this evaluation. Fuzzy equivalents of linguistic assessments which made by decision makers for fuzzy TOPSIS method were given at Table 4 (formula 2-3 are used).

Table 3: The 24 criteria are given set by the decision makers.

<table>
<thead>
<tr>
<th>Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Firm's years spent in the industry.</td>
</tr>
<tr>
<td>C2</td>
<td>CRA of the firm (Credit Reference Agency).</td>
</tr>
<tr>
<td>C3</td>
<td>CRA of the partners of the firm.</td>
</tr>
<tr>
<td>C4</td>
<td>The industry of the firm which it operates in.</td>
</tr>
<tr>
<td>C5</td>
<td>Deposit taken from the firm and the guarantor.</td>
</tr>
<tr>
<td>C6</td>
<td>Market and industry reputation of the firm.</td>
</tr>
<tr>
<td>C7</td>
<td>Conditions of purchasing trade goods, raw materials and equipment.</td>
</tr>
<tr>
<td>C8</td>
<td>Knowledge and experience of the firm partners in the industry.</td>
</tr>
<tr>
<td>C9</td>
<td>The assets of firm and its partners.</td>
</tr>
<tr>
<td>C10</td>
<td>Dependence of the firm to the companies being worked with.</td>
</tr>
<tr>
<td>C11</td>
<td>Debt collection capability.</td>
</tr>
<tr>
<td>C12</td>
<td>Development of the industry that the firm is operating in.</td>
</tr>
<tr>
<td>C13</td>
<td>The capital adequacy of the firm.</td>
</tr>
<tr>
<td>C14</td>
<td>Operating profitability of the firm.</td>
</tr>
<tr>
<td>C15</td>
<td>The presence of the owner of the firm in the work environment.</td>
</tr>
<tr>
<td>C16</td>
<td>Executing the accounting activities by the firm itself.</td>
</tr>
<tr>
<td>C17</td>
<td>Firm's proximity to the market.</td>
</tr>
<tr>
<td>C18</td>
<td>Non-seasonality of sales of the firm.</td>
</tr>
<tr>
<td>C19</td>
<td>Fulfilling the official responsibilities of the firm.</td>
</tr>
<tr>
<td>C20</td>
<td>Liquidity and the current ratio conditions of the firm.</td>
</tr>
<tr>
<td>C21</td>
<td>Compatibility in Debit - Credit Terms.</td>
</tr>
<tr>
<td>C22</td>
<td>The lack of currency risk.</td>
</tr>
<tr>
<td>C23</td>
<td>Yearly size of assets and sales development of the firm.</td>
</tr>
<tr>
<td>C24</td>
<td>Customers' commitment to the bank.</td>
</tr>
<tr>
<td>Criteria</td>
<td>DM1</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>C1</td>
<td>(0.3, 0.5, 0.7)</td>
</tr>
<tr>
<td>C2</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C3</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C4</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C5</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C6</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C7</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C8</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C9</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C10</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C11</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C12</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C13</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C14</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C15</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C16</td>
<td>(0.5, 0.7, 0.9)</td>
</tr>
<tr>
<td>C17</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C18</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C19</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C20</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C21</td>
<td>(0.9, 1, 1)</td>
</tr>
<tr>
<td>C22</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C23</td>
<td>(0.7, 0.9, 1)</td>
</tr>
<tr>
<td>C24</td>
<td>(0.9, 1, 1)</td>
</tr>
</tbody>
</table>
Table 4 is stated the fuzzy responses of lingual expressions of decision makers. Fuzzy weights of criterias were calculated by arithmetic mean of these expressions. Q (O) is definition of defuzzification which is obtained by arithmetic mean of (l, m, u) values of each criteria weight.

Table 5 is averages of fuzzy TODIM assessment which is obtained by using of scale at Table 2.

**Table 5: Assessment averages of considered decision criteria using fuzzy TODIM method by decision makers.**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Relative weights of the criteria</th>
<th>V(Aj)</th>
<th>wj</th>
<th>wjr</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>l</td>
<td>m</td>
<td>u</td>
<td></td>
</tr>
<tr>
<td>C1:</td>
<td>0.25</td>
<td>0.50</td>
<td>0.75</td>
<td>0.146382</td>
</tr>
<tr>
<td>C2:</td>
<td>0.60</td>
<td>0.85</td>
<td>0.95</td>
<td>0.509148</td>
</tr>
<tr>
<td>C3:</td>
<td>0.55</td>
<td>0.80</td>
<td>0.95</td>
<td>0.446890</td>
</tr>
<tr>
<td>C4:</td>
<td>0.45</td>
<td>0.70</td>
<td>0.95</td>
<td>0.336952</td>
</tr>
<tr>
<td>C5:</td>
<td>0.35</td>
<td>0.75</td>
<td>0.95</td>
<td>0.340909</td>
</tr>
<tr>
<td>C6:</td>
<td>0.55</td>
<td>0.80</td>
<td>0.95</td>
<td>0.446890</td>
</tr>
<tr>
<td>C7:</td>
<td>0.389588</td>
<td>0.047413</td>
<td>0.7542743</td>
<td></td>
</tr>
<tr>
<td>C8:</td>
<td>0.446890</td>
<td>0.054386</td>
<td>0.8652154</td>
<td></td>
</tr>
<tr>
<td>C9:</td>
<td>0.275172</td>
<td>0.033488</td>
<td>0.5327547</td>
<td></td>
</tr>
<tr>
<td>C10:</td>
<td>0.153382</td>
<td>0.018666</td>
<td>0.2969594</td>
<td></td>
</tr>
<tr>
<td>C11:</td>
<td>0.516507</td>
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<td>0.6388626</td>
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<td>0.7542743</td>
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<td>0.028263</td>
<td>0.4496295</td>
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</tbody>
</table>

Ranking of Fuzzy TODIM and Fuzzy TOPSIS results were given at Table 7. In the table the criteria were ranked by using two different method. In both method prominent criteria and the criteria behind-hand at the ranking are similar.

Values of each criteria given at Table 5 were obtained by arithmetic means of decision makers’ expression. Fuzzy weights obtained by fuzzy TODIM method were given at Table 6. This fuzzy weights ob obtained by using formula 4-5 and defuzzification.
Table 7: Comparing the results of fuzzy TOPSIS and fuzzy TODIM

<table>
<thead>
<tr>
<th>Criteria</th>
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<th>Fuzzy TOPSIS</th>
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<td>C1</td>
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<td>15</td>
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<tr>
<td>C2</td>
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<td>1</td>
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<tr>
<td>C3</td>
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<td>1</td>
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<td>C4</td>
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<td>12</td>
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<tr>
<td>C5</td>
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<td>3</td>
</tr>
<tr>
<td>C6</td>
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<td>6</td>
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<td>17</td>
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<tr>
<td>C8</td>
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<td>9</td>
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<tr>
<td>C9</td>
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<td>14</td>
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<tr>
<td>C10</td>
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<td>2</td>
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<tr>
<td>C12</td>
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<td>C23</td>
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</tr>
<tr>
<td>C24</td>
<td>12</td>
<td>14</td>
</tr>
</tbody>
</table>

Ranking of Fuzzy TODIM and Fuzzy TOPSIS results were given at Table 7. In the table the criteria were ranked by using two different method. In both method prominent criteria and the criteria behindhand at the ranking are similar.

6. Conclusion and future research

The problem discussed is the matter of determining the prominent criteria when considering providing loans to suitable customers. These criteria are evaluated and weighted with Fuzzy TOPSIS and Fuzzy TODIM methods by decision makers. As a result, similar results were given in both methods. The determined criteria seen as the most important in both methods are K2, K3, K11 and K15, and the ones seen as less important are K16, K17 and K18.

These present results have also been validated and confirmed by the management of the bank branch. An overall assessment for the arrangements can be made, by using different multi criteria decision-making methods in the following studies. Also, the creditworthiness of the bank customers should be assessed by using these arrangements with any multi-criteria decision-making method.

References

Abstract. It is clear that recent rapid developments in technology affect social life and as well as business life and commerce. In this context, e-commerce, developing quickly especially in the last 10 years, has become a part of our commercial life. Significant part of individuals that can be defined as internet users utilize the internet as a shopping means. These shopping types, not only via computers but also via ever increasing smart phones, are named as e-commerce and mobile commerce.

In this study, the definition and taxation of e-commerce, taxation authority of government, e-commerce and business structure, principals of residence and business concepts with regard to e-commerce are discussed.

Keywords: E-Commerce, e-communication, e-order, Technology, Electronic trade

1. Introduction

Technology, computer software development and manifests itself in the world, it also affects the business world as it affects social life and trade. In this context, especially in the last 10-year period in the rapidly growing e-commerce it has become a part of our lives. An important part of the individuals to be classified as an Internet user, they use the internet shopping tool. Not only through computers, is smart phones carried out increasingly common in this type of exchange called electronic commerce and mobile commerce.

Both the suppliers, as well as taking into consideration the advantages and facilities provided to consumers in the coming years is expected to continue the development of e-commerce and mobile commerce. These developments have increased and go beyond the limits of international economic development has been established in the light of multinational companies. Taxation powers are a subject that already want serious rigor; In the era we live emerges with too many problems in terms of determining the border. Another factor that triggered this problem has also been recently acclaimed electronic commerce. With the expansion of international trade in this type of trading, as well as multinational companies doing business in the field of small and medium-sized enterprises are also able to find a place for themselves.

In this study, the definition of e-commerce and taxation, the taxation powers of government, e-commerce and business structure, principles of settlement and business concept will focus on evaluation in terms of electronic commerce.

2. E-Commerce

Electronic trade is referred to the purchase and sale of goods and services on internet environment. According to the explanation given by OECD in 2009, e-trade is the purchase and sale of goods and services through computer webs and especially the receiving and supply of orders within projected methods. Payment and distribution is not necessarily online. On the other hand, the orders received through mails and phone calls are not within the description of e-trade (OECD, 2013:6).

One of the reasons why e-trade is developing very fast is the possibilities it provides to enterprise managers. The ability to enter big markets with small entrepreneurship
and capitalization are the first among these possibilities. In this way, investors who don’t want to miss the opportunity to grow fast are moving towards this area. They carry out their work with operational processing operations in this while. For example; they do work follow-up with logistic operations like web-based order and payment, storage, shipping, packaging and rebating.

In electronic trade, the circulation of goods and services is being provided in these ways:

* internet-based purchase and sale – payment – delivery
* internet-based purchase and sale – door payment – delivery
* internet-based search – purchase and sale in physical environment.

In this area mobile trade is also coming to fore as a developing sector in countries in which the usage of mobile devices and tendency to spend is high. While in 2012 the rate of online purchase and sale was 25%, it is expected to rise to 60% in 3 years. Moreover it is envisaged that social media will become a marketing center within the forthcoming period (Sezgin, 2013: 1).

2.1. E-Commerce Taxation

Consumption Tax, Income Tax, Corporation Tax, from three different directions to see if the e-commerce to be taxed; Income due to differences in the evaluation of web-based international revenues in terms of taxes, which remain unclear, will adhere to what types of taxes (Çevik, 2004: 162-163):

(i) There are many gaps in Taxation techniques main elements. (Determination of commercial activities, income qualifications, determination of the liability and the tax base, etc.) on the taxation of e-commerce is one of the main problems of "hard work" is the issue. (OECD Model Ant. 5. Art.) To talk about the hard work in identifying cyber space in question is quite difficult. In the name of preventing double taxation in the OECD countries it has made several arrangements and bilateral agreements. Accordingly, persons or places where the economic activity is being carried out or the nationality of the institution is bound by the tax authorities is made ret. 1963 based on constant draft workplace policy is to accept the Principles of physical presence. It also indicates whether compliance is literally connected to new developments. If a web server will be considered hard work, and in this case the server and computer hardware will inevitably be oriented towards low taxation of economic society. In fact, this situation is upsetting to most US. Because most servers are located in these countries. This is the US e-commerce taxation issues compel exhibiting a different attitude.

(ii) The main problem in terms of consumption tax which is applied by the tax authorities will draw. tax Normally, when collected from consumers by the retailer; internet brings differences occur in the seller-buyer concept and of changing this perception. Search local retailers and wholesalers that serves the interests of only one. Many writers would rapidly growing e-commerce affect the state's tax structure, the tax will increase the loss of income and tax advocates would reduce the tax base. Especially in countries where buying mainly consumption tax trends, consumption is known to alter the distribution between domestic and foreign e-commerce it is causing. Considering that the EU and developing countries for this situation is even more critical. Because the tax system is mostly based on consumption taxes such as sales taxes. However, customs and import duties for these countries is a serious problem. As Developing Countries break the customs and excise tax Losses in the budget balance, the undertaker who Efforts to fix it - will also disrupt the boost indirect tax - tax justice.

We consider e-commerce, we see that those who benefit from the services sector with high economic power. When we consider the difficulty of rapid expansion and tax control in this area is likely to occur in the future are
greater difficulties. Especially for developing countries, this poses a bigger problem. To solve this problem is inevitable international solidarity and cooperation (Çevik, 2004: 163).

This cooperation within countries, private foundations, taxation of e-commerce and international economic community’s efforts in arranging shows respect. There is no doubt that this one is the largest share of e-commerce in a very rapid development. Tax authorities are unable to explain the tax aspects of the purchases made over the internet. natural or legal person who carried out the sale and purchase without tax tool that allows tracking the way they get to each other. This makes it difficult to provide the e-commerce tax control (Çak, 2002: 83).

A lot of work has been carried out and arrangements in connection therewith. regulations and tax rules and principles developed technology along with industry has led to the need. For example: neutrality, simplicity and simplicity, efficiency and fairness, flexibility, the low administration and compliance costs, principles such as the avoidance of double taxation is determined (Ottowa OECD conference 1998) (Çak, 2002: 83-87; Anbar, 2001:22).

If we examine a little more closely to these principles;

* Opening up new revenue through e-commerce with the principle of flexibility and is expected to be subject to their taxation. This principle is the tax issues with a wider range of state.

* Targeted by the low administration and compliance costs; The tax system, as well as administrative costs, the costs incurred by the taxpayers is to reduce to the minimum level possible.

Before the avoidance of double taxation is stated as follows; E-commerce will not be mentioned to avoid any taxation or double taxation. If we look at the context of the seller and the buyer, we talk about hard work or a dwelling that is not possible. That is quite a big market in question. places where trade is performed can vary. to exchange those held in two different markets, two different taxation (double taxation) is not possible to implement. At present, the inability to benefit from this growth and development especially in countries nervous enough. countries in this respect should be relevant to certain standards put forward by the e-commerce among themselves.

The development of e-commerce brings with it many tax problem. In particular, serving as a virtual product has been the subject of debate taxed. In this case the state, investors are concerned very closely. This system will supervise all the developing technology and methods seem to be able to develop the hardware (Aytekin, 1999: 174-175). E-commerce development and rapid growth of general concern to reduce employment in the commercial sector have a place waiting for e-commerce infrastructure as a serious employment door if needed. In fact, government and business leaders are provided the development and growth opportunities.

3. Taxation of the State

States should hold management powers are subject to the tax treatment of commercial activities carried out in its territory. But states are valid for operation within its limits of the authority of the individuals or institutions. The taxation of the activities carried out outside the boundaries of nationality, source and residence
principles are taken into consideration. These principles:

3.1. Residence Policy

Income derived by a person in the entire world, this principle should be subject to tax in the country of residence of the process. Ideas and opinions that appear in the economic environment in fiscal residence principle finds a place for itself in the 20th century, is a new phenomenon that we can say with respect to the origin principle. The scope of the obligations under this principle are the income earned domestically and abroad (Tuncer, 2003: 102). Again, this principle is borne by cutting advocate who benefit from these services to meet the public expenses. According to a resident, the person is where he performs and conducts vital humanitarian relations activities. Certain that the hard place of the person in terms of continuity and safety of the activities carried out economically and is necessary to achieve desired (Öztan, 2004: 289). In this case, the relationship is substantial activity in the legal sense and is seen as essential in order to collect in one place. This situation is different in the legal person. It also fixed place of residence in person than the legal person; legal person established communications with third parties, where economic activity is where the implementation of these decisions and the various decisions taken. Determination of nationality for legal persons exhibit considerable importance residence on behalf of the determination (Özkan, a.g.e.: 80).

From this principle of taxation, tax corresponds to the principle of taxation according to the definition of full liability huk. One state, the taxation of the worldwide income of persons under its management, case to reach the economic power of the taxpayer does not address the tax issue mentioned outside their borders. States and not tax matters between countries, it is the taxpayer. The determination of the application area represents one full liability (Özbalcı, 1998: 89). The concept of a fixed place according to this principle, a person living in the 183 days or 6 months must have resided.

Legal or administrative centers and institutions checkpoint is a place of residence for the tax payer. Of course, this fiscal dwelling. Between individuals and the state is not as meaning that the definition of residence is a scale unlike concepts. Financial residence, where the taxpayer is defined as the place where or perform economic activities. Workplace, home truths; The center is a place of residence for legal or administrative entity. If you want somewhere that any earnings or financial situation of the taxpayer or a dwelling to mention that the revenues will be in question. This will eliminate the state tax levied (Tuncer, a.g.m.: 6).

This principle of handling some factors should not be ignored. First, by collecting and consumption increase in net assets' we define the income, it is not very substantial where it obtained. Subsequently, the Factors of production, in the field of international tax effect due to the lack of investment in the movement area of thought to which this according the demand of services that are being pulled down. This principle of tax justice is becoming more feasible to provide. However, the tax administration needs to be strong based on this principle. Because the parties will complete determination of activities for all domestic and foreign taxable income and must be followed in the frame (Tuncer, a.g.m.: 103).

3.2 Source Principle

Income that arises or obtained space by the taxable where it is a source for principle. Not persons, is being targeted income. Therefore taxation is made for the person who obtained income. The state holds the tax issue taxable and tax brings in management situations arise. In this context, the legal situation 'economic relations' is based on the elements and the importance of nationality and place of residence of the taxpayer is required. Generally, states will receive the tax basis of this principle. But just based on the principle of source countries as well. They keep taxable income on their own land. Wealth is not possible to talk about taxes and general taxes (Öz, 2004: 39-47).

The federal government and the institutions of taxation 'allocation formula to share' nudes are applying. This principle is based on the system resources. This institution of a progressive tax system is divided into sections.
according to the income earned in each state. And management can retain only the taxable portion of which is their effect. However, the system of management on behalf of healthy profits for the definition should be applied to the common idea. Swiss cantons and the Canadian state, we see that this principle is applied. These principles apply in wages, cost of sales, are based on distribution criteria. But this principle does not apply because there is no profit made by all internationally accepted definition channels. Both the goods in indirect taxes as well as sales of services obtained from this principle is applied. This 'destination principle' and is to ensure that the same direction. Such tax that the taxpayer is given the authority to bind the country's consumption of goods and services takes place. This principle is the application of the tax administration should be supported because it is complex and difficult issue and the execution of the laws in the countries where inadequate, providing only country in terms of convenience to tax revenues, which has its own (Tuncer, ibid: 100).

3.3. Nationality Principle

Be a citizen in this country to be bound by the terms of the tax liability, the law on state citizens a sense of mastery, which can carry beyond the geographic boundaries of the management. But today nationality principle is applied in very few countries (Tuncer, ibid : 100).

Required to be performed or direct investment abroad is carried out through a subsidiary undertaking or workplace. a form of organization in this way reveals a different form of taxation. a company operating abroad, readily met 3 different countries due to the enforcement of the laws in the countries where inadequate, providing only country in terms of convenience to tax revenues, which has its own (Tuncer, ibid: 100).

4. E-Commerce and Business Structure

The United Nations electronic trade "producing any electronic fields of information, consumers and other Stakeholders in sharing be organized and business-to-consumer on the other business or business activities and spilled commercial operations" as definitions. Electronic commerce is changing the way business is very serial way. Changes in the organizational units to create new development opportunities and the market structures show changes in this context. Information technology thanks to the rapidly evolving communication technologies have improved in line with the development of network technology, which has created the opportunity to see a more comfortable and flexible way of working. This event only way to change the organization of the company is not satisfied, is the source electronically to the creation of new enterprises. In this case a "virtual dealer" it is also called to that (Kepenek, 1999: 65).

E-market transition from physical media raises the need for a radical change in the company of some sectors. Banking services at
the beginning of the sub-structures business venture vary due to electronic commerce, publishing and music comes. Financial transactions on e-commerce, ready-made e-commerce infrastructure which handles one of the best forces. E-commerce can be defined as without intermediary for the trading environment. Physical e-commerce of goods requires the development of traditional trade figures and service. However, the content of the services has been quantified as e-commerce in the ad, order, purchase, payment, delivery, after-sales service operations are conducted through networks. Depending on the nature of e-commerce products in this context are divided into direct and indirect. (Kocasakal, 2003: 43-46).

The indirect trade constitutes a physical product the contents of e-commerce. This product is delivered by mail to the recipient's physical address. This method of performing the contract electronically, product delivery is made by the traditional way. (Kocasakal, 2003: 43-46).

The direct trade in goods delivery contract without any ties with the physical medium are carried out in electronic form. Digital or install the internationally recognized product delivery in such so-called virtual goods, transport, the application eliminates the necessity of processing such as customs clearance. So are traded companies in a wide geography have the opportunity to appeal to more customers. (Kocasakal, 2003: 43-46).

5. Residential and Resources Principals and the concept of work evaluation with regard to E-commerce

Emerging technologies provide the opportunity to participate in activities in another geographical area today to leave the country without their people. Typically, a state regulation of tax matters is based on geographical criteria. But e-commerce is not possible to talk about a physical addiction. From this point of principle not subject to international taxes is meaningless residence principle. (Güngör, 2002: 137). Through e-commerce it is given the opportunity to go into another country. Customary and familiar concept in trade with proximity to important figure, it lost its importance in e-commerce. Internet environment, individuals and businesses to be able to use their true identity while maintaining the effectiveness, making it difficult for the rest of detection that the real identity. In this case, the activities of tax havens show where the residence requirement for Businesses, especially in the direction of self-shows. More than 6 months living rules is losing its Importance. Companies that e-commerce in goods and services on demand through sales and carry out without a physical presence in the region is consumed. In terms of corporate taxes, because the workplace criteria also require geographical dependency is incompatible electronic commerce. However, it should be reconsidered residence and resource policies. (Güngör, supra, 137).

Changes in the workplace with the definition of e-commerce The expansion has occurred. Determination of the powers of ret Based on the physical place where the event occurred until today has been adopted as the basis for fixing the income is earned space. Therefore, the principle source of interstate transactions, the principles applied in the determination of jurisdiction to tax the country. To obtain the right of a country taxing powers according to this principle, if it is possible to achieve efficiency through a fixed place and the work place. When we take some hard work to do this definition to be charged on income taxes in e-commerce it is quite difficult.

At first the hard work is defined as the physical space where the e-commerce server that allows you to place has been accepted as a fixed workplace. However, the server can be located in different places called mirroring and mirroring technology, commitment to the principles mentioned were minimize. This seems to be related to the spread of the conviction cannot be regarded as the server's hard work we look at the work of the OECD. Earth to provide services via satellite instead of physical servers, or the equivalent of a settlement with the development of Internet technology, it is possible (Ekmecki, 2003: 97). Where we have reached today, the government adopted the direct tax residence principle that is allocated to the countries that export in electronic trading, while indirect tax allocation is performed by the source country that imports of electronic commerce (Yaltı, 2003: 289).
Conclusion

E-commerce in global trade in recent times, is a trading method that improves its allocated share. This has led to many problems associated with new market area of taxation. Email with branches in every aspect of world trade and the exploitation of uninhibited service arose. The physical environment to a virtual environment with services provided by vendors in the commercial relationships between their process is broken. In particular, it is also valid for products sold directly to the buyers and sellers. The issue of electronic commerce, residence principle accepted in principle not subject to international tax and are deeply resources policy. When specified as to reside in the tax haven companies in the sales or you will be exempted from tax liability. The situation has emerged in the physical delivery of the product that is the subject of trade, at least indirectly, are used in determining the sales tax and customs front. The problem is the solution of direct taxes should not necessarily refer to international cooperation. The technology is also beginning to show the problems that led to hold taxable under this cooperation, however, these problems are a result of the elimination of tax used for revealing cases it is possible to detect.

References


Russia’s Policy Towards China in Consideration of Energy Policies and Energy Security

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Abstract. Through the 21st Century, many alternations have occurred in the concept of security, one of which is the “energy” dimension of security. Foreign policies of the nations have been started to be based mainly on energy sector. Energy security is a powerful interest and a matter of immense relevance in Russian foreign policy. Russia prioritises energy to regain its regional power and even its old superpower under the leadership of Vladimir Putin. The emerging prices helped the Russian economy to recover from a recession triggered by the economic crisis in 1990’s. More importantly is the possible long-term outcome of the crisis that Russian fossil fuels come to be perceived as more reliable solutions to the needs of energy-hungry Asian market, especially China. China calculates that diversifying energy sources would contribute to the security of its energy supply. Especially with their nearly 1.5 billion population and increasing energy requirements, China has obtained crucial role in Russia’s energy politics. The volatile and unpredictable energy market has the capacity to create shared interests in cooperation and, of even greater importance for this article; it could cause a new spur in energy cooperation between Russia and China.

Keywords: Russia, China, energy policy, energy security, geopolitics

1. Introduction

This study aims to determine the positions of China and Russia in terms of energy policy and its efore to provide a perspective regarding the possible future cooperation and conflicts between these states. In addition considering the fact that Russia’s energy policy is the main determinant of its foreign policy and is regarded as a tool to obtain the foreign policy objectives, it is imperative to assess the Russian foreign policy first. Russian foreign policy has experienced an important evolution and many breaks during the 25 years following the end of the Cold War. Thus we should first focus on the changes in Russian foreign policy and breaking points in its energy policy.

This methodology will help us to understand how Russian foreign policy instrumentalized energy and will reveal the background of the China policy of Russia. In turn this background will help us to analyze the bilateral and multilateral aspects of the Russian-China
relations and to determine China’s place in Russia’s energy policy.

Finally we will analyze the China policy of Russia and inquire whetits they constituted a new axis or not. To this end, we will first explore the dynamics behind the convergence in their foreign policies both in bilateral and multilateral contexts, then inquire China’s attitude under its current energy status/needs. This analysis will help us to determine China’s place in Russian energy policy and to make deductions about both their current and future relations.

2. STRATEGIC COOPERATION ON ENERGY

Russia’s and China’s interests began to converge after the Cold War. It is a widely recognized fact by many international relations expert that this convergence showed a generally stable progress between 1991 and 2015. This strategic cooperation model began as a mutual objection against unipolarity and then spilled over to political and economic topics. In this section, we will inquire whetits this strategic cooperation extends to the energy policy field, which is a very vital policy for Russia.

In order to achieve this, we will first analyze China’s position regarding energy. In this context, we will first see the status of China in terms of energy and its energy needs, and then begin to reveal its dependency to Russia especially for natural gas and oil. We also investigate China’s energy policy and look at its energy imports from Russia. Then we will look at the energy projects, pipelines and energy agreements to determine in what extent Russia can meet the energy need of China. Finally using the information obtained from these analyses, we will reach to some conclusions about the characteristics of energy cooperation between these two countries.

2.1 Energy Status and Needs of PRC

China shows annual growth rates that bedazzle the world. China also showed the required political will to support and sustain these growth rates with structural reforms, so gained an important place in the global economy. This in turn provided a significant increase in both national and personal income. This incredible growth requires developments in transportation and when the need to accommodate approximately 20% of the world population is added, this creates an ever growing energy need. This need forced China to import energy from otits countries and changed the structure of the international energy demand. Thus we first need to analyze the energy status in China and how she managed its needs. The most important factor is the huge energy consumption in China. Currently China is the number one consumer of coal and oil; she also has an ever growing natural gas need. This makes it’s the number one energy consumer of the world. Tits efore she is the most important energy market for the energy producing countries.

Figure 1: Comparison of Energy Demands of China and the U.S.A.

Source: U.S. Energy Information Administration (EIA), 2014
As can be seen in Figure 1, energy demand of China not only exceeded that of the U.S.A. in 2010, it is also predicted to be doubled by 2040. Besides as can be seen in the figure, it is expected to increase approximately 50% in every ten years. When factors such as increased personal income, increased urbanization and increased personal energy consumption is considered, we can see the reason behind this increase.

When we look at the current structure of energy needs in China, we see that the coal occupies the first place. But projections show that in the future this structure will change in favor of oil and natural gas.

**Figure 2: Distribution of China’s Energy Consumption by Resource**

![Distribution of China’s Energy Consumption by Resource](image)

**Source:** U.S. Energy Information Administration (EIA), 2014

As can be seen in Figure 2, coal is the primary energy resource used in China and it provides 70% of the energy need. Coal gained this primacy because it is a basic and cheap resource, thus it was used extensively in the less developed regions of China during the Cold War era. These are also very rich coal mines in China. However, Chinese government decided to lower the consumption of coal because of the pressures coming from the environmental NGO’s and suffocating air pollution in major cities. In particular, it is decided to use natural gas to produce electric and provide household heating in metropoles [1].

This is considered as a positive development for Russia. Another noteworthy point is that even small amounts in Figure 2 are actually very substantial. As the greatest economy of the world and the biggest country in terms of population (1.5 billion), even small percentages such as 18% (oil) and 4% (natural gas) are very big opportunities for energy exporting countries like Russia. When we look at the oil need of China, we can easily observe an ever increasing consumption, demand and import rate.

**Figure 3: Difference between Production and Consumption of Energy Products in China**

![Difference between Production and Consumption of Energy Products in China](image)

**Source:** U.S. Energy Information Administration (EIA), 2014

As it is shown in Figure 3, consumption is higher than production since 1993. This difference is especially getting bigger and bigger since 2000. Even though China has the greatest oil reserve in Asia Pacific region with a 24.4 million proven reserve, this amount cannot meet its national demand. As we mentioned before, even though 18% seems small at first glance, with its current consumption, China is the second greatest oil consumer in the world after the U.S.A. and the number one oil importer. Therefore it is almost inescapable for China to cooperate with Russia to import oil, especially after deciding to lower the consumption of coal. Yet it is logical for China not to depend entirely to Russia to meet its needs. Hence as can be seen in Figure 4, China
diversified its oil import routes. This is important to guarantee its energy security [2].

As seen in the Figure, Russia ranks as the fourth bigger oil exporter of China and its oil import routes. This is important to guarantee its energy security [2].

As seen in the Figure, Russia ranks as the fourth biggest oil exporter of China and Iran, the third biggest exporter. However, considering the facts given above, it is highly probable that Russia will try to increase its share by realizing new projects.

Russia’s biggest chance to increase its market share in China is natural gas reserves. As we mentioned before China decided to increase 4% share of the natural gas to gain access to the clean energy and to prevent air pollution. To achieve these aims, it is possible to import natural gas from Russia to China using pipelines. New pipeline projects, especially the enormous project signed in 2014 can be seen as the realization of this opportunity.

Figure 4: Source Countries of China’s Oil Imports

Source: U.S. Energy Information Administration (EIA), 2014

But Russia has to realize many more similar projects to increase its share in the ever growing energy market of China. Because as can be seen in Figure 4.11, the half of China’s natural gas imports are coming from Turkmenistan and Russia ranks far behind.

As Figure 5 strikingly demonstrates, Russia has only 1.2% market share in China’s total energy imports. Historically Russia has put much more emphasis to exporting natural gas to Europe. Thus Russian projects aiming European market surpass that of aiming China. Thus it is possible for Russia to gain an important income source by realizing new projects for the Chinese market. Moreover China’s economy is big enough to provide a completely new alternative to Europe. Thus Russia can consider changing its long term strategies.

Figure 5: Source Countries of China’s Natural Gas Imports

Source: U.S. Energy Information Administration (EIA), 2014

Two important factors that may force Russia to increase its natural gas export to China are hidden behind the China’s energy/economy policies. First, China started to use natural gas in reformed sectors, and second China will possibly be a long term consumer.
As can be seen, China’s household and commercial energy consumption is increasingly supplied by natural gas. The most important factor behind this development is replacing coal with natural gas to create cleaner cities. Similarly, new infrastructure is using natural gas instead of coal. Taken together, these will greatly increase the share of natural gas in the Chinese energy market. Furthermore, this will happen in short term, not in long or middle terms.

An important factor that will affect the natural gas consumption is the depletion of Chinese natural resources. As China has the biggest natural gas reserve in the Asia Pacific region, she used its reserves to meet its energy demand, thus minimizing imports down to 4%. This balance began to change by 2007.

Structural changes in China began to show their effect by 2011 and the difference between natural gas production and consumption started to increase. This difference is getting bigger and bigger every passing year. This requires importing more natural gas, construction of new pipelines with greater capacities, and providing security for those lines. Realization of such project will provide Russia with a China card. And Russia will surely use this card to tip the scales between Russia and Europe.

Russia was swift to realize this opportunity and quickly act to develop new relations with China, especially on the energy field. However Russia’s China strategy has a long history and except rare incidences it has a stable progression. Thus we first need to focus on the strategies toward China or including China developed by Russia after the Cold War. We must then move to developments between two countries after the Ukrainian crisis. Only after these we can provide an answer to the discussion whether they developed a new strategic axis [3].

### 2.2 Russia’s Projects aiming PRC

Russia has an edge in the Chinese energy market, as she possesses great oil and natural gas reserves. Russia also has a geographic advantage against its competitors, as it is closer to China.

Hence Russia developed many projects after the Cold War to reach the Chinese energy market and still developing. Moreover, as we will see soon, character of these projects changed significantly after the 2013-2014 Ukrainian Crisis. Russia’s main advantage is the geographic closeness of its energy reserves to China. We can start with the oil reserves.

**Table 1: Russia Major Oil Producing Regions**

<table>
<thead>
<tr>
<th>Bölge</th>
<th>Üretim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Siberia</td>
<td>6,422</td>
</tr>
<tr>
<td>Urals-Volga</td>
<td>2,312</td>
</tr>
<tr>
<td>Krasnoyarsk</td>
<td>360</td>
</tr>
<tr>
<td>Sakhalin</td>
<td>283</td>
</tr>
<tr>
<td>Komi Republic</td>
<td>259</td>
</tr>
<tr>
<td>Arkhangelsk</td>
<td>249</td>
</tr>
<tr>
<td>Irkutsk</td>
<td>201</td>
</tr>
<tr>
<td>Yakutiya</td>
<td>138</td>
</tr>
<tr>
<td>North Caucasus</td>
<td>64</td>
</tr>
<tr>
<td>Kainiringrad</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10,317</strong></td>
</tr>
</tbody>
</table>

**Source:** U.S. Energy Information Administration (EIA), 2013

As can be seen in Table 1, oil reserves of Russia are mostly located in the eastern regions of the country. Even the oil reserves in the central regions have advantageous transport routes to China. Especially two important natural gas reserve regions, Siberia and Ural-Volga regions are relatively at the east and have advantageous routes to China. Similarly neighboring Krasnoyarsk, Irkutsk and Yakutia regions are also at the east of the country and have advantageous routes to China. Thus we can say Russia has advantage over its competitors in terms of transportation of...
oil. Although natural gas reserves of Russia is scattered to many regions, almost half of these are located in Siberia and the otits eastern regions. Even these otits reserves have advantageous routes to China over the Kazakhstan. We will analyze this situation on Table 2.

Table 2: Russia’s Gas Producing Regions

<table>
<thead>
<tr>
<th>Bölge</th>
<th>Bid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sibera</td>
<td>59.6</td>
</tr>
<tr>
<td>Tyumen</td>
<td>55.9</td>
</tr>
<tr>
<td>Yamalo-Nenets</td>
<td>52.4</td>
</tr>
<tr>
<td>Khantil-Mansiisk</td>
<td>3.5</td>
</tr>
<tr>
<td>Tomsk</td>
<td>0.4</td>
</tr>
<tr>
<td>Krasnoyarsk</td>
<td>0.2</td>
</tr>
<tr>
<td>Irkut</td>
<td>0.2</td>
</tr>
<tr>
<td>Yakutsk</td>
<td>0.2</td>
</tr>
<tr>
<td>Sakhalin</td>
<td>2.7</td>
</tr>
<tr>
<td>Urals-Volga</td>
<td>3.3</td>
</tr>
<tr>
<td>Orenburg</td>
<td>1.5</td>
</tr>
<tr>
<td>Astrakhan</td>
<td>1.1</td>
</tr>
<tr>
<td>Others</td>
<td>0.7</td>
</tr>
<tr>
<td>Komi Republic</td>
<td>0.3</td>
</tr>
<tr>
<td>North Caucasus</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>63.4</td>
</tr>
</tbody>
</table>

Source: U.S. Energy Information Administration (EIA), 2013

As can be seen in Table 2, majority of the natural gas exports from Russia is realized via the pipelines and to the West. However tits e are many singular pipelines just for China and these pipelines show the importance of China for Russia. China is big enough to cover the trade with all EU countries. As it is shown in Figure 3.6, China ranks third among the natural gas importers from Russia.

As seen in Table 2, majority of the natural gas exports from Russia is realized via the pipelines and to the West. However tits e are many singular pipelines just for China and these pipelines show the importance of China for Russia. China is big enough to cover the trade with all EU countries. As it is shown in Figure 3.6, China ranks third among the natural gas importers from Russia.

This situation can also be seen in the pipeline projects. Compared to 6000 miles long pipeline to the west with a capacity of 5.5 million bbl/d, tits are 846 miles long pipeline to the southeast with a capacity of 2 million bbl/d. But 2 million bbl/d oil going to the southeast is only bought by China, wits eas 5.5 million bbl/d oil going to the west is shared by 10 EU countries including Germany and Holland. These numbers prove the importance of China. As can be seen in Table 4.5, almost all of the oil sold to China is delivered through the East Siberia-Pacific Ocean Pipeline (ESPO).

Figure 6: ESPO Pipeline

Source: Moscow Times, 2012
It is necessary to see this pipeline on the map to understand its importance. As can be seen in Figure 6, ESPO pipeline consists of two routes. First line reaches directly to China, while the second line is used to transfer oil to the east customers of Russia such as Japan, South Korea, Philippines, and Singapore. This pipeline only provides natural gas to the northeast region of China. This is why new projects are needed and these new projects can be connected with this pipeline system.

In the previous section we mentioned that China wants to increase natural gas consumption and Russia is the most possible partner to provide the required natural gas. This choice was mostly coincided and developed in parallel with the Ukrainian Crisis. China was demanding to buy natural gas from Russia from low prices. This situation forced Russia to accept this offer. In return China accepted Russia’s offer to increase Russia’s share in the Chinese energy market. The reason behind China’s change of mind was to create an alternative to EU [4].

Two project gained prominence during this period was Altay and the “Power of Siberia” pipeline projects, both initiated before the crisis. These two lines depart from the Russia’s rich natural gas deposits listed in Table 2 and arrive to the northwest and northeast of China. They founded the basis of natural gas trade between the two countries and started in 2014.

It seems that an important milestone was crossed by 2015 and this will change the current situation drastically. The negotiation between Russia and China lasted more than 10 years and reached to conclusion in May 2014, just after the Ukrainian Crisis broke out. An agreement worth more than 400 billion dollar was signed (Bloomberg, 2014). The construction will be completed in 2018 and after completion will carry 38 billion cubic meter natural gas every year for 30 years. Considering that one thousand cubic meter natural gas is worth to approximately 350-400 dollars (BBC, 2014), the importance and value of the project for Russia can be understood.

Figure 7: Altay Pipeline, Power of Siberia Pipeline and Operating Gas Pipelines

Agreement was signed between great oil companies of Russia and China, Gazprom and CNPC (China National Petroleum Corporation). Presidents of both countries, Putin and Jinping participated to the ceremony and the stock value of Gazprom increased 2% after the agreement. The estimated cost of the pipeline construction varies between 22 and 30 billion dollar. This will surely boost the Russian economy [5].

This development proves that the natural gas consumption of China will continue to rise. It is estimated to rise from 4% to 14% in the next 10 years. Russia secured its place as the biggest energy partner of China with this agreement. But the real question is whether this will cause Russia to change its axis in the international politics. We have to answer to some intermediate questions to reach any conclusion on this: Will the demand of China continue to rise? Will these projects be feasible? How much advantage these projects will give to Russia in negotiating EU. Thus, before we will be assessing the characteristics of this strategic
cooperation and providing the last piece necessary to reach a conclusion.

2.3 Evaluation of PRC’s Place in the Projects of Russia

If we can answer whether newly developing energy relation between Russia and China can prove to be an important dynamic or not, we will also give answer to the question whether this is a change of axis or not. Thus we need to evaluate Russia’s cards against EU and their sustainability. This is why we need to determine what this energy trade means for both sides, Russia and China. This will allow us to discuss the role of PRC in the Russian energy policy in general.

First of all we need to analyze the meaning of this energy trade for Russia. Russia already has a stable relation with China since the end of the Cold War. They increased their trade capacity from just a couple billion dollars to 200 billion dollar in a very short time [6]. So they actually have become strategic partners long ago. However this positive economic relation is not enough for Russia. Russia’s energy exports already compromises 65% of its exports and its energy customers. So it is more important for Russia to establish a stable trade partnership.

To assess whether this is possible, we should first look whether the existing trade is enough to establish such a stable partnership. First of all China’s oil imports is still not big enough to be an alternative against the EU. Although China is the third biggest oil importer of Russia and will shortly rise to the second rank, China’s share is still very small compared to the whole Europe. Anotits issue to be evaluated is the locations of the existing pipelines. As can be seen in various tables, the pipelines constructed by Russia deliver energy to Europe. As we mentioned before constructing pipelines between Russia and China can be very costly. Thus it is hard for these changes to create an axis change. In other words, creating an oil flow enough for Russia to change its axis is impossible in the short term.

Thus it is more appropriate to describe China as a “strategic partner” instead of a new axis. With regard to natural gas, it is a developing relation between Russian and China [7]. Although as we have seen China became a possible alternative to the EU with the last agreement guaranteeing a 400 billion dollar oil purchase, it is important for Russia to recognize China as a long term partner. For this to happen, China have to change its energy consumption structure and increase the share of natural gas far above 4%. All these assessments shows us that China can be seen as a “strategic partner” of Russia.

China is more concerned with guaranteeing its energy security. As we have seen in the first chapter, China is careful in diversifying its energy sources and providers. This is why, China imports oil from 15 countries and natural gas from 10 countries. Also as can be seen in the negotiations between China and Russia that ended with mutual compromises in 2014 after the Ukrainian Crisis, China also careful on transportation and regional security issues. These considerations limit Russia’s export capacity. Thus Russia failed to become the major energy provider of China. Although Russia’s energy export rates are rising, the number one oil provider of China is still Saudi Arabia and the number one natural gas provider is Turkmenistan. So we can say although China supports Russia’s argument against unipolar world, China is not a complete alternative to the Western world.

Anotits important point is that China is also open to the Western world and may use the Western world as an alternative to Russia. In 2015, U.S.A. started to compete with Russia for Chinese energy market through the Asia Pacific Economic Cooperation. This development supports this argument. All these analyze beg for a general evaluation. After showing the position of Russia’s energy policies in the global energy policies, analyzing their effect on the Russian foreign policy, and why Russia’s energy based foreign policy turned to China,
we now can move to a general evaluation. So we will be able to determine PRC’s place in context of the Russian energy policies.

3. Conclusion

This study investigated China’s place in context of Russia’s energy policies. Considering that Russia has recovered its economy by selling energy products to the Western world after the Cold War, we compared Russia’s main customer, the West and the newly rising “giant customer”, China. We took the Ukrainian Crisis as our reference, as this event clearly showed that evaluating Russia’s relationship with the West only on the reference economic relations. We tried to understand whetits Russia is turning its face to the East for good or just trying to have leverage against the West. Anotits question is – regardless of Russia’s agenda, whetits China wants such a partnership.

We looked many parameters to answer this question. These parameters include Russia-China relations after the Cold War including bilateral relations, relations in the context of Shanghai Cooperation Organization and BRICS; and China’s energy status and policies. Based on these we evaluated whetits this relationship represents an axis change.

So we evaluated their bilateral relation by reference to their economic relationship. This showed us that both countries are following a staple policy for developing relations, are showing political resolution on this issue and that developments after bilateral summits are not coincidence. China mostly sells machines and technology products to Russia, wits eas Russia’s main export is energy products. However both countries main trade partner is the Western World and this is an important counterargument for the new axis theory. It is suggested that Shanghai Cooperation Organization is a strategic institution that aims to oppose unilaterality, to solve problems between member countries and to provide an alternative for the international security problems. BRICS is also an important platform to fight against the Western dominance over the economy, but it is shown that it lacks the physical infrastructure to provide a new axis. BRICS is also not very useful as it is not possible or too costly for Brazil and South Africa to import energy products from Russia. Thus its main objective is to oppose economic unipolarity. Considering these, we focused mainly to the energy relationship between China and Russia.

Finally we emphasized that China follows a multidimensional strategy with the aim of securing energy supply. China is also a giant country with giant energy consumption. Although Russia has an advantage, yet still is back in ranking especially in natural gas exports. We also emphasized that China wants to increase the natural gas consumption and Russia desires to establish stronger relations with the east. Hence Ukrainian Crisis provided a basis for cooperation and negotiations on energy trade has been hastily concluded. Thus as 400 billion worth agreement signed after the 2014 Ukrainian Crisis showed, this crisis forced both sides to compromise. However after all these developments, Russia failed to become the number one energy provider of China.

In conclusion, although two countries established a strategic relation, this relation cannot substitute the relation of Russia with the EU. Thus China-Russia relations can be interpreted as cooperation between two Asian powers to fight against the unipolarity and influence of the West over the otits Asian states. Russia gained sustainability for its struggle against the EU, wits eas China can buy energy product from cheaper prices. This is why; both countries are expected to maintain their relations with the West. China has an important place for Russia as a trade partner and an energy importer. China holds a much more important place in Russia’s policies than Germany, Holland or Turkey. However this cooperation is not strong enough to form an
axis. It will just act as a balancer for the relations of Russia with the West.

References

The Economic Relation between Turkey and Russia until Fighter Aircraft Crisis in 2015

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Abstract: Turkey-Russia relations are based on a quite long history. It is estimated that the first official contact began in 1492. 520th year of Turkish-Russian relations was celebrated in 2012. The two countries have a common history in terms of political, trade and economic relations. There was a fighter aircraft crisis between Turkey and Russia, in November 2015. This crisis was a turning point in relations between the two countries. In this study, the following question is tried to answer for the period before the aircraft crisis; how the economic relations have continued begun in 1992 and which level are those have reached in 2015 between Turkey and the Russian Federation that established after the fall of the USSR. It has been observed that the economic relations between the two countries have quite developed in energy construction and tourism sectors especially in the last fifteen years.

Keywords: Economic relations, Turkey and Russia, Fighter Aircraft Crisis

1. Introduction

In context of construction and protection of the global and regional peace, Turkey and Russia due to their historical, ethnic and cultural ties with their geographical location, hold a very important place in terms of stability and cooperation in the region that they are located in. Turkey and Russia have influenced both the countries and the people that they interact by the economic, political, historical and cultural significance of mutual relations in 500 years of history. Relations between Turkey and Russia have reached this level through the many different problems today by following a bumpy course. The common history which is surrounded by the periodic conflict and cooperation process has left an indelible mark in the collective memory of the countries [1].

1990s emerges as the most troubled years of relations between the two countries. The course of both trade-economic relations and political relations between the two countries has followed a distinct direction in this period. The most important topic of this time period when cooperation and competition were intertwined was economic relations. Continuously growing trade and economic cooperation has played and continues to play a leading role in the development of bilateral relations since 1991. Political relations have always remained in the shadow of economic relations and newer reached the level of economic relations during these years. However, it can be seen that the political relations between the two countries were experiencing rapid development in early 2000s. It can be said the rapid development of economic relations has influenced political relations in the next 20 years from the collapse of the USSR. The most obvious indicator of this
situation is many high-level visits took place between leaders of the two the countries and the rapidly increasing volume of trade [2].

Considering the economic relations, it takes the leading role in political relations and it can be considered as a balancing task. When examined the economy of Turkey and Russia, the complementary features of the two countries moves two countries in different positions from other countries. Turkey is importing raw materials for energy and other raw products from Russia and exporting mainly final goods.

2. Turkey-Russia Economic Relations

It can be said there is an imbalance has become traditional for Turkey in Turkish-Russian trade relations. Turkey's imports from Russia are significantly higher than its exports to the country. This situation creates continuously growing trade deficit against Turkey. Due to the increasing need energy received from Russia and continuing price increases Turkey’s imports grow rapidly but not exports at the same rate. According to Russia, the imbalance in foreign trade against to themselves because of the suitcase trade, tourism revenues, construction companies’ revenues and the transportation sector revenues dominated by Turkish companies. On the contrary, they argue that Turkey has a clear advantage in foreign trade between two the countries.

Table 1: Macroeconomic Indicators of Turkey and Russia in 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>TURKEY</th>
<th>RUSSIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (Million $)</td>
<td>800.107</td>
<td>1,860.598</td>
</tr>
<tr>
<td>GDP Per capita (Thousand $)</td>
<td>10.404</td>
<td>24.449</td>
</tr>
<tr>
<td>Growth (%)</td>
<td>2.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Population</td>
<td>74,933,000</td>
<td>143,000,000</td>
</tr>
<tr>
<td>Capital City</td>
<td>Ankara</td>
<td>Moscov</td>
</tr>
<tr>
<td>Total Foreign Trade (billion $)</td>
<td>399.7</td>
<td>774.4</td>
</tr>
</tbody>
</table>

Source: [3-4]

Table 1 shows figures of Turkey and Russia's macro-economic values. According to the table, the value of Turkey's GDP is around $ 800 billion in 2014 while Russia's 1.8 trillion dollars. Likewise, the value of GDP per capita is about 10 thousand dollars in Turkey. This rate is more than 24 thousand dollars in Russia. Looking at the total trade value between the two countries there is a difference by half. Turkey's total foreign trade in 2014 was around $ 400 billion this rate is up to 774 billion dollars in Russia. Russia's economy is significantly larger than Turkey in terms of virtually all macroeconomic indicators.

Basic products that Turkey and Russia sell in international markets are quite different. This difference leads to emerge a very low level of export similarity index between the two countries. Because of the export similarity index is low, foreign trade structure of Turkey and the Russian Federation doesn't resemble to each other [5].

3. Trade Balance of Turkey and Russia

In general, Turkey has a trade deficit continuously and a significant portion of Turkey's foreign trade deficit created by trade with Russia. The Russian Federation was taking first rank among the countries in Turkey's imports until 2011 and the Turkey’s exports were smaller than imports to the country [5].

When Turkey's foreign trade deficit examined by countries in 2000-2010 periods it can be seen that the most deficit caused by respectively The Russian Federation, China and USA. The main reason of the deficit is the energy imports from Russia. Russia's share in the total foreign trade deficit of Turkey was 12 percent in 2000, 36 percent in 2008, 42 percent in 2009, 24 percent in 2010 and 17 percent in 2011 [6].

Table 2: Turkey-Russia Foreign Trade Values (thousand $)

<table>
<thead>
<tr>
<th>Years</th>
<th>Export</th>
<th>Import</th>
<th>Total</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>924.107</td>
<td>3,435.673</td>
<td>4,359.780</td>
<td>-2,511.566</td>
</tr>
<tr>
<td>2002</td>
<td>1,172.039</td>
<td>3,891.722</td>
<td>5,063.761</td>
<td>-2,719.683</td>
</tr>
<tr>
<td>2003</td>
<td>1,367.591</td>
<td>5,451.316</td>
<td>6,818.907</td>
<td>-4,083.725</td>
</tr>
<tr>
<td>2004</td>
<td>1,859.187</td>
<td>9,033.138</td>
<td>10,892.325</td>
<td>-7,173.951</td>
</tr>
<tr>
<td>2005</td>
<td>2,377.050</td>
<td>12,905.620</td>
<td>15,282.670</td>
<td>-10,528.570</td>
</tr>
<tr>
<td>2006</td>
<td>3,237.611</td>
<td>17,806.239</td>
<td>21,043.850</td>
<td>-14,568.628</td>
</tr>
<tr>
<td>2007</td>
<td>4,726.853</td>
<td>21,508.494</td>
<td>26,235.347</td>
<td>-18,781.641</td>
</tr>
</tbody>
</table>
Table 2 shows the amount of trade between the two countries covering the period 2000-2014. According to the table, Turkey's exports to Russia remained lower than its imports in all years. Turkey's exports were 643 million dollars and imports at around $ 3.8 billion in 2000. Turkey's exports increased by approximately 9 times and were around $ 5.9 billion in 2014. Meanwhile, imports of Turkey in 2014 increased by 6 times compared to 15 years ago, it was around $ 25 billion.

Turkey's foreign trade volume with Russia has decreased by 39% because of the global financial crisis in 2009. A decline was observed both in exports and imports in 2009. Turkey's exports to Russia decreased by 51% while imports fell by 37% in the year 2009. Turkey has started to increase exports to Russia with the decline in negative impacts of the global crisis in the World in 2010. Turkey's exports to Russia increased 45% in 2014.

Table 3: Sector Distribution of Exports to Russia (share %)

<table>
<thead>
<tr>
<th>Chapters</th>
<th>2004</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>12.6</td>
<td>17.4</td>
</tr>
<tr>
<td>Textile</td>
<td>16.4</td>
<td>14.5</td>
</tr>
<tr>
<td>Automotive</td>
<td>10.9</td>
<td>11.9</td>
</tr>
<tr>
<td>Machinery equipment</td>
<td>3.6</td>
<td>7.7</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>7.6</td>
<td>6.0</td>
</tr>
<tr>
<td>Chemical products</td>
<td>7.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Apparel</td>
<td>9.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Metal products</td>
<td>5.1</td>
<td>5.5</td>
</tr>
<tr>
<td>Rubber &amp;</td>
<td>6.2</td>
<td>5.1</td>
</tr>
</tbody>
</table>

Turkey's imports from Russia have increased first moderate then rapidly in 1999 while exports in the same period decreased by 56.4% compared to the previous year and reached 586.5 million dollars. It seems that the decline in imports has stopped since 2000 and it has increased first moderate then rapid amounted to 1,168 billion dollars in 2002.

Turkey's exports to Russia have not reached the level of 1997 including the increase in 2000 and beyond [5].

Turkey's main export items to Russia:
- Textile products
- Food products
- Automotive industry products
- Other billets
- Chemicals
- Other consumer goods
- Other non-electrical machinery
- Apparel
- Electrical machinery and apparatus
- Mining products [16].

As long as the weight of the consumption goods lasts in the imports of the Russian Federation, Turkish consumption goods in this market will be continue to needed. In addition, the natural gas agreements signet to reduce Turkey's energy deficit with Russian Federation strengthens the expectation in raising the trade volume between the two countries in the medium run.

3.1. Exports

Turkey's exports to Russia in the 1990-2000 periods remained in the following way. Turkey's exports to the Russian Federation was 530.7 million dollars in 1990 rose to $ 2,049 billion in 1997, and its imports rose from $ 1.2 billion to 2,048 billion dollars in the same period. Exports to Russia in 1998 decreased by 34.4% compared to 1997 amounted to 1,347 billion dollars. The decline in exports continued in 1999 while exports in the same period decreased by 56.4% compared to the previous year and reached 586.5 million dollars. It seems that the decline in exports has stopped since 2000 and it has increased first moderate then rapid amounted to 1,168 billion dollars in 2002.

Turkey's exports to Russia have not reached the level of 1997 including the increase in 2000 and beyond [5].

Turkey's main export items to Russia:
- Textile products
- Food products
- Automotive industry products
- Other billets
- Chemicals
- Other consumer goods
- Other non-electrical machinery
- Apparel
- Electrical machinery and apparatus
- Mining products [16].

Table 3: Sector Distribution of Exports to Russia (share %)

<table>
<thead>
<tr>
<th>Chapters</th>
<th>2004</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>12.6</td>
<td>17.4</td>
</tr>
<tr>
<td>Textile</td>
<td>16.4</td>
<td>14.5</td>
</tr>
<tr>
<td>Automotive</td>
<td>10.9</td>
<td>11.9</td>
</tr>
<tr>
<td>Machinery equipment</td>
<td>3.6</td>
<td>7.7</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>7.6</td>
<td>6.0</td>
</tr>
<tr>
<td>Chemical products</td>
<td>7.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Apparel</td>
<td>9.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Metal products</td>
<td>5.1</td>
<td>5.5</td>
</tr>
<tr>
<td>Rubber &amp;</td>
<td>6.2</td>
<td>5.1</td>
</tr>
</tbody>
</table>
According to TUIK data, it seems that agriculture play an important role in sector distribution of Turkey's exports to Russia in recent years. It is observed that agricultural sector is followed by textile and automotive industry with their large shares.

3.2. Imports

The crisis experienced in Russia have not effected imports from Russia at the same rate as exports and has created a huge trade deficit against Turkey because of the increase in oil and natural gas prices. Imports from The Russian Federation remained more stable as compared to exports. Increase in the value of imports is due to the increase in imports of raw material prices, especially natural gas. Turkey's main import items from Russia;

- Oil gas-natural gas
- Oil and products
- Oilseeds and cereals
- Iron and steel
- Coal
- Non-ferrous metals
- Ores and waste
- Chemicals
- Other Billets
- Agricultural raw materials [6].

Turkey is a country largely dependent on the outside especially in raw materials, intermediate goods, and in particular on energy. Therefore, the foreign trade deficit is made up and is continuously increasing. Turkey's imports from Russia are one of the main reasons for the creation of the foreign trade deficit because of Turkey is the one of Russia's major trading partners [2].

Turkey's main import items from Russia are listed in Table 4. Accordingly, most imports were fuel products. Industrial products come just behind it. As seen in the table, Turkey is importing a lot of products from Russia. The economic value of these imports is more than 25 billion dollars. Therefore, commercial ties between the two countries are very important for the two countries' economies.

It is observed that the imports of mineral fuels, oils, iron and steel and grain took an important role in trade in recent years. According to TUIK data, the share of food products in Turkey's exports to Russia is 25%, the share of textile products is 20%, the share of chemicals is 9.6%, and the share of automotive-industry products is 7%. It is possible to list the main products imported from Russia are as follows: oil and petroleum products 37.6%, natural gas 32.4%, iron and steel, 8%, coal 5.8% and non-ferrous metals.

3.3. The Agreements and Protocols Regulating the Commerce Infrastructure between the Two Countries

The agreements and protocols regulating trade infrastructure between the two countries can be summarized as follows:


<table>
<thead>
<tr>
<th>Chapters</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral fuels, lubricants</td>
<td>17.119</td>
<td>16.493</td>
</tr>
<tr>
<td>Iron and steel</td>
<td>2.925</td>
<td>2.689</td>
</tr>
<tr>
<td>Cereals</td>
<td>1.005</td>
<td>1.451</td>
</tr>
<tr>
<td>Aluminum and derivatives</td>
<td>841</td>
<td>1.109</td>
</tr>
<tr>
<td>Animal and vegetable Oils</td>
<td>549</td>
<td>876</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>324</td>
<td>363</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapters</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper and copper stuff</td>
<td>348</td>
<td>301</td>
</tr>
<tr>
<td>Food industry waste, animal feeds</td>
<td>240</td>
<td>288</td>
</tr>
<tr>
<td>Organic and chemical products</td>
<td>315</td>
<td>315</td>
</tr>
<tr>
<td>Aluminum and derivatives</td>
<td>409</td>
<td>440</td>
</tr>
<tr>
<td>Plastics and their products</td>
<td>353</td>
<td>384</td>
</tr>
<tr>
<td>Total Imports</td>
<td>25.064</td>
<td>25.288</td>
</tr>
</tbody>
</table>

Source: [4-6]
"Turkey - Russia Visa Exemption Agreement" signed in 12 May 2011, entered into force on 16 April 2011.

• Turkey-Russia Intergovernmental Joint Economic Commission Protocols (12th Joint Economic Commission Meeting Protocol / 20.04.2013) [7].

4. Tourism

Turkey was visited by 4,479 million Russian citizens in 2014. Thus, Turkey has become the most visited country by Russian citizens in the world. It was observed that the number of Russian citizens visiting Turkey decreased to 3,651 million due to contraction in the Russian economy in 2015. Although the individual journeys possible with scheduled flights to Turkey it is expected a significant reduction in the number of Russian tourists to Turkey because of the prohibition of flights and package tours to Turkey. According to the data from the first months of 2016, the number of Russian tourists have decreased by 56.2% amounted 66,127 person compared to the same period of the previous year [9].

Figure 1: Number of Tourists from Russia to Turkey (million people)

Source: [4-10]

Figure 1 shows the number of tourists come Turkey from Russia between the years 2005-2014. The number of tourists from Russia were less than 3 million in 2005 has reached up to 4,48 million people at the end of 2014. That number has dropped below 4 million in mid-2015. Turkish-Russian aircraft crisis in late 2015 could negatively affect the tourism data in both 2015 and 2016. Mutually negative perceptions of Turkish and Russian society have followed a bumpy course from the past to the present. In historical framework Russian politics down to the warm sea replaced by security and economic cooperation in the Black Sea and the interaction in tourism in Mediterranean and Aegean Region with Turkey.

This conversion effect of tourism in Turkey - Russian relations has been positively affected political and economic relations between the two countries. In recent years, due to Turkey has gained high income from tourism industry, Turkish tourism officials has started to consider in talks with Russian officials the tourism as one of the prior items on the agenda. In the same way in these negotiations Russia has felt the need to address under a separate title on tourism in order to attract more tourists and investment from Turkey in their own country. These developments in the tourism business became effective in the removal of visas in 2011 [11].

Turkey was the first destination among Russian tourist to go abroad for vacation after 2010s. Turkey took the title of Russians’ favorite destination from Egypt and was gaining about $ 3 billion income by year from Russian tourists in recent years. Because of the negative developments experienced and its results are reflected in the media the perception of Turkey as an insecure country in terms of tourism in abroad was reflected negatively on tourism revenues more recently. Russian tourist agencies have announced that they have begun to cancel their tours of Turkey planned for the future especially after the negative comments of the Russian state authorities. As a result this has reflected negatively on Turkey’s tourism.

5. Energy

If it is listed the percentage share of natural gas imports of Turkey from other countries, Russia is located in first rank with a rate of 54.7%. Iran ranks just behind as second with share of 18.1%, then Azerbaijan 12.4%, Algeria and Nigeria can be listed as 8.5% and 2.8%. As an unavoidable reality, one of the most important topics which make Russia indispensable for Turkey in terms of economic is natural gas. Turkey makes 54% of the total natural gas imports from Russia. It can be said that Turkey wants to obtain the fuel of economic growth by increasing the amount of natural gas purchased from Russia. Substantial part of the natural gas purchased from Russia is used in heating as well as in electricity generation, in a sense it can be said that the
rotation of the wheel in Turkish manufacturing sector is dependent on Russian gas [12].

Figure 2: Turkey’s Energy Imports from Russia ($ Billion)

As seen on figure 4, behind Turkmenistan Russia is the second largest market for Turkish construction companies. According to the Russian Ministry of Labor and Social Security data around 30 thousand Turkish citizens is working in the country. According to Turkey Contractors Association the one of third of which means 10 thousand people employed in the construction sector. The workers quota from Turkey in Russia is determined around 60 thousand people.

5. Construction

Russia may be said that a significant market for Turkish contractors since the mid-1990s. Turkish companies may participate in public infrastructure tenders in Russia as well as carry out private projects. There is a broad portfolio ranging from hospitals to highways among the completed projects up to date. The amount of projects undertaken by Turkish constructors in Russia is about $ 64 billion until 2015. Twenty percent of overseas projects undertaken by Turkish contractors have located in Russia. Turkish construction companies have undertaken $ 4.3 billion project in 2015 in Russia. Behind Turkmenistan Russia is the second largest market for Turkish construction companies [13].

7. Conclusion

It cannot be yet expressed the relations between the two countries as a strategic partnership; it is possible to say that the strategy played a major role in the relations of both countries. May be, as a whole it is not possible to describe the relations as strategic but in some respect it is possible especially at trade and energy. Russia is very important for Turkey and in the same way Turkey is very important for Russia too. Turkey has chosen to take part in the Western system in terms of its security and stability. However, this is not an obstacle to establishing multi-faceted relations with Russia. On the contrary, establishing strong relations with Russia will strengthen Turkey’s hand in its
relations with the Western world. At this context, the point that Turkey needs to pay more attention on conducting their relations with Russia is to keep those relations without uncontrolled competition and conflict. May be it is the same for Russia. In some circles, Turkey's relations with Russia is perceived and considered as an alternative to the problematic relations with the EU and Turkey.

Lines in relations between Russia and Turkey are very sensitive and naturally to expand or narrow the lines in relations in the initiative of each country. These are the events in history are the events to expand the lines between the two countries: Soviet aid during the War of Independence, cooperation in the industrial field in the 1930s and 1960s, natural gas deal in 1984, Russia's positive support Turkey against terrorism in 1998, the Blue Stream project, Ecevit's Moscow visit in 1999, Putin’s visit to Turkey 2004 and the last nuclear power plant project was given to Russia. Turkey and Russia are indispensable two countries to each other. There is an important past for strong ties between the two countries despite the negative experience. As before, the crisis will be overcome. Resolving the crisis will suit the both countries’ interests.

8. References

Abstract. This paper aims to analyze the relationship between electricity prices and the fossil fuel prices in Turkey covering the period 1988 and 2013. The linear cointegration test corroborates the long-run relationship among the variables, whereas threshold cointegration test do not indicate any significant evidence for the long-run asymmetry in the price adjustment mechanism. VAR estimates suggest that the impact of natural gas price shocks on the electricity prices has increased remarkably with the amendment of the electricity market law in 2001.

Keywords: Electricity price, fossil fuel prices, cointegration, VAR model, Turkey.

1. Introduction

After 1980s the electricity markets in most of the developed countries has witnessed important regulatory reforms aiming to liberalize all segments of the market from generation to distribution. European countries have started to liberalize their electricity markets in 1990s in order to improve the efficiency and financial viability of the market. Therefore one can expect that after those regulations, electricity prices tend to be determined by the cost of primary energy sources employed in the electricity generation. Empirical studies conducted on these countries support this view by providing evidence for the long-run relationship between electricity and fossil fuel prices [9-10, 17, 19, 26 for US; 7 for UK; 28 for Spain; 6 for Northern Europe].

This paper aims to contribute the literature by examining the relationship between electricity and fossil fuel prices in Turkey. A detailed analysis of this topic is important for two reasons. First with the amendment of the new law in 2001, an important step has been taken towards the liberalization of the Turkish electricity market in order to improve competition and efficiency in the fields of transmission and distribution. Second since 1980s the composition of the primary energy sources utilized in the electricity production has changed substantially over time. Figure 1 illustrates the evolution of the primary energy sources employed in the electricity generation between 1980 and 2012. In early 1980s, hydropower and coal were the only primary energy resources, around 70 percent of the production has been generated by hydropower. However natural gas and coal have become the most commonly utilized energy sources in the generation of electricity by the end of 1990s.
Total electricity produced by natural gas (36.418 GWh) has even surpassed the electricity generated by the coal (35.193 GWh) and hydropower (34.677 GWh) in 1999. In 2012 natural gas has become the most important primary source with 104.506 GWh corresponding to 43.8 percent of the total electricity production in Turkey. This indicates that Turkey is heavily reliant on the fossil fuels in the generation of electricity; hence the fluctuations in the prices of fossil fuels may have important implications on the cost of electricity in Turkey.

The previous studies on the electricity market of Turkey have mainly concentrated on the relationship between electricity consumption and economic growth [e.g. 1, 10, 27] or electricity demand forecasts [e.g. 3, 5, 8, 14, 30]. In this paper the long-run relationship between the electricity and fuel prices is analyzed with the asymmetric cointegration test developed by [29]. In order to assess the enforcement of the new electricity market law in 2001, impulse response and forecast error decompositions are also applied based on the estimation of subsample VAR models.

The rest of the paper is organized as follows. The next section introduces the data employed in the estimates. Section 3 explains the methodology of the paper. Empirical results are presented in section 4. Finally the paper ends with conclusions drawn based on empirical findings.

2. Data

This paper uses quarterly data covering the 1988:1-2013:1 period. The prices of fossil fuels used in the electricity generation are collected from International Energy Agency database (www.iea.org) and they are defined in terms of national currency toe NCV (Tonne of Oil Equivalent, net calorific value). The vector of endogenous variables \( Y_t \) is given by

\[
Y_t' = [\text{lep}_t, \text{lcoal}_t, \text{lng}_t, \text{loil}_t, \text{lusd}_t] \tag{1}
\]

where \( \text{lep}_t \) represents the residential price of electricity. \( \text{lcoal}_t, \text{lng}_t, \text{loil}_t \) denote the naturally logged prices of coal, natural gas and oil respectively. As for oil prices we use Brent crude oil price in USD/per barrel collected from International Financial Statistics (IFS) database of IMF. To account for the impact of exchange rate movements on the electricity prices, \( \text{lusd}_t \), the natural log of US/TL nominal exchange rate is also considered as one of the explanatory variables.

3. The Methodology

Cointegration analysis is used to investigate the long run relationship between electricity and
fossil fuel prices. To this aim first we consider the following VAR,
\[ Y_t = A_0 + \sum_{i=1}^{p} A_i Y_{t-i} + \varepsilon_t \] (2)
where \( Y_t \) is the previously defined vector containing the endogenous variables.

\( A_0 \) and \( A_i \) represent the respective parameters of constant and endogenous variables lagged by \( p \) period. \( \varepsilon_t \) contains the vector of innovations
\[ \varepsilon_t = \begin{bmatrix} \varepsilon_{ep} \varepsilon_{coal} \varepsilon_{ng} \varepsilon_{oil} \varepsilon_{usd} \end{bmatrix} \]
with the variance-covariance matrix of \( E(\varepsilon_t \varepsilon_t') = \Sigma \).

If the variables are I(1) and cointegrated the VAR model in (2) is rewritten as the following Vector Error Correction Model (VECM):
\[ \Delta X_t = \alpha + \Pi X_{t-i} + \sum_{i=1}^{n} \Gamma_i \Delta X_{t-i} + \varepsilon_t \] (3)
where \( \Pi = -I + \sum_{i=1}^{p} A_i \) and \( \Gamma_j = -\sum_{i=1}^{n} A_j \).

\( \Pi = \alpha \beta' \) is the impact matrix containing the vector of adjustment coefficients \( \alpha \) and the vector of cointegration relations \( \beta \). If the variables are not found to be cointegrated, the VECM model defined above collapses into a first-differenced unrestricted VAR model. The dynamics among the variables can be further investigated with impulse response functions and variance decompositions based on the above model.

The model presented above assumes that the relationship between electricity and fuel prices follows a symmetrical pattern. To consider asymmetry in the price adjustment mechanism, we use threshold cointegration test developed by [29].\(^3\) In the first step of the test electricity prices are modeled as a linear function of the fuel prices as follows:
\[ \Delta e_t = \bar{\rho}_1 \Delta e_{t-1} + (1-\bar{\rho}_1) \rho_2 \varepsilon_{t-1} + \varepsilon_t \] (5)
\( \bar{\rho}_1 \) is the heaviside indicator is defined by
\[ I_t = \begin{cases} 1 & \text{if } \varepsilon_{t-1} \geq \tau \\ 0 & \text{if } \varepsilon_{t-1} < \tau \end{cases} \] (6)
Where \( \tau \) is the optimal threshold value of the residuals usually set to zero. However this paper employs a grid search method to find a consistent estimate of \( \tau \) as in [20] and [29].\(^4\)

In the above equation \( \rho_1 \bar{\rho}_1 \) and \( \rho_2 \varepsilon_{t-1} \) represent positive and negative deviations from the long-run equilibrium respectively. Therefore the rejection of the null hypothesis \( \rho_1 = \rho_2 = 0 \) implies the existence of cointegration. Similarly the null hypothesis of no asymmetry can be tested by imposing \( \rho_1 = \rho_2 \) restriction.

[29] also introduced another adjustment mechanism called as momentum-threshold autoregressive (M-TAR) model where the threshold value \( \tau \) depends on the first difference of the previous period’s residual (\( \Delta e_{t-1} \)) based on the following indicator function:
\[ I_t = \begin{cases} 1 & \text{if } \Delta e_{t-1} \geq \tau \\ 0 & \text{if } \Delta e_{t-1} < \tau \end{cases} \] (7)

The TAR model is more convenient in analyzing the persistency of positive and negative deviations from the long-run equilibrium, while M-TAR accounts for the sharp asymmetric deviations from the equilibrium relationship.

4. Empirical Results

As a first step of the test electricity prices are modeled as a linear function of the fuel prices as follows:
\[ \Delta e_t = \bar{\rho}_1 \Delta e_{t-1} + (1-\bar{\rho}_1) \rho_2 \varepsilon_{t-1} + \varepsilon_t \] (4)

The existence of a linear long-run relationship can be tested with the investigation of the stationarity of estimated residuals with the ADF test. However, in the case of asymmetry adjustment, linear cointegration test may be misleading. Therefore [29] suggests a modified version of the ADF test based on the following Threshold Autoregressive (TAR) specification:

3 This test has been used by a considerable number of studies in the modeling of various stages of the price adjustment mechanism. See for example [21, 23].

4 In this method the variables are ordered with respect to increasing values of the threshold variable and then the regression is estimated according to each possible value of the threshold variable excluding the smallest and largest 15%. The value minimizing the residual sum of square obtained from the regression is chosen as a superconsistent estimate of the threshold.
at 5% level of significance. Lee and Strazicich [18] unit root test is also applied allowing for two structural endogenous breaks in the series. The results again corroborate the first difference stationarity of the variables (the results of those unit root tests are available upon request).

Therefore we proceed to Johansen cointegration test, both trace and maximum eigenvalue tests suggest the existence of at least two cointegrating vectors for the residential electricity price model (see Panel A of Table 1). The long-run cointegrating parameters of the model are presented in Table 1. The parameters of the variables have expected sign and are significant except for the oil price.

Table 1 Cointegration test results

<table>
<thead>
<tr>
<th>(a) Johansen cointegration test</th>
<th>Maximum Eigenvalue Test</th>
<th>Trace Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H0</strong></td>
<td><strong>HA</strong></td>
<td><strong>Stat.</strong></td>
</tr>
<tr>
<td>r = 0</td>
<td>r = 1</td>
<td>62.2162**</td>
</tr>
<tr>
<td>r&lt;= 1</td>
<td>r = 2</td>
<td>33.8238**</td>
</tr>
<tr>
<td>r&lt;= 2</td>
<td>r = 3</td>
<td>16.1974</td>
</tr>
<tr>
<td>r&lt;= 3</td>
<td>r = 4</td>
<td>12.3941</td>
</tr>
<tr>
<td>r&lt;= 4</td>
<td>r = 5</td>
<td>3.9843</td>
</tr>
<tr>
<td>(b) Long-run cointegrating parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td><strong>lng_t</strong></td>
<td><strong>lcoal_t</strong></td>
</tr>
<tr>
<td>4.8766***</td>
<td>0.2534***</td>
<td>0.2578***</td>
</tr>
<tr>
<td>(0.5738)</td>
<td>(0.0673)</td>
<td>(0.0699)</td>
</tr>
</tbody>
</table>

Notes: Restricted intercepts and no trend specification is used in the estimation of the VAR model. Optimum number of lags are determined by Schwarz Information Criterion. Standard errors are presented in parentheses. *, ** and *** indicate significant at 10, 5 and 1% respectively.

Table 2 Threshold cointegration tests

<table>
<thead>
<tr>
<th><strong>Dependent Variable</strong></th>
<th><strong>Δlep_t</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAR</strong></td>
<td><strong>M-TAR</strong></td>
</tr>
<tr>
<td>ρ₁</td>
<td>-0.083593</td>
</tr>
<tr>
<td>(0.062129)</td>
<td>(0.044487)</td>
</tr>
<tr>
<td>ρ₂</td>
<td>-0.183478***</td>
</tr>
<tr>
<td>(0.057969)</td>
<td>(0.159095)</td>
</tr>
<tr>
<td>τ</td>
<td>0.16382</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>H₀: ρ₁ = ρ₂ = 0</td>
<td>5.754499</td>
</tr>
<tr>
<td>[11.061330]</td>
<td>[12.438775]</td>
</tr>
<tr>
<td>H₀: ρ₁ = ρ₂</td>
<td>1.438628</td>
</tr>
<tr>
<td>4.936837</td>
<td>7.795511</td>
</tr>
</tbody>
</table>

Notes: Standard errors are presented in parentheses. *, ** and *** indicate significant at 10, 5 and 1% respectively. The lag length for the augmented part is selected by the AIC criterion, τ is the optimal threshold estimated as in [20]. Simulated 5% level of significance critical values for the threshold cointegration test, ρ₁ = ρ₂ = 0 and symmetry test ρ₁ = ρ₂ are presented in squared brackets.
Table 3 Error correction model

<table>
<thead>
<tr>
<th>Regressors</th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta e_{t-1}$</td>
<td>0.12019***</td>
<td>(0.04081)</td>
</tr>
<tr>
<td>$\Delta o_{t-1}$</td>
<td>0.066035*</td>
<td>(0.03821)</td>
</tr>
<tr>
<td>$\Delta n_{t-1}$</td>
<td>0.016133</td>
<td>(0.097421)</td>
</tr>
<tr>
<td>$\Delta o_{t-1}$</td>
<td>0.016834</td>
<td>(0.039696)</td>
</tr>
<tr>
<td>$\Delta usd_{t-1}$</td>
<td>0.21427*</td>
<td>(0.11424)</td>
</tr>
<tr>
<td>$ecm_{t-1}$</td>
<td>-0.32794***</td>
<td>(0.07171)</td>
</tr>
</tbody>
</table>

Diagnostic tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Correlation</td>
<td>1.9623 [.743]</td>
<td></td>
</tr>
<tr>
<td>Ramsey’s RESET</td>
<td>4.6996 [.030]</td>
<td></td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>128.4607 [.000]</td>
<td></td>
</tr>
<tr>
<td>Heteroscedasticity</td>
<td>13.2798 [.000]</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Standard errors are presented in parentheses. *, ** and *** indicate significance at 10, 5 and 1% respectively. 
p-values of the diagnostic tests are presented in squared brackets.

Figure 2 Responses of electricity prices to one-standard deviation shocks
Table 4 Variance decomposition of electricity prices

<table>
<thead>
<tr>
<th>Step</th>
<th>S.E.</th>
<th>$\varepsilon_{\text{coal}}$</th>
<th>$\varepsilon_{\text{ng}}$</th>
<th>$\varepsilon_{\text{oil}}$</th>
<th>$\varepsilon_{\text{usd}}$</th>
<th>$\varepsilon_{\text{el}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.073</td>
<td>25.842</td>
<td>23.000</td>
<td>1.765</td>
<td>3.755</td>
<td>45.638</td>
</tr>
<tr>
<td>4</td>
<td>0.089</td>
<td>33.163</td>
<td>22.607</td>
<td>1.394</td>
<td>9.528</td>
<td>33.308</td>
</tr>
<tr>
<td>6</td>
<td>0.090</td>
<td>33.307</td>
<td>22.766</td>
<td>1.379</td>
<td>9.587</td>
<td>32.961</td>
</tr>
<tr>
<td>8</td>
<td>0.090</td>
<td>33.320</td>
<td>22.783</td>
<td>1.377</td>
<td>9.594</td>
<td>32.926</td>
</tr>
<tr>
<td>12</td>
<td>0.090</td>
<td>33.321</td>
<td>22.785</td>
<td>1.377</td>
<td>9.595</td>
<td>32.922</td>
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<td>1.377</td>
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<td>32.922</td>
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Before 2001

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<th>$\varepsilon_{\text{oil}}$</th>
<th>$\varepsilon_{\text{usd}}$</th>
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<tr>
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<td>43.733</td>
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After 2001

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<th>$\varepsilon_{\text{ng}}$</th>
<th>$\varepsilon_{\text{oil}}$</th>
<th>$\varepsilon_{\text{usd}}$</th>
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<td>7.171</td>
<td>40.788</td>
<td>14.236</td>
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<tr>
<td>8</td>
<td>0.071</td>
<td>7.170</td>
<td>40.789</td>
<td>14.242</td>
<td>1.283</td>
<td>36.517</td>
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<td>0.071</td>
<td>7.170</td>
<td>40.789</td>
<td>14.242</td>
<td>1.283</td>
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<td>16</td>
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<td>40.789</td>
<td>14.242</td>
<td>1.283</td>
<td>36.517</td>
</tr>
</tbody>
</table>

We also test the existence of possible asymmetry in the price adjustment mechanism (see Table 2). The null hypothesis of no cointegration $H_0: \rho_1 = \rho_2 = 0$ cannot be rejected therefore the results do not provide significant evidence for asymmetric long-run relationship between electricity and fuel prices. Therefore we focus on the results of linear model. The error correction model results are presented in Table 3. Error correction terms are found to be significant. This suggests that there is a short run price adjustment mechanism in the electricity market of Turkey.

The interaction among the variables is further analyzed with generalized impulse response functions and forecast error decompositions based on the VECM model in (3). The generalized impulse response functions are used in this study introduced by [11] in order to produce responses independent from the ordering of variables in the VAR model. Impulse response and variance decomposition analyses are also conducted for the two subsamples covering the period before and after 2001 to assess the impact of the new law on the electricity market.

The responses of electricity prices to the fuel prices are presented in Figure 2. The responses are illustrated with their upper and lower one-standard-error bands in order to assess their significance over the 16th-quarter horizon. The sign of all responses are found to be positive and significant as expected. The results suggest that exchange rate is the most important variable in terms of the impacts on the electricity prices as the response functions covering the whole period are considered. A one standard deviation shock to exchange rate leads to a 0.049 instantaneous rise in the electricity prices. Then the responses decline gradually, by the end of the period the accumulated impact of one-standard deviation exchange rate shocks is computed as 0.148. Natural gas prices are found to have also substantial effect on the electricity prices (0.135 accumulated response at the 16th period) followed by coal prices (0.119 accumulated response independent from the ordering of variables in the VAR model. Impulse response and variance decomposition analyses are also conducted for the two subsamples covering the period before and after 2001 to assess the impact of the new law on the electricity market.

3 The standard error bands are produced from 1000 draws by Monte Carlo Integration based on [2].
lated response at the 16th period). The impact of oil price shocks is lagging behind the other variables, oil shock leads to a 0.059 accumulated increase in the residential electricity prices at the 16th period.

Generalized impulse response functions obtained from the estimation of the VECM based on the two subsamples indicate the presence of substantial differences between the responses of electricity prices to the fuel price shocks. The accumulated impact of natural gas price shocks at the 16th period has increased from 0.056 to 0.095 after 2001. Responses to oil price shocks have also increased considerably from 0.027 to 0.064. The decline in the impact of coal price shocks during the same period (from 0.061 to 0.022) is very notable. The impact of exchange rate shocks decreases from 0.077 to 0.067 slightly.

Forecast error decompositions presented in Table 4 are in general corroborates the results obtained from the impulse response functions. The variance decomposition of the residential electricity prices suggests that coal prices explain even more on the own shocks of the electricity prices in the long run with 33.32%. The natural gas prices still explain a considerable part of the variation in the residential electricity prices (22.79% at the 16th-quarter horizon).

Variance decomposition analyses based on two subsamples are also worth mentioning. After 2001 the contribution of natural gas prices to the variation in the electricity prices has increased remarkably from 16.1% to 40.79% at 16th quarter horizon. However the importance of coal for has declined from 25.11% to 6.15% supporting the evidence obtained from the impulse response functions.

The contribution of exchange rate in the explanation of residential electricity price fluctuations has declined remarkably from 8.24% to 1.28% which might be conflicted with the results of the impulse response analysis. However, due to the achievement of stability in exchange rate as a result of the implementation of inflation targeting policy after 2001 financial crisis, the variation in the natural gas prices has become more important in the explanation of electricity prices.

5. Conclusion

This paper investigates the relationship between electricity prices and the fossil fuel prices – oil, natural gas and coal – in Turkey with quarterly data covering the period 1988 and 2013. Linear cointegration test corroborates the presence of a stable long-run relationship among the variables, whilst the results obtained from threshold cointegration test are failed to provide any significant evidence for the long-run asymmetry in the price adjustment mechanism. Generalized responses and forecast error decompositions obtained from the VAR models show that natural gas and coal prices have a considerable impact in the explanation the electricity prices, whereas the contribution of oil prices and exchange rates remain relatively limited. VAR estimates based on subsamples also reveal that natural gas price has become the most important determiner of electricity prices since the early 2000s as it is increasingly utilized in the generation of electricity after that time.

References

Evaluation Of Stock Market Istanbul In Terms Of Investor Profile

Asistant Professor Umut Evlimoğlu and Asistant Professor E.Yasemin Bozdağlıoğlu
Adnan Menderes University, Nazilli Faculty of Economics and Administrative Sciences, Department of Economics

Abstract: Capital markets are one of the factors that provide connections between fund offerors and fund demandants. Building blocks of capital markets are stock markets. Stock markets have functions such as providing sources for the economy, providing liquidity, being barometer of the economy and distribution of the capital to the base. One of the most crucial of these functions is the distribution of capital to the base. Distribution to the base means; ensuring small investors or those who are not trading by establishing companies to take share from country enrichment and growth and thus from company profits. Distribution to the base is achieved by increment of the number of small investors. It is seen that stock ownership is high in developed countries. In addition, development of stock markets in Turkey and calling of more investors (savers) to the market for Istanbul to be a financial center, are vital importance. From this point of view, in the historical period starting from IMKB and extending to the Borsa İstanbul, necessary points related to calling of small investors to the stock markets by revealing profiles of investors at stock markets and their investment preferences.

Keywords: Turkey's Stock Market, Investor Profile, Borsa İstanbul

1. Introduction

The first factor is stock market for capital markets. Stock markets bring small savings to the economy, increase the liquidity of securities which has been dealing at secondary market, providing the transfer of capital to the efficient investment projects and has an economic barometer task. Even if there are different stock market types in which many different assets are dealt, the most known type of stock markets is stock exchanges. Stock exchanges have vital importance for both companies and investors. Companies want to go public to provide funds for financing of their investments with intent to be known and for other purposes as well. Investors aim to gain by taking shares from the profits of the companies by being partners to the companies. Primary component at the stock markets is investors. Investors invest with different risk and gaining perspectives with different terms. These investors can be real person, institutional investors or various funds too. The aim of the country stock markets is to increase the number of investors, to call new investors and to provide the increment of depth of the stock market. For this purpose, new public offers are vital. It can be claimed that the stock market understanding in the world go back to the past, but in Turkey it mainly started in the middle of 1980s. “İstanbul Menkul Kıymetler Borsası (IMKB)” which began its activities in 1986, have developed in many different areas until these days. Many steps were taken for the sake of better functioning of the stock market. As a matter of fact, at this point, its name was changed as “Borsa İstanbul” in parallel with the project of Istanbul being financial center. Borsa İstanbul which is stock exchange, is a market in which stocks that are not dealt in money markets or are used as investment tools and are providing the emergence and functioning of capital markets, are dealt.

2. Stock Market Concept And Functions Of Stock Markets

Concept of stock market states the organized markets which are functioning in certain rules and periods, established in a certain place, in which clients and sellers, or people representing them, come together for commerce of assets like properties and securities. People who are dealing with the administration and commerce of farming product debts for banks are accepted as first stockbrokers and the place where they commerce is accepted as first stock market place [17]. Stock markets are organized institutions which have rules regulated in detail and specific number of members. In second hand stock market, the most active markets are stock markets. The most primary feature of the stock markets is providing the order of investors at the market about commerce of stocks is done by auction system in a central place [5].
Stock markets have undergone same changes depending on the civilization levels of the country, trading types within the period of their development. The stock markets which are providing the exchange of primitive goods at first, later the exchange of metallic bullions and money, has turned complicated capital transfer systems in time [4]. Stock markets have various sub-branches. This division is usually done according to the goods which are dealt in stock market. For instance, gold exchange, stock exchange, option exchange, future exchange, cotton exchange etc. The market which will be the topic of this study and referred as ‘exchange’ is stock exchange.

Stock exchanges, in primary markets, are markets where commerce of the goods after export is done regularly, providing liquidity of these goods and creating appropriate prices [6]. Not stocks of all companies are dealt in markets. Only the stocks of limited number of company in exchange list are dealt in markets. The companies have to provide certain conditions to be able to enter to the exchange list and stay there. Markets publish some reports within certain periods to protect their investors and to provide sheerness at the market [7].

In general, to determine the development level of the markets, criteria such as market capitalization, trading volume, the ratio of national savings in capital market to the gross national product, the base of local investor and institutional investor, presence of derivative markets, variety of the goods dealt in market, turnover ratio, market concentration, degree of openness to abroad, new issues, the number of companies’ market establishment, are used [12].

The functions of stock exchanges can be compiled as follows [1]:

- It provides mobility and liquidity to the investment tools in goods
- It provides the distribution of capital ownership to the wider parts
- It creates an environment where the stocks which are in the exchange list can compete each other
- It provides rational usage of idle resources and emergence of bigger capitals
- It provides decrement of capital costs by increase at stock prices of the corporates.
- It provides flowing of savings and capital to the profitable areas with the effects of prices created at the markets
- In the framework of public disclosure and sheerness regulations, it provides investors to reach information related to the stocks and shares and information that shapes their decisions without cost.

There is crucial contribution of securities exchanges in the development of country economies. These are [13]:

- Providing savings to be transferred to the companies as financial resources
- Companies can get long-term resources without interest with the help of stock exchanges instead of having short term credits with high interest from banks
- Turn of these resources to the investments provides the development of the economy and creates employment and development.

Efficiency and the developmental level of financial markets is closely related to the economic growth. Efficient and developed financial markets lead the economic growth by providing efficient distribution and usage of savings. Well-functioning financial systems makes resource allocation easier. Specifically, efficient financial system makes easier the mobility of savings, risk management and diversification, efficiency at resource distribution, auditing and observation, goods and service commerce [18].

In parallel with the development of capital markets, with reasons such as going public of corporates, increase at the number of stocks, stocks becoming attractive, small savings are directed towards stocks. Direction of small savings to the stocks means distribution of ownership to the base. In addition, companies’ stock selling by capital increase and increasing the number of partners are vital for the distribution of ownership to the base [13].

The primary factor of stock exchanges is the aim for the profit. Stockholder act for taking dividends or capital gaining through selling the stock with higher price. As a result of people’s commerce decisions, general tendency of the markets is emerged. Stock exchanges are important barometers of the countries they belong for their political or economic situations. At the
same time, they are affected by country politics and economics they belong.

The existence of stock exchange in a country may not be a sign of developed capital market. However, presence and functioning of stock exchange is a must to mention a healthy capital market. Following conditions are necessary to form for stock exchanges are useful for country economy and for investors [4]:

- Commerce should be in a complete honest environment
- Easy and fast operations
- Stocks which are dealt in exchange should be wide in a degree for a meaningful determined prices
- A flow of information should be provided for informing of savers and authorities about determined prices in a systematic and ordered fashion

3. History Of Stock Exchanges In Turkey

Before looking for development of stock exchange in Turkey, if we look at the emergence of it in the world; first stock exchange is established in 1487 in Anvers city of Europe. In 16. Century, it is replaced by Amsterdam stock exchange. In Amsterdam Stock Exchange, East India Company from Netherlands exported its stocks for the first time in 1602 [17]. Exportation of stocks in 16. And 17. Century, was started by public in England, France and Germany. With industrialization, at the beginning of 18. Century private stocks are placed in the markets. As a result of this, London Stock Exchange in 1773, Brussel Exchange in 1801, Rome Exchange in 1802, Milano Exchange in 1808 and Amsterdam Exchange in 1876 has been officially established [6].

When we look at the situation in Ottoman Empire; the idea to establish a stock exchange in Galata in Istanbul can be accepted as a result of fast development of stock exchanges in Europa. In addition, the other factors which are influential are: beginning of commerce of stocks and holdings of joint-stock companies in Europe, through minorities mediation by bankers and moneychangers in Istanbul and the commerce of bonds which are issued because debts starting with 1854 Crimea War [15]. In 1864, as a result of increase of influence of foreigners in Istanbul Galata Stock Exchange and acquiring illegal gains from people by stock speculations, in 1866 Dersaadet Bonds Stock Exchange is established. In this stock exchange, dealing of foreign capital company bonds and stocks in addition to the state bono and holding selling is planned too [11]. At the beginning of 20. century, improvement attempts in Ottoman Stock Exchange is started, a new regulation of stock exchange starting from 1904 is prepared. Regulation works at Ottoman Stock Exchange continued until 1906 and with a regulation of same year Dersaadet Bonds Exchange is considered as “Shares and Bonds Stock Exchange” [10]. This stock exchange came to an end with the collapse of Ottoman. The organization of capital markets during the beginning of Republic period is achieved with “Stocks and foreign Exchange Law” numbered 1447, with a new name “Istanbul Stocks and Foreign Exchange”. This stock exchange is also closed because of reasons such as Great Depression and later World War II [14].

With Capital Market Law issued after 1980 and “Legislative Decree About Stock Exchange” issued in 198, establishment and running of new stock exchange was decided. In 1984, regulation of “Rules of Establishment and Functioning of Stock Exchanges” was published. Istanbul Stock Exchange went into action at the beginning of 1986 [18].

One of the vital reasons of establishing IMKB and the start of the modern exchange is “bankers’ crisis” event between 1979-1982. In August of 1981, a confidence crisis has emerged with first instances of bankers’ scandal showed up. Bankers’ event has shaken confidence of savers towards financial markets and intermediary firms operating at the market. This bankers’ event made necessary for regulations at capital markets protecting savers and valuation of savings in an efficient way [16]. Since there was no Capital Market Law in these days, bankers’ system damaged many people, seeking for a new system began and Capital Market Board was established for auditing all institutions of capital markets.

In August 1989, declaration numbered 32 about Protection of Turkish Lira Value was published and international expansion of capital market and stock exchange was paved away. Interest and demand of foreigners to IMKB increased transaction size and brought big aliveness. Important increments for index base too has been achieved [16].
In this period, many steps related to the stock market were taken and development of this market is tried to be achieved. One of the prominent development in latest years is the change of name from “Istanbul Menkul Kiyimetler Borsası” (IMKB) to Borsa Istanbul in April 5 2013. This progression can be taken as one of the building blocks of project to make Istanbul a financial center.

In addition, after the change of Capital Market Law in 2012, many transformations have been achieved in Borsa Istanbul too. Opening of new markets, new products, various worldwide partnerships are some them. The most vital change lately is the activation of all peripheral systems such as share market operation system, bartering system, observance and risk management system as a first part of activation of “Transformation with Technology Program” called BISTECH in 30 November 2015. Later on, as a continuation of the system, operation of systems like Derivatives Loan Instruments and Precious Metals and Stones Markets under a single platform is aimed [3].

4. Development Of Borsa Istanbul in Years

The development period was tried to be summarized with the help of various tables below to make the development until these days to be more understandable. Although it is not accurate to evaluate the number of publicly offered companies as a direct measurement of success of failure of stock markets, second hand markets are known to be important for their signals to the economy. In this framework, liquidity which second hand markets provide and the increase of number of companies which investors prefer is important. In case there is no liquidity in second hand market, primary hand market activities do not develop as well. Second hand market activities or public offers have contributions to the increase of investments in economy, economic growth and employment. From this perspective, public offers have a vital place in economy and contribute to the efficient distribution of resources [18]. According to this, in Graph 1, the number of companies operating in Borsa Istanbul in years is shown.

Graph 1: The number of companies operating in Exchange Markets in years


In Borsa Istanbul which is founded with 80 companies operating in 1986, the number of trading companies increased in years. In addition, besides national Market some companies are allowed to trade in new markets as well. The number of companies which are in increasing trend until 2000 because of new public offers, decreased in 2001, 2002 and 2003 since in the crises in November 2000 and February 2001 some corporates were closed. However, with the public offer mobility in 2010, the number of companies increased again and the number of companies trading in Stock Exchange markets increased to 429. The increase at company number contribute to the depth increment in Borsa Istanbul and new companies to provide finance for their investments. Additionally, it provides more investment options to the investors.

In graph 2, development of trading size of Borsa Istanbul in years is given. Annually, trading size starting from 13 million dollars
became 375 billion dollars at the end of 2015. Annual trading size which made leapt with foreign interest to Borsa Istanbul since 1990, made another leap with the increase in interest to the developing markets after 2003. Increase of trading size is an indicator of market depth.

**Graph 2: Trading Size in Stock Exchange Istanbul in years (Million $)**

Reference: It is taken from annual reports of IMKB and MKK Stock Exchange Trends reports

Market prices of companies trading in Borsa Istanbul, market capitalization in other words, is shown in Graph 3. While total market price of 80 companies trading in 1986 was 938 million dollars, this amount increased to 190 billion dollars in 2015. Increase of the number of companies which are publicly offered, increase of company values make possible to decrease in speculative motilities and healthy market.

**Graph 3: Total Market Prices of Companies Trading in Borsa Istanbul (Million $)**

Reference: TSPB Annual Reports

In table 1, gaining of Borsa Istanbul is compared with other investment instruments. In the period from its foundation to nowadays, Borsa Istanbul became the most profitable exchange in the world in some years. Ignoring 2001 crisis in Turkey and global crisis years, it is seen that Borsa Istanbul was profitable in most of the years. In addition, there are no two years following each other which causes loss. In many years, investors who invested to the stocks made gaining above gaining which other investment instruments provided. As it is seen at the table, in 2003-2004, 2005-2007, 2009-2010, 2012-2014, Stock Exchange provided much more gaining than other investment instruments. According to a research from Wall Street Journal, in the period of 2004-2013, BIST100 brought % 418 to its investors, Dollar brought % 149, Euro % 206, Gold % 425 and Interest brought % 340 gaining [19]. These data show that investing in Borsa Istanbul is a profitable option for its investor in the long run.
The ratio of national and foreign investor is shown in Graph 4. According to this, as of the date of 31.12.2015 % 62.36 of stocks in stocks exchange belong to foreigners, % 37.64 belong to national investors. For the sake of comparison, this ratio of foreigners in Borsa Istanbul was % 39 in 1997. When the global crisis started, this ratio of foreigners increased to % 72. This fact is important since it shows confidence of foreigner investors to Borsa Istanbul.

Graph 4: Ratio of National and Foreigner Shares in Borsa Istanbul


The investments of foreign investors and their presence in financial markets and Borsa Istanbul result from many factors. First of these factors, intent of international investors to value their investments abroad stock exchanges to differentiate risk-gaining. Secondly, investment of USA, European Union and Fareast Asian countries to other countries to make more gaining. Fourth of all is the fact that investment funds and hedge funds are consist of foreign security funds [2].

In conclusion, in the period from its foundation to this day, Borsa Istanbul made a significant leap and showed an important development with its technology, infra-structure institutionalization and many other achievements. This development period continues within the framework of Istanbul as financial center project. However, interest of Turkish investors to developing Borsa Istanbul will be revealed in the following section.

5. Evaluation Of Investor Profile In Borsa Istanbul

Development of companies and their well organization encourage them to public offers and provide the capital to be distributed to the base. The owners of companies who do not want to share the control of their own companies with a bigger partner but who’s still intending to find resources for their investments can sell stocks to millions of investors. By this way, many people find chance to utilize company income by being partners to them. Distribution of capital ownership provide the partnership of small saving owners to the bigger enterprises (İMKB, 2008:10). In addition to the presence of individual investors, presence of institutional investors is also important. It is necessary to have enough number of institutional investors.

### Table 1: Nominal Annual Gaining of Investment Instruments (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Stock Exchange</th>
<th>Interest</th>
<th>Dollar</th>
<th>Gold</th>
<th>DIBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>38.1</td>
<td>34.3</td>
<td>113.6</td>
<td>121.9</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>-6.9</td>
<td>58.0</td>
<td>10.0</td>
<td>34.1</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>47.2</td>
<td>46.0</td>
<td>-10.4</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>39.8</td>
<td>24.6</td>
<td>0.7</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>62.30</td>
<td>15.15</td>
<td>-3.20</td>
<td>10.90</td>
<td>22.38</td>
</tr>
<tr>
<td>2006</td>
<td>1.40</td>
<td>15.20</td>
<td>5.90</td>
<td>29.80</td>
<td>11.81</td>
</tr>
<tr>
<td>2007</td>
<td>41.90</td>
<td>16.99</td>
<td>-17.70</td>
<td>5.90</td>
<td>22.79</td>
</tr>
<tr>
<td>2008</td>
<td>-53.50</td>
<td>15.46</td>
<td>31.20</td>
<td>34.80</td>
<td>17.23</td>
</tr>
<tr>
<td>2009</td>
<td>95.50</td>
<td>18.91</td>
<td>-2.40</td>
<td>33.50</td>
<td>21.24</td>
</tr>
<tr>
<td>2010</td>
<td>31.53</td>
<td>7.93</td>
<td>1.01</td>
<td>24.77</td>
<td>11.00</td>
</tr>
<tr>
<td>2011</td>
<td>-20.19</td>
<td>7.37</td>
<td>22.85</td>
<td>44.76</td>
<td>5.37</td>
</tr>
<tr>
<td>2012</td>
<td>-45.77</td>
<td>7.10</td>
<td>-4.40</td>
<td>-1.91</td>
<td>16.29</td>
</tr>
<tr>
<td>2013</td>
<td>-7.76</td>
<td>6.10</td>
<td>15.96</td>
<td>-16.14</td>
<td>0.51</td>
</tr>
<tr>
<td>2014</td>
<td>18.78</td>
<td>5.09</td>
<td>11.13</td>
<td>8.97</td>
<td>14.93</td>
</tr>
<tr>
<td>2015</td>
<td>-12.85</td>
<td>4.96</td>
<td>27.25</td>
<td>13.47</td>
<td>1.37</td>
</tr>
</tbody>
</table>
trading in the market for markets to be efficient. Institutional investors have vital role in determination of prices in the market by commerce with high amounts and increase the depth of the market. Institutional investors, as opposed to individual investors, decide investments after a detailed investigation of all other investment instruments. Besides, since institutional investors make portfolio investment, extreme fluctuations in the market decrease. Because of these benefits, the weight of institutional investors in a market matters (Serpam, 2011:94).

Development of Borsa Istanbul from both individual investors and institutional investor perspective, is tried to be shown with the help of tables below.

Table 2: National Saving Distribution (Billion TL)

<table>
<thead>
<tr>
<th>Million TL</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2015 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Stationary</td>
<td>621.918</td>
<td>675.832</td>
<td>806.525</td>
<td>913.156</td>
<td>1.108.075</td>
<td>1.472.612</td>
<td>1.665.504</td>
<td></td>
</tr>
<tr>
<td>TL Depository</td>
<td>331.826</td>
<td>375.081</td>
<td>456.971</td>
<td>519.788</td>
<td>611.011</td>
<td>650.366</td>
<td>701.862</td>
<td>42</td>
</tr>
<tr>
<td>Foreign Exchange account</td>
<td>139.334</td>
<td>142.725</td>
<td>180.689</td>
<td>186.935</td>
<td>286.396</td>
<td>324.063</td>
<td>448.370</td>
<td>27</td>
</tr>
<tr>
<td>DI BS</td>
<td>64.761</td>
<td>60.259</td>
<td>67.087</td>
<td>73.006</td>
<td>611.011</td>
<td>650.366</td>
<td>701.862</td>
<td>22</td>
</tr>
<tr>
<td>Share stock</td>
<td>40.666</td>
<td>50.291</td>
<td>53.072</td>
<td>73.034</td>
<td>89.699</td>
<td>85.114</td>
<td>65.704</td>
<td>5</td>
</tr>
<tr>
<td>other</td>
<td>45.331</td>
<td>47.476</td>
<td>48.706</td>
<td>60.344</td>
<td>63.635</td>
<td>68.278</td>
<td>65.704</td>
<td>4</td>
</tr>
<tr>
<td>Abroad stationary</td>
<td>126.197</td>
<td>164.340</td>
<td>179.362</td>
<td>275.642</td>
<td>261.468</td>
<td>348.519</td>
<td>328.970</td>
<td></td>
</tr>
<tr>
<td>Share stock</td>
<td>8.263</td>
<td>102.847</td>
<td>86.096</td>
<td>139.618</td>
<td>122.219</td>
<td>159.243</td>
<td>141.206</td>
<td>43</td>
</tr>
<tr>
<td>DI BS</td>
<td>30.765</td>
<td>43.836</td>
<td>67.530</td>
<td>101.718</td>
<td>105.033</td>
<td>122.412</td>
<td>100.171</td>
<td>30</td>
</tr>
<tr>
<td>Eurobond</td>
<td>1.227</td>
<td>1.562</td>
<td>767</td>
<td>814</td>
<td>675</td>
<td>1.542</td>
<td>932</td>
<td>1</td>
</tr>
<tr>
<td>Depository</td>
<td>11.574</td>
<td>16.095</td>
<td>24.969</td>
<td>33.497</td>
<td>33.541</td>
<td>61.983</td>
<td>83.629</td>
<td>26</td>
</tr>
</tbody>
</table>

Reference: TSPB It is compiled from summary data of Capital Market

Table 3 shows the distribution of investors in Borsa Istanbul. According to this, as of the date of end of 2015, % 98,5 of total investors are national investors. Total number of national investors are 1.049.578, total number of foreign investors is 9.735. Approximately from 23.5 million accounts, there is a balance in only 1 million accounts. Additionally, although national individual investors consist of % 98,5 of all investors, they have half of stock portfolio in national investors. Other half belongs mainly to legal entities and funds. In foreign investors, the portfolio mainly belongs to foreign funds.

Table 3: Distribution of Investors in Borsa Istanbul (2015)
The number of individual investors (who trades for their own name) except the funds, legal entities and investment partnership, is shown in Graph 5. In 2001, the number of individual investors being 1,030,569 decreased until 2007. After 2007, small increments in the number is observed. However, when we look at last 15 years, there is no significant increase in investor number. Only 13,384 people are added compared to 2001. This number is low considering a period as long as 15 years.

**Graph 5: Change of Individual Investor Number in Years**

There are many benefits of increase of investor number in stock market. These are [9]:
- High number of investors provide high prices of financial assets
- Wider gross customer number increase the companies recognition
- It provides the partnership of small savings to bigger enterprise
- It decreases the possibility of controlling the company by collecting company stocks
- It decreases the price fluctuations and volatility
- It provides depth in the market

The number of stock investors in Turkey is quiet low compared to some developed countries. The rate of stock investors to the population number is %2 in Turkey, this rate is %45 in USA, %41 in Australia and %18 in England. This situation shows there are many things to proceed.

**Graph 6: The rate of investor number to population of growth people in Turkey and in Developed Countries**

When we look at the size of portfolio of the people who are trading for their own name and account (Table 4), more striking results can be seen. Out of 1 million 43 thousand people, approximately 130,000 people have 1 thousand TL as the size of portfolio, and 675 thousand people have portfolio size between 1-10 thousand TL. In other words, in total 805,052 people have less than 10 thousand TL. These people, although they consist of %77 of individual investors, they own only %2 of portfolio. The number of people who have more than 10 thousand TL, is 238,901. People with 1 million portfolio size is 4150. These people own
more than half of the national investor portfolio. The rate of foreigner individual investors is low. Foreign investments are mainly fund and legal entity investments.

Table 4: Size of Individual Investor Portfolio (2015)

<table>
<thead>
<tr>
<th>Size of portfolio (TL)</th>
<th>NATIONAL</th>
<th>FOREIGNER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of investors</td>
<td>Value of portfolio (Thousand TL)</td>
</tr>
<tr>
<td>0 - 1</td>
<td>129.142</td>
<td>36</td>
</tr>
<tr>
<td>1 - 10.000</td>
<td>675.910</td>
<td>890.335</td>
</tr>
<tr>
<td>10.000 - 50.000</td>
<td>150.240</td>
<td>3.561.581</td>
</tr>
<tr>
<td>50.000 - 100.000</td>
<td>40.495</td>
<td>2.850.038</td>
</tr>
<tr>
<td>100.000 - 500.000</td>
<td>38.919</td>
<td>7.955.881</td>
</tr>
<tr>
<td>500.000 - 1.000.000</td>
<td>5.097</td>
<td>3.610.067</td>
</tr>
<tr>
<td>&gt; 1.000.000</td>
<td>1.450</td>
<td>24.799.897</td>
</tr>
<tr>
<td>Total</td>
<td>1.043.953</td>
<td>43.667.839</td>
</tr>
</tbody>
</table>

Reference: MKK Data

When we look at according to age, the interest of people between age of 35-44 seems to be higher. With increasing age, the number of investor decreases. However, average size of portfolio increases. People in the group of age 0-24 too have high average portfolio size.

Table 5: Individual Investors according to age groups (2015)

<table>
<thead>
<tr>
<th>Ages</th>
<th>Number of investors</th>
<th>Portfolio value (Mn.TL)</th>
<th>Average size of portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-24</td>
<td>13.462</td>
<td>536</td>
<td>39.837</td>
</tr>
<tr>
<td>25-34</td>
<td>117.994</td>
<td>2.634</td>
<td>22.324</td>
</tr>
<tr>
<td>35-44</td>
<td>289.256</td>
<td>8.233</td>
<td>28.462</td>
</tr>
<tr>
<td>45-54</td>
<td>287.243</td>
<td>12.726</td>
<td>44.304</td>
</tr>
<tr>
<td>55-64</td>
<td>200.232</td>
<td>9.769</td>
<td>48.790</td>
</tr>
<tr>
<td>65+</td>
<td>135.766</td>
<td>9.770</td>
<td>71.959</td>
</tr>
</tbody>
</table>

Reference: MKK Data

When national and foreigner investors are compared according to their gaining, national investors gained more than foreigners in all studied years. In losing years, still national investors made less losses compared to foreigners.

Table 6: Comparison of gaining of national and foreigner investors

<table>
<thead>
<tr>
<th>BIST100 Gaining</th>
<th>Foreign Investor Gaining</th>
<th>National investor gaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 -%63</td>
<td>-%65</td>
<td>-%58</td>
</tr>
<tr>
<td>2009 %101</td>
<td>%90</td>
<td>%124</td>
</tr>
<tr>
<td>2010 %20.9</td>
<td>%21</td>
<td>%35.5</td>
</tr>
<tr>
<td>2011 -%36.8</td>
<td>-%33.2</td>
<td>-%28.1</td>
</tr>
<tr>
<td>2012 %62.1</td>
<td>%41.8</td>
<td>%59.7</td>
</tr>
<tr>
<td>2013 -%27.7</td>
<td>-%28.3</td>
<td>-%20.1</td>
</tr>
<tr>
<td>2014 %15.5</td>
<td>%14.3</td>
<td>%15.7</td>
</tr>
</tbody>
</table>

Reference: It is compiled from TSPB annual reports

Considering the duration of stock holdings of national and foreigner investors, very striking results can be seen. Foreigners hold stocks for all indexes way more than national investors. For instance, while foreign investors hold a stock for 230 days in average in BIST100, national investors hold their stocks for 33 days in average.
<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIST100 Foreign</td>
<td>230</td>
<td>268</td>
<td>287</td>
<td>343</td>
</tr>
<tr>
<td>BIST100 National</td>
<td>33</td>
<td>34</td>
<td>37</td>
<td>40</td>
</tr>
<tr>
<td>BIST30 Foreign</td>
<td>214</td>
<td>243</td>
<td>260</td>
<td>305</td>
</tr>
<tr>
<td>BIST30 National</td>
<td>28</td>
<td>26</td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td>BIST Industry Foreign</td>
<td>211</td>
<td>239</td>
<td>267</td>
<td>302</td>
</tr>
<tr>
<td>BIST Industry National</td>
<td>33</td>
<td>34</td>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>BIST Trade Foreign</td>
<td>328</td>
<td>417</td>
<td>444</td>
<td>639</td>
</tr>
<tr>
<td>BIST Trade National</td>
<td>61</td>
<td>71</td>
<td>63</td>
<td>54</td>
</tr>
<tr>
<td>BIST Services Foreign</td>
<td>571</td>
<td>688</td>
<td>651</td>
<td>837</td>
</tr>
<tr>
<td>BIST Services National</td>
<td>50</td>
<td>66</td>
<td>63</td>
<td>41</td>
</tr>
</tbody>
</table>

Foreigner investors carry goods 10 times longer in daily base compared to the national investors. The average holding of foreigners in 2015 at BIST100 was 230 days. The longest holding duration was 571 days in BIST Trade, the shortest one was 178 days for BIST Bank. National investors hold 33 days in BIST100, 92 days at BIST Holding and Investment as the longest duration, and as the shortest duration they invested for 19 days delay at BIST Bank. Foreigner investors hold their stocks 310 days in average, national investors hold them 40 days in average. This fact mirrors the investment perception and delay of two groups clearly.

**RESULTS AND SUGGESTIONS**

It is seen that trading size, the number of companies and capital value of Borsa Istanbul since its foundation has developed. Many steps have been taken to increase of sheerness and for technological and legal improvements for better operation of the stock exchange. In addition, it provided better gaining to its investors compared to other investment instruments in many years. However, it is seen that the share of stock exchange is way behind other investment instruments in national savings. The ownership of stocks in Turkey is way behind of other countries. When we look at from the perspective investor number, there is only tiny increase from 2001. The preferred point could not be achieved considering the interest of Turkish investors and investment preferences as stocks. When we evaluate the profile of Turkish investors in general, a great majority of them have portfolio size below 10 thousand TL and the duration of stock holdings are low. There are many factors for investors keep distance from stock exchange. The pre-requisite of investment is to providing confidence of investors against stock exchange. In this framework, it is necessary to avoid applications which might damage the investor confidence.

If the country and companies is growing, their profits are increasing, one of the ways citizens of that country to have a share from this growth is gaining dividends from company profits by investing to the companies. Companies should be encouraged to distribute more dividends. Turkey has young, dynamic population who might be interested in stock exchange. Since Turkish investors have little interest to the Borsa Istanbul, the weight of foreign investors in Borsa Istanbul is higher.

The increment of investor number in Borsa Istanbul can be achieved by both calling of previous investors again and of new investors. With new capital market law, many steps have been taken to protect the investors and precautions such as imposing fines for market damaging acts and for abusing information were taken. Return of previous investors to the stock exchange can be achieved by publishing more of these precautions through media. Although the works which have been done for the mobility of investors in 2012 are hopeful, they did not create expected results about the number of investors at Borsa Istanbul. Especially, as a result of crisis and hyperinflation at the beginning of 1990s and bad experiences of investors are the reasons why investors became distanced. It seems calling of new investors who did not experience bad results in the past, is easier. It can be achieved by encouragement of big holdings and companies to go public offers. In addition, the studies for increasing financial literacy which are continued by various institutions cooperation are also vital for calling of new investors. Expressing that stock exchanges are not playground but a place of investment to the public is necessary. It is necessary to emphasize sheerness and
The trustworthy nature of Borsa Istanbul as an alternative investment instrument.

The reasons why the most of the investors in Turkey got distanced from stock exchange should be investigated clearly and steps to remove these reasons should be taken. Especially, desire and demands of small investors at SPK regulations should be considered and a focus of small investor should be the basis. In other words, while deciding about Borsa Istanbul, not only requests of foreigner investors, institutional investors or stock brokers, but also requests of small investors should be considered. Especially, opening of complaint, information and investor consultancy offices in city center where the capital is high can be thought of as a new option to understand present problems of investors and to call new investors. The detection of transactions which cause losses for small investors must be achieved by using actively the technological infra-structure of Bistech and by integral structure with takasbank. An appropriate environment for investors should be created for stock exchanges to be useful for country economy and investors. Istanbul as being a financial center is another factor that might increase interest of investors to the stock exchanges.

References
[18]Serpam “Küresel Rekabet İMKB’nin Yapısal Konumlanması ve Alternatif Modeller” İ.Ü. sermaye Piyasaları Araştırma ve Uygulama Merkezi Araştırma Raporu 2011
THE EFFECTS OF EARTHQUAKES ON LOCAL ECONOMY: THE CASE OF SIMAV DISTRICT

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Abstract. There are many impacts of earthquakes such as social, environmental and urban. Earthquake which is a natural event affecting human life very closely, may result loss of life and property. In addition to that it may cause permanent and temporary discomforts as injuries and psychological traumas. The purpose of this study is more related to economic consequences of earthquakes. It is investigated that what kind of impacts and damages of Simav Earthquake in 2011 and its aftershocks cause on district’s economy. According to Turkish Statistical Institute, there are 25000 people living in district center of Simav. Along with villages this number reaches 70000. In this study, the answer to the question of how the 2011 earthquake affect Simav economy is investigated and also the perceptions and expectations of the victims are analyzed. Besides, migration of qualified and experienced employees from Simav district to surrounding provinces and migration from villages to town center is also examined. A survey implemented in the district center and SPSS program was used to analyze the data obtained.

Key Words: Earthquake, Local Economy, Migration, Unemployment, Employment.

1 This study was supported by Scientific Research Project Council of Dumlupınar University (DPU BAP). Project No. 2016-5.
1. Introduction

Earthquake is an unavoidable natural event that can be described as shaking of the ground caused by the sudden breaking and movement of large sections of the earth's rocky outermost crust. Since the beginning of the earth, it is well known that earthquakes affect many properties and lives where seismic activities are intense. Turkey is located on an earthquake belt known for its intense seismic movements. Taking into account this fact, it shouldn’t be forgotten that Turkey suffered many destructive earthquakes in the past and in the future earthquakes will continue to cause loss of lives and property [3].

On May 19th 2011, Simav district in Kütahya, Turkey shook with an earthquake and several aftershocks. The magnitude of the earthquake was 5.9. Earthquake and aftershocks disrupted electricity transmission and telecommunication services. Some buildings in the district were severely damaged [5].

Earthquakes crucially affect daily lives of people including social and economic dimensions where it struck. Studies in the literature deals with different aspects of earthquakes. The aim of this study is to investigate how the 2011 earthquake affect Simav economy and also to analyze the perceptions and expectations of the victims.

It is a fact that the earthquake in 2011 affected Simav district in many ways. The earthquake had many economic, social, psychological and institutional aspects. Thus, the purpose of this study is to investigate how the 2011 earthquake affected Simav economy and also to find out how people living in Simav perceive these effects economically. In this purpose 8 hypothesis were tested in the study. These hypothesis are listed below:

H1: There is a significant difference in terms of quality of life indicators according to gender in the first 12 months following the earthquake

H2: There is a significant difference in the credit loan variable for the first 12 months period following the earthquake with respect to income variable for post-earthquake period.

H3: The reason for moving out of the houses seems to be the earthquake.

H4: There is a significant difference in the residence variable before the earthquake and residence variable after the earthquake.

H5: There is a significant difference in considering to leave Simav according to gender in the first 12 months following the earthquake.

H6: There is a significant difference in considering to leave Simav for the first 12 months period following the earthquake with respect to income variable for post-earthquake period.

H7: There is a significant difference in considering to leave Simav for the first 12 months period following the earthquake with respect to employment opportunities for post-earthquake period.

H8: There is a significant difference in considering to leave Simav for the first 12 months period following the earthquake with respect to fear of getting fired for post-earthquake period.

The result of this study is important in the sense that if the economic effects of an earthquake and the perception of these effects by the people living in this area can be understood correctly by decision makers, it could be much more easy to cope with these negative effects of earthquakes.

2. Related Literature

For many years, common sociological and psychological effects of earthquakes have been investigated. Nevertheless, growing attention on investigating economic effects was a result of developments in econometric tools. Most of the empirical studies in the literature employed regional econometric methods and input output analysis.

One of the earliest studies belong to Ellison et al. They investigates the effect of an earthquake expectation on investment decisions. According to their simulation based studies, damages caused by a false prediction of an earthquake surpasses the gains of correct prediction of an earthquake [12]. Several years later Ewing et al. tried to determine the macroeconomic effects of earthquakes based upon two important indicators (real output and employment). By employing time series
analysis they found that the earthquakes has negative and statistically significant effect on both real output and employment. It is also stated in their study that real output returned back to its initial pre-earthquake levels but same inference cannot be made for employment [2]. Same year, Sawada and Shimizu took discussed the policies that government could follow in order to diminish the losses of natural disasters with reference to Hanshin-Awaji earthquake in 1995 [13]. In 2007, Dodo et al. developed a linear programming model to help decision makers in countries with intense seismic activities. This model is used to compare the pre-earthquake prevention spending and the post-earthquake reconstruction spending [1].

There are also empirical studies in the literature dealing with economic effects of Marmara earthquake in 1999. One of the first studies analyzing the effects of this earthquake on Turkish economy was carried out by Selçuk and Yeldan. A general equilibrium approach based on a simulation model with four different recovery policy was used in the study. Also it is estimated that the Marmara earthquake will reduce the GDP in a range of -4.5% and -8% [7]. Another study on 2001 earthquake was carried out by Efe and Demirci. They revealed that the destructive effects of 1999 Marmara earthquake damaged further due to the rapid increase in population and migration, unplanned, uncontrolled, and unscientific urbanization and industrialization and illegal housing [11]. After Efe and Demirci, Aktürk and Albini investigated the effects of Marmara earthquake on Turkish economy with regard to pre-earthquake economic conjuncture and post-earthquake economic conjuncture with adding earthquakes costs in their analysis [8]. They also make policy suggestions to reduce negative effects of the earthquake on performance of Turkish economy. Lately, Kotil et al. investigated the economic effects of Marmara earthquake on Turkish economy with reference to Kocaeli province [6]. It is stated in the study that retail and wholesale sectors were the most unfavorably affected sectors. Besides, it is also seen in the study that the restrictive effects of earthquake on tourism and manufacturing sectors occurred in a considerable extend

There are also some studies on earthquakes in general for Turkey. One of them is Karagöz. Karagöz investigated the macroeconomic effects of earthquakes by employing distributed lag model. He found that while GDP declines in the following 3 months of earthquake, real non-interest public expenditures and internal debt stock increases [9]. In another study carried out by Güvel, macroeconomic effects of earthquakes are analyzed by using quarterly data in the period of 1987-2000 [4]. According to this study, a serious decline in real output is observed following the first 3 months of the earthquake and severity of this decline is closely related to magnitude of the earthquake.

Tuna et al. analyzed the Van earthquake in 2001. They tried to reveal the perceptions, assessments and satisfaction degrees of earthquake victims against the activities and organizational behaviors displayed in earthquake zone [10].

3. Data

Population the study comprised of the people living in Simav district center. According to Turkish Statistical Institute, the population of Simav district center is 25,000 in 2015. Our sample comprised of 400 random people living in Simav district center who are at least 23 years old. The sample constitutes 2.7% of the population.

We employed survey method in order to collect the data for our study. Demographic characteristics, migration, recent and pre-earthquake economic conditions such as employment, income and housing of the participants was investigated through the survey.

4. Analysis Results

The main findings of the study is based on two important method of analysis. One is t test, and the other is ANOVA test. According to these tests, results and main findings are listed below.

Table 1: T test results for quality of life indicators according to gender in the first 12 months following the earthquake
<table>
<thead>
<tr>
<th>Quality of Life Indicators</th>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>df</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household income</td>
<td>Male</td>
<td>225</td>
<td>1,5422</td>
<td>0,75548</td>
<td>398</td>
<td>4,593</td>
<td>0,000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>1,2286</td>
<td>0,56149</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surrounding damaged scenery</td>
<td>Male</td>
<td>225</td>
<td>2,6933</td>
<td>0,53385</td>
<td>398</td>
<td>-2,378</td>
<td>0,018</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>2,8114</td>
<td>0,43402</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to find food and necessities</td>
<td>Male</td>
<td>225</td>
<td>1,9156</td>
<td>0,80010</td>
<td>398</td>
<td>1,321</td>
<td>0,187</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>1,8057</td>
<td>0,85566</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment opportunities</td>
<td>Male</td>
<td>225</td>
<td>1,8622</td>
<td>0,85233</td>
<td>398</td>
<td>0,518</td>
<td>0,605</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>1,8171</td>
<td>0,87805</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident rental prices</td>
<td>Male</td>
<td>225</td>
<td>2,7956</td>
<td>0,43607</td>
<td>398</td>
<td>-2,580</td>
<td>0,010</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>2,8971</td>
<td>0,32296</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential prices</td>
<td>Male</td>
<td>225</td>
<td>2,8444</td>
<td>0,38704</td>
<td>398</td>
<td>-2,195</td>
<td>0,029</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>2,9200</td>
<td>0,27207</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furniture and white appliances prices</td>
<td>Male</td>
<td>225</td>
<td>2,8489</td>
<td>0,38302</td>
<td>398</td>
<td>-1,897</td>
<td>0,059</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>2,9143</td>
<td>0,28074</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garment and clothing prices</td>
<td>Male</td>
<td>225</td>
<td>2,3511</td>
<td>0,81630</td>
<td>398</td>
<td>-4,299</td>
<td>0,000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>2,6800</td>
<td>0,67840</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food prices</td>
<td>Male</td>
<td>225</td>
<td>2,7911</td>
<td>0,40742</td>
<td>398</td>
<td>-3,233</td>
<td>0,001</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>2,9086</td>
<td>0,28904</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of life in general</td>
<td>Male</td>
<td>225</td>
<td>1,7956</td>
<td>0,86756</td>
<td>398</td>
<td>0,014</td>
<td>0,989</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>1,7943</td>
<td>0,91788</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

T test results in Table 2 reveals that residential rental prices (p<0.05), residential prices (p<0.05), garment and clothing prices (p<0.05), food prices (p<0.05) show statistically significant difference according to gender. According to that, male participants display more optimistic view only in household income compared to female participants. In other quality of life indicators such as surrounding damaged scenery, residential rental prices, residential prices, garment and clothing prices and food prices, female participants are less optimistic than male participants.

Table 2: One way ANOVA test results for post-earthquake income and credit loan for expenditures

<table>
<thead>
<tr>
<th>Post-earthquake income</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>Minimum</th>
<th>Maximum</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit loan for expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased</td>
<td>286</td>
<td>1,0629</td>
<td>0,24328</td>
<td>1,00</td>
<td>2,00</td>
<td>2</td>
<td>1,394</td>
<td>0,249</td>
</tr>
<tr>
<td>Not changed</td>
<td>66</td>
<td>1,1212</td>
<td>0,32887</td>
<td>1,00</td>
<td>2,00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
One way ANOVA test result are shown in Table 2. According to that, there is no statistically significant difference between credit loans for expenditures caused by earthquake (p<0.05) and post-earthquake income change.

Table 3: T test results for reasons of moving out after earthquake

<table>
<thead>
<tr>
<th>Reason for moving out after earthquake</th>
<th>N</th>
<th>Mean</th>
<th>Test Value</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>158</td>
<td>1,0949</td>
<td>1,5</td>
<td>-17,315</td>
<td>157</td>
<td>0,000</td>
</tr>
</tbody>
</table>

158 out of 400 participants (40% of all participants) responded the survey that they move out after the earthquake. According to t test results in Table 3, earthquake is the only reason for moving out after occurrence of the earthquake.

Table 4: One way ANOVA test results for resident before and after earthquake

<table>
<thead>
<tr>
<th>Resident before earthquake</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>Minimum</th>
<th>Maximum</th>
<th>df</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident after earthquake</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home owner</td>
<td>213</td>
<td>1,4930</td>
<td>0,51045</td>
<td>1,00</td>
<td>3,00</td>
<td>397</td>
<td>36,130</td>
<td>0,000</td>
</tr>
<tr>
<td>Rental</td>
<td>174</td>
<td>1,8448</td>
<td>0,40809</td>
<td>1,00</td>
<td>3,00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belongs to a family member</td>
<td>13</td>
<td>2,2308</td>
<td>0,59914</td>
<td>1,00</td>
<td>3,00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to Table 4, it can be seen that residents of people in Simav before the earthquake (p<0.05) show statistically significant difference compared to residents after the earthquake.

Table 5: T test results for participants ever think about leaving Simav after the earthquake according to gender

<table>
<thead>
<tr>
<th>Migration</th>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>df</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever think about leaving Simav</td>
<td>Male</td>
<td>225</td>
<td>1,1511</td>
<td>0,52125</td>
<td>398</td>
<td>1,236</td>
<td>0,217</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>175</td>
<td>1,0914</td>
<td>0,41893</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is shown in Table 5 that there is clearly no statistically significant difference according to their gender for the people ever think about leaving Simav after earthquake.

Table 6: One way ANOVA test results for post-earthquake income and thinking about leaving Simav.

<table>
<thead>
<tr>
<th>Post-earthquake Income</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>Minimum</th>
<th>Maximum</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever think about</td>
<td>286</td>
<td>1,1189</td>
<td>0,4737</td>
<td>1,00</td>
<td>3,00</td>
<td>2</td>
<td>0,124</td>
<td>0,884</td>
</tr>
</tbody>
</table>
leaving Simav

<table>
<thead>
<tr>
<th></th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not changed</td>
<td>0,50360</td>
</tr>
<tr>
<td>Increased</td>
<td>0,48925</td>
</tr>
</tbody>
</table>

According to Table 6, there is no statistically significant difference between post-earthquake income and thinking about leaving Simav after earthquake.

Table 7: One way ANOVA test results for employment opportunities and thinking about leaving Simav.

<table>
<thead>
<tr>
<th>Employment opportunities</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>Minimum</th>
<th>Maximum</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever think about leaving</td>
<td>Decreased</td>
<td>185</td>
<td>1,1081</td>
<td>0,45348</td>
<td>1,00</td>
<td>3,00</td>
<td>2</td>
<td>0,589</td>
</tr>
<tr>
<td>Simav</td>
<td>Not changed</td>
<td>93</td>
<td>1,1720</td>
<td>0,54421</td>
<td>1,00</td>
<td>3,00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased</td>
<td>122</td>
<td>1,1148</td>
<td>0,46704</td>
<td>1,00</td>
<td>3,00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to Table 7, there is no statistically significant difference between employment opportunities and thinking about leaving Simav after earthquake.

Table 8: One way ANOVA test results for fear of getting fired and thinking about leaving Simav.

<table>
<thead>
<tr>
<th>Fear of getting fired</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dv.</th>
<th>Minimum</th>
<th>Maximum</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever think about leaving</td>
<td>Decreased</td>
<td>4</td>
<td>1,2500</td>
<td>0,50000</td>
<td>1,00</td>
<td>2,00</td>
<td>2</td>
<td>2,241</td>
</tr>
<tr>
<td>Simav</td>
<td>Not changed</td>
<td>88</td>
<td>1,2159</td>
<td>0,61493</td>
<td>1,00</td>
<td>3,00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased</td>
<td>308</td>
<td>1,0974</td>
<td>0,43119</td>
<td>1,00</td>
<td>3,00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to Table 8, there is no statistically significant difference between fear of getting fired and thinking about leaving Simav after earthquake.

One of the most concerned subjects about earthquakes is their economic dimension. Studies on this subject usually carried out in geographically middle or large scale. And this dimension of earthquakes are usually investigated with regard to their employment, production, income and psychological effects. In this study, the effects of an earthquake struck a small district of Kütahya was investigated from various aspects such as credit loans, quality of life, migration decisions, housing and residential conditions, employment and fear of getting fired.

5. Conclusions and Recommendations

T test results in the study reveals that residential rental prices, residential prices, garment and clothing prices and food prices show statistically significant difference according to gender. According to that, male participants display more optimistic view only in household income compared to female participants. It can be said that female participant did not perceive intensive negative effects of earthquake as male participants. Despite this difference, it can be said that earthquake reduced quality of life in Simav in...
a considerable extent. 71% of participant stated about a declension in their household income, 77% stated an increase in surrounding unhealthy environmental conditions such as damaged buildings and construction noises, 42% of them stated a decline in the availability of food and necessities, 46% stated a decline in the employment opportunities, 85% stated an increase in furniture and white appliances prices, 88% states an increase in residential house prices, 67% stated an increase in garment and clothing prices, 84% stated an increase in food prices and 51% stated a declension in their overall quality of life.

According to survey results, 93% of all participant to survey demanded a credit loan from local banks. The rate of people ever think about emigrating Simav just after the earthquake is 94%. Emigration idea is more intense among the people who has fear of getting fired, suffers a declension in employment opportunities, and suffers a declension in household’s income and also among females.

The main recommendations of this study would be specified as follows. First, in order to reduce economic effects of earthquakes, ordinary but compulsory daily needs such as food, garment and clothing and housing should be met and fulfilled. Second, incentives for employers in order to pay the wages of their employees should be put into action. Third, incentives to prevent emigration from earthquake area should be put into action by decision makers.

References

A Research On The Factors That Affect The University Students Preference to Purchase Mobile Phones

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Abstract

Along with globalization, the developments in technology have caused the use of mobile phones spread very quickly. Among all communication technologies, particularly young people use mobile communication most commonly. In this study, the aim is to determine the factors that affect students’ purchasing preferences of mobile phones. Within this scope, surveys have been conducted to 300 students studying at Trakya University Keşan Yusuf Çapraz School of Applied Sciences. Factor analysis have been conducted to the data gained from the survey. The factor analysis with 13 variables has been determined as 3 factors (Functions of the Mobile Phone, Brand and External Conditions Exposure, the Importance of the Price). In addition, Kolmogorov Smirnov normal distribution test has been conducted to the subdimensions of the scale of Mobile Phone Purchasing Preferences of the Students. According to the results of Kolmogorov Smirnov normal distribution test, it has been determined that nonparametric tests are needed to be conducted and therefore, Mann Whitney U and Kruskal Wallis test have been conducted. According to the results of the tests, it has been found that the subdimension of Functions of Mobile Phone differs according to age and the subdimension of the Importance of the Price differs according to the income of the family.

Keywords: Mobile Phone, purchasing preference, factor analysis

1. Introduction

Communication, which is among the essential factors of humans’ individual and social lives, has a great importance. People go on their daily lives by communicating with other people, organizations, institutions, groups and themselves [13]. Despite the fact that the term ‘communication’ covers a large meaning as a concept, according to communication studies, communication can be defined as: the exchange of emotions, thoughts, behaviors and knowledge between two people or groups of people which are named as sender and receiver [7]. When we say communication, mass media, which is carried out with mass communication tools such as radio, television, cinema and the press, the media institutions, the organizational structures of these institutions, the content of media tools and the studies which try to find out the effects of these content on audience are the first things that come into minds [18]. On the other hand, mobile communication, which is one of the mass communication tools, provides the users with the opportunities of private communication with their families, children and friends [23]. Mobile phones have an important role among mass communication tools. Mobile phones are one of the important communication Technologies in our daily lives and influence the relations and interactions of human beings both directly and indirectly in many aspects [30, 26].

Mobile phones, which are the most stunning examples of communication technologies in terms of social lives, have been observed to be one of the most rapidly-developing sectors with more than 3 billion subscribers throughout the world since it was released in 1990s [16]. The rate of mobile phone use in Turkey, which has the youngest population in Europe, is high and Turkey is the 6th country which has the youngest user profile throughout the world [8].
As well as the communicative use of the mobile phones, with short message service between individuals, internet access, sending/receiving images, and sharing location the use of mobile phones has had an important place in people’s lives. It has been observed that the historical development of mobile phones has formed the ways people perceive and use mobile phones [17].

New generation communicational information technologies can change the purchasing decisions of young consumers dramatically and have a significant influence on life styles of young people [5, 27, 29]. In today’s society, which mass media has a large control over, one of the groups that are largely affected by these technological tools is the youth. The use of mobile phones is also common among higher education students as is among the young people. The reason of this is that the students consider their multi-functional mobile phones as a resource of information and interest [14].

The purpose of this research is to reveal the factors that affect the mobile phone preferences of the university students in Keşan Yusuf Çapraz School of Applied Sciences in Trakya University. In today’s increasing conditions of competition, in order to sustain in the market, organizations need to form a marketing system which is able to meet the needs of target consumers. This study is significant in that it can enlighten the production policies of the organizations to some extent.

1.1. The Invention of Mobile Phones

In the past, the mobile phones could be seen in space movies. Martin Cooper, who is the inventor of mobile phone, was inspired from the radio telephone in the series of Star Trek. It was possible to communicate via radio telephones between long distances before mobile phones. The radiotelephones became smaller in time and the ones which were possible to carry on back were produced. When the radio telephones got smaller, mobile phones were set up into vehicles in 1962 in Sweden but the fact that the mobile phones were heavy was posing a problem. The weight of transistor mobile phones was reduced to 20 kilograms. The mobile phone had been produced. These mobile phones were huge and it was difficult to make them smaller. Even if the devices got smaller, there were no durable batteries for them in the market. Martin Cooper’s job in Motorola was to make the mobile phones smaller. Within this scope, he decided to make the mobile phones so small that it would be possible to hold in hand. He would turn the fictitious mobile phone in Star Trek series into a real one. The first mobile phone in the world was introduced to the Press on 3rd April, 1973 [35].

Martin Cooper, who became the inventor of the first mobile phone in 1973, paved the way for GSM technology. The opinion that the mobile phones provide connection and require cables to be laid in everywhere in the world caused the studies and works of mobile phones which were started in 1982 to be carried out. According to the data acquired the first mobile phone call was carried out in Finland and in 1992 the first SMS was sent [31].

In 2000s on the other hand, the mobile phones which were possible to carry in automobiles finally became hand-held. These devices that we are almost glued to are required to be personalized and intrinsic to us as in every item we have. At that point, mobile phone accessories stepped in and became an important supplement of mobile phones by completing their developments together with mobile phones in time [34]. The first mobile phone which looks like a brick when compared to very small mobile phones that are produced today was a revolutionary invention at that time. When it is considered that the former mobile phones in cars weighed 13 kg, it is easier to understand the change that the first mobile phone created. While Cooper was working as a system department manager in Motorola, he explained the underlying idea of the development of mobile phone as: “Our main dream was not to obliged people to speak to cars. People did not want to call a table or a wall. They wanted to call other people [32].

1.2. Statistics of Mobile Phone Use in Turkey

Information and Communication Technologies Authority announced the statistics of mobile phone use for the first 9 months of 2014. According to the report prepared, 72 million mobile phones were used in the first 9 months in Turkey. 51,5 billion-minute phone calls were made with these
telephones and 4119 SMSs a second were sent. At the present time in which even primary school children have mobile phones, there are 71 million 908 thousand 742 active mobile phone lines according to official records. This number is equal to 112% of the country population excluding the children aged between 0 – 9. The number of SMSs which were sent from these 72 million phones in the first 9 months of 2014 is announced as 97 billion 169 million and this means 1349 SMSs for each mobile phone line. It is stated that the number of privately sent SMSs in a day is 355 million 930 thousand, in an hour it is 14 million 830 thousand, in a minute it is 247 thousand and in a second it is 4 thousand 119 [36]. On average with 364 minutes a month Turkish people are the number one in Europe in talking on mobile phones. By April 2015, there are mobile phones or smart phones in 96,8% of the residences [33].

2. METHODOLOGY
2.1. The Sample Size and Means of Measuring

The data acquired from the surveys which were carried out randomly among the students in Keşan Yusuf Çapraz School of Applied Sciences, Edirne in 2015/2016 form the main material of the study. There are 1375 students in the university in total. The sample size has been determined by proportional sampling method with the help of the equation below [28]:

\[ n = \frac{N \times t^2 \times p \times q}{d^2 \times (N-1) + t^2 \times p \times q} \]

n; Number of the individuals that are to take part in the sample, N; 1375,

2.2. Research Model

The main hypotheses according to Research Model are as below: }

- Gender
- Age
- Department studied
- Income
- Functions of the Mobile Phone
- Getting Influenced by the Brand and External Conditions
- The Importance of the Price

Sub-dimensions of Students’ Mobile Phone Purchasing Preferences

The main hypotheses according to Research Model are as below:
H1 = The participants' expressions regarding the Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students have variance according to gender.

H2 = The participants' expressions regarding the Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students have variance according to age.

H3 = The participants' expressions regarding the Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students have variance according to the department studied.

H4 = The participants' expressions regarding the Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students have variance according to the family income.

2.3. The Data Analysis

The data gained from 300 students has been evaluated by using the statistical package software of SPSS 2.0. It has been determined that all of the students in the survey use mobile phone. In a survey which was carried out on university students in 2006, it was determined that 98.7% of the students use mobile phones [12].

The attitudes of the students towards mobile phone use have been determined by the factor analysis which is one of the multivariate analysis techniques. Factor analysis method is to interpret the variations of a certain number of dependent variables with the help of independent variables (or factors) which are less in number [20, 21,12]; There are several forms of general factor model. The most common ones are “Common Factor Analysis” and “Component Factor Analysis”.

Selecting the factor model depends on the aim of the research. The mathematical model of the factor analysis for the standardized i variable is as below:

\[ X = A_{i1} F_1 + A_{i2} F_2 + \ldots + A_{ik} F_k + U \]

In the equation;

- \( F_1, 2, \ldots k \) = Common factors,
- \( U \) = Unique factor,
- \( A_{i1}, i2, \ldots \) = Constants that correlates k number of factors

It is acknowledged that the unique factors have no correlation between each other and common factors [1]. Factors are extracted from observed variables and can be predicted to be the linear components of them.

General prediction equation of the jth factor Fj is as below:

\[ F_j = \sum W_{ji}X_i = W_{j1}X_1 + W_{j2}X_2 + \ldots + W_{jp}X_p \]

In the equation;

- \( W_i \) = Scores,
- \( X_i \) = Standardized variable
- \( P \) = Number of variables

After the factor analysis, the 3 factors that are effective on mobile Phone Purchasing Preferences of the Students have been determined (Functions of the Mobile Phone, Getting Influenced by the Brand and External Conditions, The Importance of the Price). Kolmogorov-Smirnov distribution test has been conducted to these factors. According to the result of the distribution test, it has been determined that nonparametric tests are to be conducted. Mann-Whitney U and Kruskal Wallis nonparametric tests have been conducted.
Table 1: Demographical Features of The Attendants

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>136</td>
<td>45.3</td>
</tr>
<tr>
<td>Female</td>
<td>164</td>
<td>54.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-19</td>
<td>6</td>
<td>2.0</td>
</tr>
<tr>
<td>20-21</td>
<td>122</td>
<td>40.7</td>
</tr>
<tr>
<td>22-23</td>
<td>144</td>
<td>48.0</td>
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<tr>
<td>24-25</td>
<td>28</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>300</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>University Department</strong></td>
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<td></td>
</tr>
<tr>
<td>Business Information Management</td>
<td>48</td>
<td>16.0</td>
</tr>
<tr>
<td>International Trade</td>
<td>65</td>
<td>21.7</td>
</tr>
<tr>
<td>Banking and Insurance</td>
<td>50</td>
<td>16.7</td>
</tr>
<tr>
<td>Computer Technology and Information Systems</td>
<td>60</td>
<td>20.0</td>
</tr>
<tr>
<td>Custom and Border Management</td>
<td>77</td>
<td>25.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>300</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Family Income Level</strong></td>
<td></td>
<td></td>
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<tr>
<td>1000 TL and below</td>
<td>36</td>
<td>12.0</td>
</tr>
<tr>
<td>1001-2000 TL</td>
<td>75</td>
<td>25.0</td>
</tr>
<tr>
<td>2001-3000 TL</td>
<td>130</td>
<td>43.3</td>
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<tr>
<td>3001-4000 TL</td>
<td>36</td>
<td>12.0</td>
</tr>
<tr>
<td>4001 TL and over</td>
<td>23</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>300</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The students' distribution according to demographics is presented in Table 1. According to this, 45.3% of the participants are males and 54.7% are females. It has been observed that the main age group of the students is between 20 - 23 (88.7%). 16.0% of the students study in the department of Business Information Management, 21.7% study in International Trade, 16.7% study in Banking and Insurance, 20.0% study in Computer Technology and 25.6% study in the department of Custom and Border Management. When the family incomes of the participants are examined, whereas 43.3% of them have a family income between 2001-3000 TL, it has been observed that 12.0% of them have a family income of 1000 TL and below and 7.7% have 4001 TL and above.

Table 2: KMO and Barlett’s Results of the Scale of Mobile Phone Purchasing Preferences of Students

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kasiser Meyer Olkin (KMO)</td>
<td>.826</td>
<td></td>
</tr>
<tr>
<td>Bartlett Sphericity Testi</td>
<td>χ² (Chi-Square)</td>
<td>1153.905</td>
</tr>
<tr>
<td></td>
<td>Sd (Degrees of Freedom)</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>P (Probability)</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

In the research, factor analysis has been conducted to the data of the scale of mobile phone purchasing preferences of the students. Before that KMO and Barlett’s test has been used to test if the data set is appropriate for factor analysis. As the result of Keiser-Meyer-Olkin test, if the value is below 0.50, it is interpreted that the factor analysis cannot be conducted [22]. In the research the result
of Keiser-Meyer-Olkin (KMO) test has been found as 0.826. This value shows that the data set is appropriate for factor analysis. $\chi^2$: 1153.905, d:78, P<0.05 (Table 2).

**Table 3:** The Results of Factor and Reliability Analyses of the Scale of Mobile Phone Purchasing Preferences of Students

<table>
<thead>
<tr>
<th>Factor 1 (Functions of the Mobile Phone)</th>
<th>Explained Variance %</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image quality and camera features</td>
<td>.755</td>
<td>31,479</td>
</tr>
<tr>
<td>Screen Width</td>
<td>.691</td>
<td></td>
</tr>
<tr>
<td>Link speed</td>
<td>.787</td>
<td></td>
</tr>
<tr>
<td>External Design</td>
<td>.709</td>
<td></td>
</tr>
<tr>
<td>Sound Quality</td>
<td>.657</td>
<td></td>
</tr>
<tr>
<td>Battery power</td>
<td>.652</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>.679</td>
<td></td>
</tr>
<tr>
<td>Memory status,</td>
<td>.726</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 2 (Getting Influenced by the Brand and External Conditions)</th>
<th>Explained Variance %</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand is very important</td>
<td>.727</td>
<td>12,922</td>
</tr>
<tr>
<td>Advertising and Promotion</td>
<td>.744</td>
<td></td>
</tr>
<tr>
<td>Peer Influence</td>
<td>.707</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 3 (The Importance of the Price)</th>
<th>Explained Variance %</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having an affordable price</td>
<td>.808</td>
<td>11,727</td>
</tr>
<tr>
<td>Easy terms of payment</td>
<td>.861</td>
<td></td>
</tr>
</tbody>
</table>

Factor analysis have been applied in order to test if the 13 variables which have been asked to examine the scale of mobile phone purchasing preferences of students are collected under certain factors or not. In the factor analysis study conducted, 13 variables have been collected under 3 factors by factor analysis. The first factor of the Scale of Mobile Phone Purchasing Preferences of Students has been determined as ‘Functions of the Mobile Phone’. Factor 2 has been determined as ‘Getting Influenced by the Brand and External Conditions’ and Factor 3 has been determined as ‘The Importance of the Price’ (Table 3). As the result of the factor analysis 3 factors that explains 56,1% of the total variance have been obtained. Cronbach’s Alpha values for these 3 factors are above 0.50. Cronbach’s Alpha value for the whole scale of Mobile Phone Purchasing Preferences of the Students have been found as 0.77.

It has been determined that Factor 1 consists of 8 specifications and the factor load values of the specifications in this sub-dimension change between 0.652 and 0.787; Factor 2 consists of 3 specifications and the factor load values are between 0.707 and 0.744; Factor 3 consists of 2 specifications and the factor load values are between 0.808 and 0.861.

Factor 1 consists of the components of image quality and camera features, screen width, link speed, external design, sound quality, battery power, quality and memory status and explains the 31,479% of the variance. It was stated that the students in Kırklareli take the features such as the memory of the device, battery duration, and camera resolution into consideration, while purchasing mobile phones [11]. In a study by [24] named as the Consumption of the Mobile Services of the University Students in Australia, on the other hand, it was concluded that students make use of mobile services more day by day and they attach more importance to technological features, while purchasing mobile phones. In a study by [2] conducted on 384 university students in one of the European Union countries, they aimed to find out the opinions of the students about the prices and
features of mobile phones and other mobile communication devices and according to the results of the study it was determined that the most required qualifications of mobile phones and other mobile communication devices by students were qualifications such as battery life, having an MP3 player and camera.

Factor 2 consists of the components of ‘brand is very important’, ‘advertising and promotion’ and ‘peer influence’ and explains the 12.922% of the variance. When the other studies are examined; in a study conducted in Aydın, the factors that affect the mobile phone purchasing behaviors of the students were determined as qualifications of the product, brand, price, social factors and advertising [10]. In a study conducted in Dumlupınar University about the mobile phone demands of the students, it was found that durability, disclaimer of warranty and brand have more importance than display [9]. In a study among students in Malaysia, it was found that brand name and social influence are the factors that increase the demand for smart phones [19]. In their study, [25] stated that the factors that affect the university students’ use of mobile phone are social features, conformity and convenience, originality, authenticity and reliability. In a study carried out among 400 students in Ordu University Uyney Faculty of Economics and Administrative Sciences, [4] collected the factors that are effective on students’ mobile phone purchasing behaviors under four headings. These are the qualifications of mobile phones, service, brand name and price factors.

Factor 3 consists of the components of ‘having an affordable price’ and ‘easy terms of payment’ and explains the 11.727% of the variance. In a study conducted to 256 participants in France, it was determined that the effective factors on purchasing or changing mobile phones are price, quality level, ease of use and functionality [15]. In a study conducted to 350 students studying in Aksaray University, it was seen that the ones who consider the price in their preferences of mobile phone use have a percentage of 46.35% [6].

Table 4: Kolmogorov Smirnov Test Results for the Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students

<table>
<thead>
<tr>
<th>One-Sample Kolmogorov-Smirnov Test</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Normal Parameters\textsuperscript{a,b}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>26,6433</td>
<td>10,9600</td>
<td>5,8067</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>6,21435</td>
<td>2,37428</td>
<td>1,94471</td>
</tr>
<tr>
<td>Most Extreme Differences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute</td>
<td>.063</td>
<td>.177</td>
<td>.120</td>
</tr>
<tr>
<td>Positive</td>
<td>.040</td>
<td>.105</td>
<td>.090</td>
</tr>
<tr>
<td>Negative</td>
<td>-.063</td>
<td>-.177</td>
<td>-.120</td>
</tr>
<tr>
<td>Kolmogorov-Smirnov Z</td>
<td>1,089</td>
<td>3,061</td>
<td>2,071</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.186</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

\textbf{H}_0= The Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students show normal distribution.

\textbf{H}_1= The Sub-dimensions of the Scale of Mobile Phone Purchasing Preferences of the Students do not show normal distribution.

As it can be seen in Table 4, since p<0.05, the hypothesis \textbf{H}_0 is rejected. In other words, the sub-dimensions of the scale of Mobile Phone Purchasing Preferences of the Students do not have a normal distribution. For this reason, Mann-whitney U and Kruskal Wallis non-parametric tests have been applied.
Table 5: Test Results of the Variances of Sub-dimensions of Students’ Mobile Phone Purchasing Preferences Scale According to Demographical Features

<table>
<thead>
<tr>
<th>Sub-dimensions</th>
<th>Types of Tests</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functions of the Mobile Phone</td>
<td>Mann-Whitney U</td>
<td>0,156</td>
</tr>
<tr>
<td>Getting Influenced by the Brand and External Conditions</td>
<td>Mann-Whitney U</td>
<td>0,095</td>
</tr>
<tr>
<td>The Importance of the Price</td>
<td>Mann-Whitney U</td>
<td>0,800</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functions of the Mobile Phone</td>
<td>Kruskal Wallis</td>
<td>0,038</td>
</tr>
<tr>
<td>Getting Influenced by the Brand and External Conditions</td>
<td>Kruskal Wallis</td>
<td>0,193</td>
</tr>
<tr>
<td>The Importance of the Price</td>
<td>Kruskal Wallis</td>
<td>0,842</td>
</tr>
<tr>
<td><strong>University Department</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functions of the Mobile Phone</td>
<td>Kruskal Wallis</td>
<td>0,761</td>
</tr>
<tr>
<td>Getting Influenced by the Brand and External Conditions</td>
<td>Kruskal Wallis</td>
<td>0,985</td>
</tr>
<tr>
<td>The Importance of the Price</td>
<td>Kruskal Wallis</td>
<td>0,686</td>
</tr>
<tr>
<td><strong>Family Income Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functions of the Mobile Phone</td>
<td>Kruskal Wallis</td>
<td>0,133</td>
</tr>
<tr>
<td>Getting Influenced by the Brand and External Conditions</td>
<td>Kruskal Wallis</td>
<td>0,185</td>
</tr>
<tr>
<td>The Importance of the Price</td>
<td>Kruskal Wallis</td>
<td>0,003</td>
</tr>
</tbody>
</table>

As the result of the analysis, it has been determined that the sub-dimensions of the scale of students’ mobile phone purchasing preferences do not vary according to gender.

It has been determined that the sub-dimension ‘Functions of Mobile Phones’ varies according to age (p<0.05). It has been found that the average of ‘Functions of Mobile Phones’ sub-dimension of the students aged 24-25 (184,57) is higher than the average of the other age groups. That is to say that students aged 24-25 attach more importance to the functions of mobile phones than the others.

It has been determined that the sub-dimensions of the scale of students’ mobile phone purchasing preferences do not vary according to departments studied.

It has been determined that the sub-dimension ‘Importance of the Price’ varies according to the income of family (p<0.05). It has been found that the average of the sub-dimension ‘Importance of the Price’ for the students whose family incomes are below 1000 TL (173,92) is higher than the average of the other groups.

3. Conclusion

The rapidly progressive technology has increased the use of communication devices. One of the most rapid devices in communicational use is mobile phones. Mobile phones are being used by almost everybody young and old alike. Today, mobile phones are being used by young people almost anytime, anywhere such as at the cinema, in a café, during a visit, in bed, in restroom or bathroom. Today mobile phones are most commonly used by university students. For this reason, the target group in this study has been the university students.

In the study, first of all, the frequency and percentage values of the consumers’ demographics have been given according to the results of the survey. Then, factor analysis and reliability tests, Kolmogorov-Smirnov normality tests, Mann-Whitney U and Kruskal Wallis tests have been applied for mobile phone purchasing preferences of the students.

In the study, mobile phone purchasing preferences of the students have been measured by factor analysis. 3 sub-dimensions have been obtained after factor analysis. The first factor of the Scale of Mobile Phone Purchasing Preferences of Students has been determined as ‘Functions of the Mobile Phone’. The second factor has been determined as ‘Getting Influenced by the Brand and External Conditions’ and the third factor has been determined as ‘The Importance of the Price’. The factor of ‘Functions of the Mobile Phone’, which is the first and the most important factor, consists of the components
of Image Quality, Camera Features, Screen Width, Link Speed, External Design, Sound Quality, Battery Power, Quality and Memory Status. University students attach high importance to camera features, since they use their mobile phones as a camera and they also attach high importance to link speed, since they surf on social media websites through internet all the time. Especially, they prefer products with wide screen because of its ease to use. Mobile phones have replaced I-pads as the students carry their mobile phones with them all the time. They also attach importance to external design and sound quality to talk easily, listen to mp3s and the radio. Today, battery power is important for our mobile phones which we carry with us all the time. Since the battery power lasts for a short time in smart phones, power banks have been released to the market to meet the need. However, instead of carrying these power banks, people prefer mobile phones with longer battery life. Besides, mobile phones with high memory capacity are generally required in order to record and save both videos and photographs.

The Second Factor ‘Getting Influenced by the Brand and External Conditions’ consists of the components of ‘brand is very important’, ‘advertising and promotion’ and ‘peer influence’. Students prefer certain brands by getting influenced by advertisements and their friends. They think that they have a social status and prestige when they use branded mobile phones.

‘The Importance of the Price’ factor consists of the components of ‘having an affordable price’ and ‘Easy terms of payment. Since the students have a shoestring budget, the price of the mobile phone and easy terms of payment is significant for them. As mobile phones are not paid by installments, the companies that sell mobile phones offer loans for the customers and these loans are paid by installments.

When the variances of the Sub-dimensions of the Scale of Students’ Mobile Phone Purchasing Preferences are examined according to Socio-demographics, it has been determined that they do not vary according to gender. It has been stated that students aged 24-25 attach more importance to the functions of mobile phones than the others. It has been determined that the sub-dimensions of the scale of students’ mobile phone purchasing preferences do not vary according to departments studied. It has been determined that the sub-dimension ‘Importance of the Price’ varies according to the income of family. It has been found that the students with lower family incomes attach more importance to the price.

This study is both informative and instructive about the present status of mobile phone preferences for the smart phone producers, software developers and sellers. While producing mobile phones, producers should take these features into consideration and form their policies accordingly in order to sustain in the market. Furthermore, the study will scientifically contribute to other studies and the literature on this topic.

References


25. S. Li and Y. Li, An Exploration of the Psychological Factors Influencing College Students’ Consumption of Mobile Phone in West China, International Journal of Business and Management, 5(9), 2010, s.s. 132-138.


Field research in Usak region about using the manufacturing resources planning and material requirements planning

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Ozan KARAHAN
Usak University, Department of Esme MYO
Koray BULUT
Usak University, Department of Esme MYO

Abstract. In this study, Usak Organized Industrial Zone in the manufacturing sector operating Small and Medium Sized Enterprises (SMEs) Material Requirements Planning (MRP) and Manufacturing Resource Planning (MRP II) use to investigate the effects businesses, a survey was administered. The work was commissioned from 67 in the manufacturing industry. MRP and MRP II systems of SMEs perceptions that positively affect business performance was found to be present.

Keywords: Material Requirement Planning (MRP), Manufacturing Resource Planning (MRPII), SMEs

1. Introduction

Nowadays, it is becoming more and more mandatory to have a renewing and developing structure for organisations in order to compete at the globalising world. The importance of SMEs(Small and Medium Enterprises) in country economy can not be denied, however to continue their existence, to develop and make profit, use of technology becomes the leading important fact. In the recent years, several systems are developed to use integrating the inside and outside processes of organisations. At production, first software solutions are about stock control. Later on, these softwares are enlarged as it is also going to include Material Requirements Planning and Manufacturing Resources Planning solutions in it. As MRP and MRP II, by reducing some problems, it is organised by Wight in 1984 [12]. Several studies took place in literature about MRP and MRP II [1-2;5-6;8-11]. Among the cities exporting in Turkey, Uşak is the 30th place with 258 million 878 thousand dollar [15]. For the organisations in Uşak, to define the problems related to productivity and developing solution suggestions is becoming more important in increasing their market share at the economy.

This study is about the MRP and MRP II usage of SMEs, the level of their usage and the effect of it to their productivity.

2. Material Requirements Planning (MRP)

MRP concept, came up at the end of 1960s, when production is developing real fast in USA. Growing economy brought strong demand with it, and producers are led to high volume serial production. And as a result, supply of the necessary raw materials and materials became a general problem and in order to solve this problem, organisation managers started to enter all the statistical information, product trees and sales forecast of the products in computers. Computers
matching data, first defines the necessary raw material quantity and then via checking current stocks and orders placed, are calculating the right quantities [4].

3. Manufacturing Resources Planning (MRP II)

Some developments at the economy created the result of determining the market due to customer needs and production companies are led to order based production instead of keeping stock. Via this production style, subjects such as economical and little quantities of production, effective financial management became very important. By this means, a new approach MRP II came up. This approach includes all production, planning, marketing, distribution, engineering and financial activities [4;13].

4. Definition and Features of SMEs

In the last years, it is seen that SMEs creating one of the dynamic powers of the country economy increased the added value they create in economical and social aspects significantly. SMEs including all segments of the society survive by facing so many problems resulting from either their inside structures or from their environments. Some of them can not overcome these problems and withdraw from the economical environment and some go on struggling to survive. In addition to this, SMEs watching developments and changes closely, evaluates several opportunities and obtaining important advantages and grow, develop [3].

Even though SMEs are generally the basic dynamics of all economies, there is no SME definition agreed at world literature [7]. At this study, quantitative standards which is the main definition of SMEs and different scale sizes limits both top and bottom, are accepted as the frame European Union defined. It can be seen at Table 1 [14].

<table>
<thead>
<tr>
<th>The Scale Size of Businesses</th>
<th>Number of Employees</th>
<th>Net Sales (Million TL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro-Scale Business</td>
<td>1-9</td>
<td>≤ 1</td>
</tr>
<tr>
<td>Small-Scale Business</td>
<td>10-49</td>
<td>≤ 5</td>
</tr>
<tr>
<td>Medium-Scale Business</td>
<td>50-249</td>
<td>≤ 25</td>
</tr>
</tbody>
</table>

5. Evaluation of the Research

The aim of this research took place about the SMEs at Uşak region; defining the current situation of MRP and MRP II softwares that effect production planning and control activities directly, and problems faced while using these softwares and determine the advantages they provide to the organisations. In the direction of this purpose, 67 companies operating in Uşak Industrial Zone have become sample. At the evaluation, each answer option in the survey is coded and analysed via IBM SPSS Statistics 20 program. In order to keep the surveys more accurate and confidential, names of the organisations are kept hidden.

The results show that SMEs use MRP and MRP II softwares. While applying the surveys, at face to face interviews, it is assumed that managers have the necessary information needed to answer the questions and replies are real.

At this chapter, findings of the research will be explained by charts.

5.1. General Information about the Attendance of Research

When the gender allocation of the people attending the research is examined, it shows that 92.6% of attendance are male and 7.4% are female attended. 58.2% have a college degree and 23.9% have a high school degree. Among the organisations attending the survey, 55.2% are corporate, 17.9% are limited and 26.9% are sole proprietorship. And from
these organisations, 22.3% have regional, 40.3% have domestically operating and 37.4% have internationally operating.

5.2. Sectoral Allocation of the Organisations

Sectoral allocation of the organisations in the research is shown at Table 3. When examined the sectoral allocation of organisations, it shows that 34.3% are in textile sector, 22.1% are in machinery sector, 10.6% are in furniture sector, 7.4% are in food sector, 11.9% are in automotive, paper products and chemical sector and also 13.7% are outside these sectors.

5.3. Distribution of Production Technology

Table 4 shows distribution of companies’ production technology. According to the chart, 26.8% use CNC or similar lines, 22.5% use automatic production line, 20.9% use traditional production looms, 17.9% use production loom with special purposes, 3% use robot production technology and 8.9% have service type production line.

5.4. Findings related to Organisations making MRP and MRP II

Situation of organisations, attending the research, to do MRP and MRP II are shown at Table 5. Due to the data at this table, %100 of the organisations are making MRP and MRP II.

5.5. Efficiency of Main Production Schedule of the Organisation
At the organisations in this research, the efficiency of main production schedule is seen at Table 6. 37.8% measure main production schedule effectiveness by labor efficiency ratio, 32.2% by labor usage ratio, 28.2% by distribution on time ratio, 22.3% by machine usage ratio, 19.6% by realising ratio of the schedule, %13.1 never measured and %16.2 by other methods. Effectiveness of main production schedule is measured by the efficiency of labor and ratio of distribution realised on time in the organisations.

<table>
<thead>
<tr>
<th>The efficiency of main production schedule</th>
<th>N</th>
<th>%</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realising ratio of the schedule</td>
<td>8</td>
<td>11.9</td>
<td>19.6</td>
</tr>
<tr>
<td>Distribution on time ratio</td>
<td>11</td>
<td>16.4</td>
<td>28.2</td>
</tr>
<tr>
<td>Machine usage ratio</td>
<td>9</td>
<td>13.5</td>
<td>22.3</td>
</tr>
<tr>
<td>Labor efficiency ratio</td>
<td>14</td>
<td>20.9</td>
<td>37.8</td>
</tr>
<tr>
<td>Labor usage ratio</td>
<td>12</td>
<td>17.9</td>
<td>32.2</td>
</tr>
<tr>
<td>Never measured</td>
<td>6</td>
<td>8.9</td>
<td>13.1</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>10.5</td>
<td>16.2</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>100</td>
<td>169.4</td>
</tr>
</tbody>
</table>

5.6. Organisations’ Inventory Management System Practices

At the organisations subject to this research, practices of organisations inside inventory management system, are shown in Table 7. 67.1% use current inventory system to define the order time, quantity and stock quantity accurately, 54.9% use the system to define optimum order quantity (economic order quantity), 36.3% use system to keep security stock level and 83.5% use the system to make MRP (MRP, MRP II, HRP, organisation based software, etc).

<table>
<thead>
<tr>
<th>Organisations’ Inventory Management System Practices</th>
<th>N</th>
<th>%</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>115</td>
<td>100</td>
<td>241.8</td>
</tr>
</tbody>
</table>

5.7. Advantages of MRP and MRP II usage to the Organisations

At the organisations subject to this research, the benefits of using MRP is shown in Table 8. %69.9 of the organisations declare that resources are used effectively, %66.8 say stock control and %60.6 say organisational efficiency increased, %57.3 say production costs are decreased, %51.1 say labor efficiency increased and %44.8 say adaption at the terms increased, %41.7 say sales increased and %35.5 say product quality increased, %32.3 say competition increased and %47.9 say other benefits are obtained.

<table>
<thead>
<tr>
<th>The benefits of MRP and MRP II usage to the Organisations</th>
<th>N</th>
<th>%</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational efficiency</td>
<td>21</td>
<td>11.7</td>
<td>60.6</td>
</tr>
<tr>
<td>Production costs</td>
<td>20</td>
<td>11.1</td>
<td>57.3</td>
</tr>
<tr>
<td>Labor efficiency</td>
<td>18</td>
<td>10.2</td>
<td>51.1</td>
</tr>
<tr>
<td>Stock control</td>
<td>23</td>
<td>12.8</td>
<td>66.8</td>
</tr>
<tr>
<td>Sales increased</td>
<td>15</td>
<td>8.3</td>
<td>41.7</td>
</tr>
<tr>
<td>Adaption at the terms</td>
<td>16</td>
<td>8.9</td>
<td>44.8</td>
</tr>
<tr>
<td>Resources are used effectively</td>
<td>24</td>
<td>13.4</td>
<td>69.9</td>
</tr>
<tr>
<td>Product quality increased</td>
<td>13</td>
<td>7.3</td>
<td>35.5</td>
</tr>
<tr>
<td>Competition increased</td>
<td>12</td>
<td>6.8</td>
<td>32.3</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
<td>9.5</td>
<td>47.9</td>
</tr>
<tr>
<td>Total</td>
<td>179</td>
<td>100</td>
<td>507.9</td>
</tr>
</tbody>
</table>

5.8. Problems faced at the usage of MRP and MRP II Software
At the organisations subject to this research, problems faced at the usage of MRP and MRP II softwares, is shown at Table 9. 49.3% of them define the problems as lack of qualified human resources, 38.1% technical support and service problems, 35.5% insufficiency of softwares, 30.4% changes at competition conditions, 27.8% resistency of employees, 22.7% lack of interest of the managers, 20.2% fast changes at technological conditions, 15.2% lack of resources and 17.7% other problems.

Table 9. Problems faced at the usage of MRP and MRP II Software

<table>
<thead>
<tr>
<th>Problems faced at the usage of MRP and MRP II Software</th>
<th>N</th>
<th>%</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistency of employees</td>
<td>11</td>
<td>10.9</td>
<td>27.8</td>
</tr>
<tr>
<td>Technical support and service problems</td>
<td>15</td>
<td>14.8</td>
<td>38.1</td>
</tr>
<tr>
<td>Lack of interest of the managers</td>
<td>9</td>
<td>8.9</td>
<td>22.7</td>
</tr>
<tr>
<td>Lack of qualified human resources</td>
<td>19</td>
<td>18.9</td>
<td>49.3</td>
</tr>
<tr>
<td>Fast changes at technological conditions</td>
<td>8</td>
<td>7.9</td>
<td>20.2</td>
</tr>
<tr>
<td>Insufficiency of softwares</td>
<td>14</td>
<td>13.8</td>
<td>35.5</td>
</tr>
<tr>
<td>Changes at competition conditions</td>
<td>12</td>
<td>11.8</td>
<td>30.4</td>
</tr>
<tr>
<td>Lack of resources</td>
<td>6</td>
<td>5.9</td>
<td>15.2</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>7.1</td>
<td>17.7</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>100</td>
<td>256.9</td>
</tr>
</tbody>
</table>

6. Conclusions

The aim of this research took place about the SMEs at Uşak region; defining the current situation of MRP and MRP II softwares that effect production planning and control activities directly, and problems faced while using these softwares and determine the advantages they provide to the organisations. In the direction of this purpose, a survey is realised in order to define the effects of MRP and MRP II softwares on SMEs.

Organisations that the survey study is applied, operate in several sectors due to the data from National Industrial Zone as; 34.3% textile, 22.1% machinery, 10.6% furniture, 7.4% food, 5.9% chemical, 4.4% automotive, 1.6% paper products and approx 13.7% at other sectors. Due to SME definition, 52 of 67 organisation middle sized, 15 of them small sized organisations. It is seen that numbers of employees and managers are in proportion.

The necessity of today’s production sector; is to follow technological developments, and consistently update and improve the organisation, machinery, number and quality of employees, training of the employees. The survey shows that, organisations following technological improvements and open to innovations, are having larger and more corporate structure than others.

Success of an organisation can be defined not only with its management and financial strength, but also the number of experienced specialists, coordination between the departments, and the sufficiency and quality of technical devices. At this research it is identified that one fourth of the organisations have lack of coordination and experienced specialists. Almost half of the organisations do not have professional managers, and it is seen that most of the organisations are family owned and critical departments are created from family members. This reflection, that has no relation with being Professional, emphasizes the intensiveness of traditional approach at organisation management at SMEs. It is evitable that this effects general management policy of the organisation.

All the organisations subject to this research, are making production planning. Two thirds of the organisations’ production planning include capacity, one third cost items, three fourth include staff and cost reduction applications. It is seen that ratios of labor and machinery using and measuring main production schedule effectiveness is very low at the organisations. The main reason of this problem are as follows; MRP is not directed by expertised and capable people, production figures are given missing or wrong and main production schedule is not prepared properly.
Current stock management make it possible to organise the order timing, quantities and stock numbers. Four out of five of the organisations use computers to make MRP and one third gives importance to preserve the safety of stock level. Effectiveness of MRP is limited because of such reasons as; main production schedule is not prepared properly, material list is missing or wrong, stock records are missing or wrong, too many kinds of materials and production information is missing or wrong, product tree is complicated, capacity planning is insufficient and not directed by experienced people. Besides these, as SMEs have partial production and order based production mindset instead of serial production, this is the reason why stock control is far from systematic structure.

Usage of computerised systems is irrevocable for our age. Organisations subject to this research are all using computer Technologies for MRP II activities, stock control activities, account, marketing and customer follow-up, supplier relations, internet, E-trade, promotion and advertisement, emailing systems and staff work etc at so many and all of them have WEB sites. High usage of computer at the organisations show clearly that all are open to technological developments.

Benefiting from MRP, decreases production costs, increases labor efficiency, provides efficient usage of physical sources, increases product quality and even less than normal cases controlling the stocks are the results of the survey. A positive direction perception is seen that MRP and MRP II systems effect the SMEs organisational performance.

References


The Impact of Professional Management on Firm Performance: Evidence from Turkey

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Abstract. It became obvious with also financial crises in the recent years that companies’ professional management is of vital importance both in micro and macro level. Conducted empirical studies discovered that international investors attach importance to whether a company is managed professionally as well as the company's financial performance. Keeping this in mind, the main purpose of this study is to empirically research whether the existence of professional managers in companies makes a significant difference in the firm's profitability. In this study, year 2013 data of 287 firms - data of which could be accessed - of 1000 industrial companies listed in “Turkey’s First and Second Top 500 Industrial Enterprises” were used. In the result of this study, it was determined that Gross Added Value/Total Assets ratios of companies with professional managers in management positions were statistically significantly higher than that of other firm group. However, it is not possible to claim that Pre-Tax Profit/Total Assets and Interest, Amortization, and Pre-Tax Profit/Total Assets ratios are higher in firms with professional managers than the other firm group.

Keywords: Professional Management, Management Approach, Firm Performance.

1. Introduction

Due to economical, social, political, cultural, and technological changes beginning with industrial revolution, some changes in organizational structures also occurred. Need for educated individuals who will make organizations which target success and power in changing environmental conditions reach their goals increased. Thus, as ownership and management were separated especially in larger companies, work of management became an independent function which is done by different individuals and it was professionalized [18].

When the concept of management which is defined as the process of reaching certain organizational goals through planning, organizing, leading, and control of human and physical resources (human, money, energy, material, space, time) of an organization [28] is considered in terms of groups which make the process work, three different types of management could be discussed; namely patrimonial management, political management, and professional management [32].

Patrimonial management occurs when the majority of ownership, main political decision bodies, and many hierarchical positions belong to the members of a family and the major characteristic of this type of management is that the top management positions are open to the family members (Koçel, 2003: 17). Political management is the type of management which occurs when the owners of the company, main political decision bodies, and major hierarchical positions consist of people with certain political views and contacts (Koçel, 2003: 18). Professional management occurs when the main decision bodies and major management positions consist of people who are chosen based on expertise and skill rather than belonging to a family or political view [14]. According to this type of management
approach, owners of the company or other family members do not personally take place in performing the works [7]. Family members are responsible for making and executing strategic decisions in the organizations while the professional managers are responsible for operational decisions and execution of operations [22]. In addition to three types of management mentioned, the concept of board of directors was included in this study. Board of directors is the company's body of strategic decision making, representation, and top execution. The board of directors aim to maximize the market value of the company while making and executing decisions. With this awareness, the board of directors perform the works of the company in a way that will enable shareholders gain long term and steady income. While doing this, they also pay attention to keep the delicate balance between shareholders and need for company's growth. The members of the board of directors are the representatives of shareholders. For this reason, these members have the responsibility to monitor the quality of the information provided in the firm's financial reports [24].

In the related academic studies, board size, presence of female board members, duality of the CEO, education level of board members, board working experience, independent directors, board compensation, board ownership, and blockholders are often used as variables and it is researched whether these variables have an impact on firm performance. Some examples of these studies include Board Size (16, 19), Female Board Members [23, 26], CEO Duality [5, 15], Education Level of Board Members [17, 27], Board’s Experience [17], Board’s Independent Directors [4, 8], Board’s Compensation, [13], Board Ownership [9, 10], Blockholders [29]. When the empirical results of these studies conducted in many developed and developing countries were examined, no consensus were reached on whether these variables related to the structure of board of directors have an impact on firm performance.

In the strategic management literature, the concept of performance is evaluated based on achieved change in firms' sales and profitability and the market share. In this sense, an achieved increase in firms' sales, sales profits, and market share is regarded as high performance. Firm performance is, in the broadest sense, the success level of executed strategies in reaching certain goals in a certain period of time [3, 20]. According to Lebas and Euske's (2002) definition, this concept is the total necessary processes which make the managers perform appropriate actions in the current situation for firm’s future effective and efficient operation [21]. Hult, Hurley and Knight (2004) defined the concept as the level of achievement in organizational goals related to profitability with the increase in market share and sales in addition to achieving main strategic goals [11]. The phenomenon of firm performance implies the skill of creating solutions in a certain period of time based on goals and priorities and also the qualitative or quantitative evaluation of results and all planned efforts for reaching defined goals [6].

It could be stated that firm performance is important in strategic management theoretically, empirically, and in terms of management. While firm performance is the base for strategic management theoretically, strategy studies, empirically, focused on maximizing firm performance. In terms of management, the concept provides implementers many prescriptions in order to increase organizational performance [25].

Although there is no consensus on a single method for measuring firm performance today, performance evaluation criteria adopted by managers mostly focus results rather than processes [31]. Firm performance, in a limited sense, could be measured by financial indicators such as sales volume, profitability, etc., it could, in a broader sense, also be measured by operational performance indicators such as market share, new product success in addition to financial indicators.

As mentioned earlier big transformation which began with industrial revolution caused also major changes in firm structures and the need for educated individuals in firms targeting success increased. As a result of this, especially in larger companies, the need for professional managers increased and management structures in which the ownership and management were separated emerged. However, when the management structures of the firms are examined, it could be seen that management function is still administered by family members in some companies while in some
other companies, this function is done by professional managers depending on the management approach. Firms’ – which operate in a rapidly changing and uncertain environment – survival, gaining competitive advantage, and increasing firm performance depend mostly on their management approach and philosophy. In this sense, the purpose of this study is to determine whether the existence of professional managers in firms affects firm performance. This study, in which whether the existence of professional managers in firm’s management makes a significant difference in firm’s profitability is empirically researched, is expected to create valuable knowledge for the firm owners and investors.

2. Data and Methodology

In this study, data of 287 firms - data of which could be accessed - of 1000 industrial companies listed by Istanbul Chamber of Industry (İSO) in 2013 in “Turkey’s First and Second Top 500 Industrial Enterprises” were used. Ratios which represent profitability were gathered from Turkey’s First and Second Top 500 Industrial Enterprises Survey 2013 published by Istanbul Chamber of Industry. The data on whether the firms have professional managers in management positions were collected from the surveys conducted on the firms. Three different ratios that represent profitability were used, namely Gross Added Value/Total Assets, Pre-Tax Profit/Total Assets, Earnings Before Interest, Tax, Depreciation, and Amortization/Total Assets.

Pre-Tax Profit/Total Assets reflects the profitability of the firms’ investments before tax. Gross Added Value/Total Assets ratio shows the economic profitability of the firms and is calculated as follows;

\[
\text{Gross Added Value} = \text{Pre-Tax Profit} + \text{Interest} + \text{Salaries and Wages} + \text{Rent Expenses} + \text{Indirect Tax} + \text{Amortization}
\]

Gross added value is the value increase in a good or service in each phase of its production. In short, it means the value which is added. It is one of the primary economic goals of a country to create added value and produce and sell value added goods. This also provides some advantages to the country in the competition among countries. Added value is the difference between input and output price of a good and service in each phase of production. Net added value is the sum of “rent + wages + interest and profit”. When amortization and indirect tax, which is included in the production price, are added to this then “gross added value” is found [12].

Some income earned and costs spent by firms are due to transactions in their main area of operation while some other could be due to non-operating area. For instance, a firm makes some non-operating expenditure such as finance, rent while it earns some non-operating income such as interest and rent. EBITDA (Earnings before Interest, Tax, Depreciation, and Amortization) is an important ratio since it reflects the profitability of main operations of the firms and it is calculated by subtracting operating costs from gross profit which is calculated by subtracting the cost of sales from net sales.

Whether the means of two data sets are different can be tested via parametric and non-parametric statistical test methods. In order to determine which statistical test method to be used in this study, first whether the sample distributions of groups show normal distribution and population variances of groups are homogenous were examined. If the data used in the analyses show normal distribution and variances are homogenous, parametric tests should be used; in the case any of these assumptions are not met, then non-parametric tests should be used. In order to determine whether the data show normal distribution, Shapiro-Wilk test was conducted and in order to determine whether the assumption of homogeneity of variances is met, Levene’s test was used [1].

3. Findings

Whether or not normal distribution assumption has been met is tested by the following hypotheses:

Shapiro-Wilk Test:

\[ H_0 : \text{Profitability ratio means of firm groups show normal distribution.} \]
H_1 : Profitability ratio means of firm groups do not show normal distribution.

Whether or not homogeneity of variance assumption has been met is tested by the following hypotheses:

**Levene's Test:**

H_0 : Variances of profitability ratios of firms with professional managers and variances of profitability ratios of firms without professional managers are homogenous.

H_1 : Variances of profitability ratios of firms with professional managers and variances of profitability ratios of firms without professional managers are not homogenous.

The results of Shapiro-Wilk test for normality and Levene’s test for homogeneity of variances are illustrated in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Shapiro-Wilk Test Results</th>
<th>Levene’s Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Firms with Professional Managers</td>
<td>The Firms without Professional Managers</td>
</tr>
<tr>
<td>Gross Added Value/Total Assets</td>
<td>0,000</td>
<td>0,033</td>
</tr>
<tr>
<td>Pre-Tax Profit/Total Assets</td>
<td>0,000</td>
<td>0,000</td>
</tr>
<tr>
<td>Profit Before Interest, Amortization, and Tax /Total Assets</td>
<td>0,027</td>
<td>0,000</td>
</tr>
</tbody>
</table>

*, indicates validity of normal distribution and homogeneity of variance (at 5% significance level) assumption.

In order for the assumption of normal distribution to be valid, profitability ratios of two firm groups must both show normal distribution. In Shapiro-Wilk test, if the probability value is greater than 5%, H_0 hypothesis is accepted and H_1 hypothesis is rejected; i.e. it shows that assumption of normal distribution is valid. In Shapiro-Wilk test, if the probability value is less than 5%, H_1 hypothesis is accepted while H_0 hypothesis is rejected; i.e. it shows that the data do not show normal distribution. Since the probability values in Table 1 according to Shapiro-Wilk test results are less than 5%, sample distributions of the groups do not show normal distribution.

A similar procedure is valid for Levene’s test. If the probability value in Levene's test results is greater than 5%, H_0 hypothesis is accepted while H_1 hypothesis is rejected; i.e. it shows that assumption of variance homogeneity is valid. If the probability value is less than 5%, H_1 hypothesis is accepted while H_0 hypothesis is rejected; i.e. it shows that variances are not homogenous. According to Levene's test results illustrated in Table 1, assumption of homogeneity of variances is valid since probability values are greater than 5%.

As mentioned earlier, nonparametric test methods should be used in case of any of the two main assumptions is found invalid. Test results illustrated in Table 1 show that the assumption of normal distribution is invalid. For this reason, whether there is a statistically significant difference between profitability ratios of firms with professional managers and firms without professional managers was analyzed with Mann-Whitney U test.

Mann-Whitney U test, which is a nonparametric test method, is used for testing the differences between two independent groups measured in ratio level. This test is the nonparametric alternative for T test, one of the parametric tests, which are applied in independent samples. Like in T test, two groups' medians, not means, are compared in Mann-Whitney U test [30].

In order to determine whether there is a statistically significant difference in profitability ratios of firms with professional managers and
firms without professional managers, the following hypotheses were tested.

\( H_0 \): There is no statistically significant difference in profitability ratios of firms with professional managers and firms without professional managers  

\( H_1 \): Profitability ratios of firms with professional managers are higher than profitability ratios of those without professional managers  

Mann-Whitney U test results are illustrated in Table 2. According to test results, the mean of three profitability variables is higher in the samples of firms with professional managers. However, in order for this difference to be accepted as statistically significant, significance level in Mann-Whitney U test must be less than 5%. As can be seen in Table, significance level of Mann-Whitney U test is less than 5% only in Gross Added Value/Total Assets ratio. Thus, \( H_1 \) hypothesis was accepted for the related ratio while \( H_0 \) hypothesis was rejected. This result indicates that Gross Added Value/Total Assets ratio in firms with professional managers is higher in a statistically significant level than the ratio in other firm group.

The difference in Pre-Tax Profit/Total Assets ratio and Interest, Amortization, and Pre-Tax Profit/Total Assets ratio between two firm groups is not statistically significant because both firm groups' significance level in Mann-Whitney U test is greater than 5%. This means, \( H_1 \) hypothesis was rejected and \( H_0 \) hypothesis was accepted. Thus, it is not possible to claim that Pre-Tax Profit/Total Assets and Interest, Amortization, and Pre-Tax Profit/Total Assets ratios are higher in firms with professional managers than the other firm group.

<table>
<thead>
<tr>
<th></th>
<th>The Firms with Professional Managers</th>
<th>The Firms without Professional Managers</th>
<th>Mann-Whitney U Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Added Value /</td>
<td>26,0457</td>
<td>19,4426</td>
<td>0,036*</td>
</tr>
<tr>
<td>Total Assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Tax Profit /</td>
<td>5,1614</td>
<td>3,9842</td>
<td>0,339</td>
</tr>
<tr>
<td>Total Assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit Before Interest, Amortization, and Tax / Total Assets</td>
<td>11,5445</td>
<td>10,5044</td>
<td>0,709</td>
</tr>
</tbody>
</table>

* indicates statistically significance at 5% significance level.

4. Results

Since “ownership” and “control” functions are not clearly separated from each other in conventional company management, the board of members which consists of the owners of the company and family members might manage the company based on their preferences and judgements ignoring company's other stakeholders' interest. It is probable that such a situation causes irregularities, unfairness, and corruption. Company scandals and financial crises in recent years showed the need for professional management of companies and control of managers. In addition, professional managers in companies' management positions could contribute to the enhancement of company's success. For this reason, the main purpose of this study was based on the question "Does the existence of professional managers in companies make a significant difference in firm profitability?". The results obtained in this study shows that Gross Added Value/Total Assets ratio of the companies with professional managers in management positions is statistically significantly higher than that of other firm group. It was also found that existence of professional managers in management positions did not make any significant difference in Pre-Tax Profit/Total Assets and Interest, Amortization, and Pre-Tax Profit/Total Assets ratios.
References


The Influence Of Workplace DNA In Job Satisfaction And The Practices Towards Nurses In A Health Organization In The City Of Izmir

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Abstract. The job satisfaction of employees is affected by their works and workplaces. The employees with low job satisfaction tend to leave their job more than the ones whose satisfaction is higher. The purpose of this study is identifying the workplace DNA of an organization for determining the factors increasing employees’ job satisfaction and presenting solutions for other organizations in business world.

To analyze the relationship between organizational tipologies and job satisfaction, a large-scale health care organization in Izmir is chosen. A survey study is completed with 262 nurses of this health care organization. The organizational structure is identified and the job satisfactions of nurses are observed by the survey study. The findings show that a successful management stimulates the employees’ job satisfaction. Because the relationship between workplace DNA and job satisfaction has not been researched in Turkey yet, this study makes an initial contribution to the literature. It should be considered that this study brings a new perspective for the business world especially for new investments in health care sector.

Key Words: Workplace DNA, Job Satisfaction, Organic Organization, Organizational Tiplogies

1. Introduction

While describing the organization in a biological perspective, it can be said that the organizations have a determined purpose and duties and they maintain their lives like a living organism. From the anthropological point of view, the organizations have personalities and requirements and cognitive processes just like humans (Şişman, 1994).

The employees’ requirements should be provided by the organization so that they can perform well at their workplace and have a healthy daily life. This idea shows that organizational theories should be considered together with biology. Individuals and groups behave like biological organisms. They can only show active performance when their needs are satisfied. These arguments direct researchers to focus on new subjects like continuation of existence, organization-environment relationships and organizational efficiency.

Living organisms have the same DNA structure through their bodies. That is why information reaches to all parts of the organism. DNA has a flexible structure. It grows up with the environmental changes. For this reason organizational DNA could be both international and flexible (Tüz, 2001).

In the second part of the study a comprehensive literature review can be found including researches about both workplace DNA and job satisfaction. Methodology and research definitions are exercised in the third part and finally the findings of the study and the conclusion are discussed at the forth part.
2. Literature Review

2.1. Organic Organization Model and Workplace DNA

DNA is the coded information identifying who and what the organization is (Akgül, 2003). The information about the ability of improving a living organism’s skills hides in the codes of DNA. It is possible to name the DNA as “fate” because of having the specific and detailed information about human lives (Pekdemir, 2000).

Organizational DNA is a kind of a database which includes all the necessary information for coordinating and collaborating the employees through the organization (Baskin, 1998). Kadıbesgil explains organizational DNA as “The cultural values that are transferred to the new employees such as vision, mission, strategy, organizational values, services, human resources and social sensitivity” (Kadıbesgil, 1999). For Morgan, the workplace DNA is the integration of vision, values and the goals of the organization (Morgan, 1997). Döş defines the workplace DNA as an identity or fingerprint of the organization (Döş, 2013). Govindarajan and Trimble explain workplace DNA as the structure, culture and cycle between the employees and the system in an organization (Govindarajan & Trimble, 2005).

In literature, the workplace DNA is considered to consists of four main elements: structure, decision making, motivation and information (Çandır, 2005). Workplace DNA is a metaphor used for the factors hiding behind the organization structure which explains the personality and the performances of an organization. Booz Allen Hamilton has developed a framework for workplace DNA in the light of their long life experience in business world. Their purpose is to disclose the problems that any company would face and to find solutions for them (Neilson, Pasternack, Mendes, & Tan, 2004).

2.1.1. The Profiles of Workplace DNA

Gary Nielson thinks that the differentiation point of the companies, like humans, is their DNAs. He says that different combinations of four main elements of DNA (structure, decision making, motivation and information) cause different types of organization profiles. As the result of analyzing different organizations (up to 30000 companies), the main organization profiles are explained blove (Neilson, Pasternack, Mendes, & Tan, 2004) (Çandır, 2005) (Sürgevil & Budak, 2010).

1-) The Military Organization: Generally driven by a small and focused senior leadership team. The success of this kind of organization lies behind the well - through out and superior business model and superior execution.

Hypothesis 1: There is a significant and positive relationship between military organization management profile and job satisfaction.

2-) The Resilient Organization: This is a flexible organization that is adaptable to the changes. The management focuses on their strategis and improvements.

Hypothesis 2: There is a significant and positive relationship between resilient organization management profile and job satisfaction.

3-) The Just in Time Organization: The necessities for success are clear although there is a high level of inconsistency. This organization structure is also flexible to meet market demands.

Hypothesis 3: There is a significant and positive relationship between just in time organization management profile and job satisfaction.

4-) The Out Grown Organization: There is a relatively small number of managers that controls the decision making processes. However managers are often increasingly out of touch with the market demands.

Hypothesis 4: There is a significant and positive relationship between out grown organization management profile and job satisfaction.

5-) The Over Managed Organization: There is a high level of bureaucracy, a highly political
environment and too many layers of management.

Hypothesis 5: There is a significant and positive relationship between over managed organization management profile and job satisfaction.

6-) The Passive Aggressive Organization: This type of organization do not have difficulties in developing their plans and strategies but has problems in implementing them.

Hypothesis 6: There is a significant and positive relationship between passive aggressive organization management profile and job satisfaction.

7-) The Fits and Starts Organization: In this kind of organizations there are many skilled employees but there is a problem of coordinating them.

Hypothesis 7: There is a significant and positive relationship between fits and starts organization management profile and job satisfaction.

The out grown organization profile did not used in this study because the health care organization, in which the survey study is done, is a large scale organization within the city and has 2400 employees.

2.2. Job Satisfaction

Job satisfaction is the happiness of an employee in daily work. It is also known as personal emotional attitudes towards employees’ jobs. Enjoying at work is the main factor of job satisfaction (Keser, 2009).

Job satisfaction is an evaluation of conditions (job itself, management attitudes etc.) and the results (salary, work safety etc.) of the job. In other words, job satisfaction is the perception and emotional reaction about the job and the results of it (Luthans, 1994).

The attitudes and behaviors of employees are formed by their job satisfaction. Satisfied employees show positive actions (Akyıldız & Turunç, 2013). An increase in the efficiency of the employees will also increase the corporate performance. For this reason, the organization should try to increase job satisfaction by identifying and meeting employees’ needs. In case of dissatisfaction low performances, frequent discontinuity and increasing employee turnover would appear (Noe, Hollenbeck, Gerhart, & Wrigh, 1997).

The factors influencing job satisfaction differs from the societies, cultures and persons. Those factors can be listed as personal factors (age, gender, working experience, education) and organizational and environmental factors (salary, working conditions, managers’ attitudes, employees’ relationships and physical environment) (Şahin, 1999).

Smith, Kendall and Hulin explain the factors influencing job satisfaction into five categories (Luthans, 1994).

1-) Job itself: The attractiveness of the job, educational opportunities and the chance of taking responsibility.

2-) Salary: The salaries should not be lower than other companies.

3-) Promotion opportunities: The employee should have rising opportunities in his job.

4-) Management: The management should be skilled enough to support their employees in technical and social ways.

5-) Colleagues: Technical and social support of the colleagues.

Researchers consider job satisfaction as a reason for the reactions like job performance, the intense of leaving job and disappointment (Rusbelt, Farrell, Rogers, & Mainous, 1988). Moreover, in organizations where job satisfaction is at high levels, the ratios of leaving job and incontinuity are very low (Shalley, Gilson, & Blum, 2000).

2.2.1. The Influence of Management to Job Satisfaction

The communication between the managers and the employees, the problem solving with the employees, accuracy of the attitudes of the managers and equality between the employees are some of the main factors affecting job satisfaction in positive ways (Keser, 2009).
The organization of the management, their behaviors to the employees and the way of implementing the rules are really important aspects (Mitchell & Larson, 1987).

Having responsibility in their jobs, being sure of safety, having social relationships in daily work life and working in a stress-free environment are positive factors affecting job satisfaction of the employees (Edvardsson & Gustavsson, 2003).

3. Methodology

The starting point of this study is the intuition of a relationship between workplace DNA and job satisfaction. Because there is a high employee turnover in health care sector, a large scale health care organization is chosen. A survey investigation is conducted with the nurses of this organization to search for the possible relationship between workplace DNA and job satisfaction.

The questionnaire of the study consists of 28 questions aiming to determine organization’s DNA and 20 questions measuring job satisfaction. For understanding responders’ backgrounds, there is also a six-questioned demographic part at the end of the questionnaire. 5 point Likert scale is used in the questionnaire. After the implementation period, gathered data analyzed with SPSS program.

The number of respondents is 274 and the number of analyzed questionnaires is 262. 12 questionnaires are eliminated. With the help of SPSS program, descriptive analysis, frequency tables and crosstabs are prepared.

4. Findings and Conclusion

4.1. Demographic Results

The implementation is conducted with 262 nurses working in a large scale health care organization in Izmir. According to the demographic framework, only 36% of the respondents are male. 50.8% of the respondents are married and 49.2% of the respondents are single. The age ranges are %12.6 below the age of 21, %47.3 between 21-30, %35.5 between 31-40, %3.8 between 41-50 and %0.8 of the respondents are above 51. Moreover, %33.6 of the respondents are high school graduates, 27.1% are associate degree program graduates, 37.8% are bachelor’s degree graduates and only 1.5% of the respondents are masters’ degree graduates.

The experience levels are also analyzed and 61.8% have less than 5 years of experience, 19.8% have between 6-10 years, 9.9% have between 11-15 years, 6.5% have 16-20 years and 1.9% have more than 21 years of experience. When their professional experience examined in detail, 48.9% of the respondents have been working at the same job less than 5 years, 23.7% have been working for 6-10 years, and 12.6% for 11-15 years, 11.8% for 16-20 years and 3.1% have been working at the same job more than 21 years.

<table>
<thead>
<tr>
<th>Table 1: Reliability Coefficients of Workplace DNA Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>The Resilient Organization</td>
</tr>
<tr>
<td>The Military Organization</td>
</tr>
<tr>
<td>The Just in Time Organization</td>
</tr>
<tr>
<td>The Fits and Starts Organization</td>
</tr>
<tr>
<td>The Over Managed Organization</td>
</tr>
<tr>
<td>The Passive Aggressive Organization</td>
</tr>
</tbody>
</table>
4.2. The Relationship between Workplace DNA and Job Satisfaction

The reliability coefficient of job satisfaction scale is found as 0.909; workplace DNA is found as 0.716. According to Likert scale principles every question measures only one attitude (Tavşancıl, 2005). Reliability coefficient, according to literature, is acceptable when it is between 0.60 and 0.70 (Cronbach, 1990). In the light of these explanations, this study can be accepted as reliable with its total reliability value of 0.824.

The structural validity of workplace DNA scale is analyzed and a factor test is implied. The factor analysis measures the validity of the questions according to their purposes (Büyüköztürk, 2002). Suitability of the data set for factor analysis should be measured by Kaiser-Meyer-Olkin (KMO) coefficient and Barlett Sphericity test. KMO coefficient should be higher than 0.60 and Barlett test should give a meaningful result for implementing factor analysis. The result of the factor test is shown in Table 2. KMO coefficient is found as 0.882. The six dimensions are found according to the results of factor test.

As it is shown in the table, all of the question groups representing an organization tipology have reliability results above than 0.60.

Respondents’ perceptions about the organization structure are as the following:

<table>
<thead>
<tr>
<th></th>
<th>Respondent</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job Satisfaction</strong></td>
<td>262</td>
<td>1,00</td>
<td>5,00</td>
<td>3,7736</td>
</tr>
<tr>
<td><strong>The Military Organization</strong></td>
<td>262</td>
<td>1,50</td>
<td>5,00</td>
<td>3,6708</td>
</tr>
<tr>
<td><strong>The Just in Time Organization</strong></td>
<td>262</td>
<td>1,00</td>
<td>5,00</td>
<td>3,3969</td>
</tr>
<tr>
<td><strong>The Resilient Organization</strong></td>
<td>262</td>
<td>1,00</td>
<td>5,00</td>
<td>3,3874</td>
</tr>
<tr>
<td><strong>The Fits and Starts Organization</strong></td>
<td>262</td>
<td>1,00</td>
<td>5,00</td>
<td>2,8155</td>
</tr>
<tr>
<td><strong>The Over Managed Organization</strong></td>
<td>262</td>
<td>1,00</td>
<td>5,00</td>
<td>2,7716</td>
</tr>
<tr>
<td><strong>The Passive Aggressive Organization</strong></td>
<td>262</td>
<td>1,00</td>
<td>5,00</td>
<td>2,5509</td>
</tr>
</tbody>
</table>

The results show that the respondents mainly adopt the resilient, military and just in time organization structures which are accepted to be the healthy organization structures in the literature. This is also an indicator of management’s success of the organization.

The respondents’ job satisfaction is found as 3.7736. Values between 3.41 and 4.20 are accepted as “I agree” or “Satisfied”, it can be said that the respondents are satisfied of their jobs.

4.3. Further Research and Conclusion

The main purpose of this study is to investigate the relationship between workplace DNA and job satisfaction. The study has a comprehensive literature review and a survey study which is implemented to 262 respondents of a large scale health care organization. Besides, the study is important because of indicating the factors and the right organization structures to increase job satisfaction. Other organizations operating in other sectors can also find useful solutions for developing their employees’ job satisfaction.
Thewre is an important point in the correlation between job satisfaction and organization structures: the best correlations between job satisfaction and organization structures are found in just in time organization and resilient organization. This situation shows that if the organization, where the questionnaire implementation is conducted for this study, turns into a just in time organization or resilient organization instead of military organization the employees’ job satisfaction will increase. However, this is a health care organization and any misapplication can cause damages in human health. That is why it is not possible to make flexible decisions in all operation. The management restrains the health care personnel and allows only the experts in decision making. This is required for the organization to avoid from disasters. This situation is the main reason of the difference between the existing organizational structure and the desired organizational structure of the employees.

The organizational results are as following: The reason of the existing organizational structure should be told to the employees, required actions to make employees more satisfied with the organizational structure should be taken, new decision making fields should be created for the employees to make them more effective and increase their job satisfaction levels.

This study is conducted with an organization which increased its employee number 50% in a short time period. Because of being a health care organization, it is not possible to compensate mistakes. For this reason, a new study with a different organization would provide a chance to make comparison. Especially an organization where there are physical errors can be a good starting point.

References


The meta-analysis of the relationship between emotional labor and burnout

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Abstract. There is a considerable increase in service sector jobs that involve face-to-face interaction between service providers and clients. Recently, the concept of emotional labor has gained importance in shaping the future of institutions in the service sector. Researchers have shown that emotional labor behavior types can lead to burnout in workers as well as negative work results such as job dissatisfaction and intention to quit. This study seeks to advance the scientific understanding of emotional labor by meta-analytically reviewing the relationship between burnout and emotional labor. This meta-analysis reviewed the literature on emotional labor and burnout in journal articles and theses between 2000 and 2015. It includes 37 papers that meet the inclusion criteria. The results of the meta-analysis showed that there is a significant relationship between emotional labor and burnout. Also, there is a moderate level of relationship between surface acting and emotional exhaustion. The results also revealed that there is a moderate level of relationship between expression of naturally felt emotions and personal accomplishment, while there is a significant but weak relationship between expression of naturally felt emotions and emotional burnout. Deep acting and all burnout dimensions have a significant but weak relationship.

Keywords: Emotional labor, burnout, effect size, meta-analysis

1. Introduction
The concept of emotional labor was first proposed by Hoshchild in 1983 and has been the topic of numerous book chapters, articles and presentations since then. The studies on emotional labor between 1983 and 2000 focused more on conceptual definitions and were confined to the efforts to understand the structure of emotional labor [14]. The studies after 2000 tried to determine the reasons behind and results of emotional labor, and emotional regulation strategies [13]. For example, it was revealed that emotional labor has such results as organizational rules, emotional management at workplace, and possible emotions harmful to health. The studies that have been conducted particularly in the last decade have found that emotional labor leads to some severe negative effects on employees such as physical disturbances, stress, burnout and job dissatisfaction [15] because the positive emotions that an organization expects employees to show like smiling, looking happy, and establishing good communication with customers, and sustaining these emotions lead to stress in employees. The dilemma between the emotional requirements of the work and a person’s own emotions causes burnout in an employee [11].

Bono and Vey examined the reasons for and results of emotional labor in their meta-analysis study in 2005. The researchers argued in their study that there are numerous studies on the negative psychological and cognitive effects of emotional labor and that these studies are inconsistent with each other [14].

The aim of the present study is to meta-analytically examine the relationship between emotional labor and one of its negative results, burnout. The reason behind choosing burnout is that it has been empirically examined in the occupational health, industrial and organizational psychology, and management literature, and it has been considered as a highly important construct for workplace productivity and personal well-being. Burnout is one of the major problems in jobs involving intense face-to-face communication (jobs with heavy emotional workload). According to Kenworyt et al. [15], burnout will continue to be an important construct in the future as well. As Zapf [11] states, one of the most cited negative effects of emotional labor is burnout.
In this study, first, the publications between 2000 and 2015 that include the relationship between emotional labor and burnout were reviewed, and a meta-analysis study was carried out with the empirical studies selected based on certain criteria from among the reviewed studies. More specifically, the aims of this study are; (i) to determine the extent of the relationship between emotional labor and burnout, and (ii) to evaluate some methodological characteristics that affect this relationship (for example, the language of emotional labor scale, scale type, country of the research, application field).

2. The Relationship between emotional labor and burnout

The emotional labor phenomenon was first defined by Aarlie Russel Hoshchild in 1983 and has been the focus of attention for researchers until today. This has led to detailed discussions regarding emotional labor. Hoshchild [4] defines emotional labor as “the effort of employees to regulate their feelings in a way to meet the expectations of the organization”. Sandiford and Seymour [23], on the other hand, stated that emotional labor means “displaying or regulating the appropriate feelings, while hiding the true feelings”. An important point about emotional labor that requires further attention is to reveal what form the feelings shown by employees to customers take. In this respect, emotional labor behaviors have different dimensions in the literature. One of these dimensions, surface acting, refers to the expression of emotions that do not exist or that are not felt as if they are felt, or in other words, refers to acting by presenting false feelings [2]. An employee who exhibits surface acting experiences a high level of emotional conflict. When one exhibits surface acting, he or she only changes his or her behaviors and show the feelings that are required by the conditions. In other words, the feeling that one has to show is quite different from what he or she really feels [26]. Kurml and Geddes [27] views deep acting, which is another dimension of emotional labor, as the basis of the emotional labor phenomenon. According to Grandey [1], deep acting refers to employee’s developing empathy with the customer and showing positive feelings to the customer by trying to understand the conditions that create difficulties to him or her. In this case, the individual changes his or her feelings and make them compatible with the conditions. This type of behavior requires one to pay a far greater effort.

In addition to these two dimensions of behavior, Ashforth and Humphrey [6] developed the dimension of expression of naturally felt emotions. According to Dienfendorff, Croyle and Gosserand [16], an employee who expresses his or her feelings in this way does not act when dealing with customers, and is genuinely ready to help and full of positive feelings. Moris and Feldman underscore that all these dimensions require a certain amount of effort [3].

Lee and Ashforth [24] define burnout as "an emotional exhaustion syndrome, depersonalization towards others and the feeling of decrease in personal accomplishment". Burnout is defined as physical, emotional, and mental exhaustion resulting from working at emotionally difficult jobs and job conditions. According to Maslach and Leither [9], burnout occurs when there is a huge mismatch between the nature of the job and the nature of the person. While there are efforts to extend burnout to other aspects of life such as marriage and family, it is primarily related to work life as initial findings suggest [17].

Burnout occurs when employees cannot keep enough psychological distance between job requirements and the sense of self, which is valid not only in service sector but all sectors that involve emotional labor [5]. Zapf [11] found that emotional labor is significantly related to burnout as well as all other organizational problems. The high levels of emotional demands and serious role conflicts have an influence on the three dimensions of burnout. Surface acting, the process of employees’ changing and controlling their emotional expressions, is related to stress findings [7]. Thus, surface acting is assumed to be related with both emotional exhaustion and depersonalization. Deep acting is the process of controlling the internal feelings and thoughts to meet the expectations, and as findings suggest, it is more related with personal accomplishment at work [8]. In their meta-analysis study, Bono and Vey [14] found a positive relationship between emotional labor, emotional exhaustion, and
depersonalization. These findings reveal that it is highly likely to observe burnout syndrome in jobs that involve intense emotional labor.

In this respect, our study addresses the following research questions:

1. Is there a relationship between emotional labor and burnout?
2. What are the moderator variables in the relationship between emotional labor and burnout?

3. Method

3.1. Determining the studies for the meta-analysis

Literature review on emotional labor and burnout syndrome was done by using the key words “emotional labor, emotional labour, surface acting, deep acting, expression of naturally felt emotions”, “emotional work, emotion work”, and/or “burnout, emotional exhaustion” in all subscribed and trial databases of Akdeniz University, and by limiting the search to the years between 2000 and 2015 and to the title, abstract, and keywords. The reviewed databases were EmeraldInsight, JSTOR, EBSCOhost, Hospitality & Tourism Complate, ERIC, ProQuest Digital Dissertation, Sage Journal, Science Direct and Scopus. A total of 1682 documents were accessed as a result of the search. The inclusion criteria for the meta-analysis study are as follows:

1. Using an emotional labor and burnout scale,
2. Reporting sufficient amount of statistical data so that the relationship between emotional labor (minimum two dimensions) and burnout (minimum one emotional burnout scale) could be assessed,
3. Having been published as a full text in a refereed journal, as a paper in a book of conference proceedings or as a dissertation between 2000 and 2015.

Following this elimination process, it was found that 37 articles, most of which used the emotional labor scale that involved two dimensions (surface acting and deep acting), could be included in the meta-analysis study. In these studies, the scale of Brotheridge and Lee [8] or the scale of Diefendorff, Croyle and Gosserand [16] were used to measure emotional labor. To measure burnout, Maslach Burnout Scale [10] with three dimensions (emotional exhaustion, depersonalization and personal accomplishment) was generally used in the studies. Some studies used only the emotional burnout dimension of the scale.

3.2. Coding process

For the meta-analysis study, a formal template was designed using the meta-analysis books. This template indicates the name of the article, authors, the journal in which the paper was published, the methodological information about the paper (scales used, the number of the dimensions, the research language, the sample size, the country of the research), the effect size (Pearson correlation coefficient), sample characteristics (the occupations, gender, age, and seniority of the participants). The information entered into the template by one researcher was checked by the other researcher.

3.3. Calculation of the average effect size

The study used Pearson correlation coefficient r as the effect size. Since the results are expressed as a correlation, correlation coefficients were entered into the Comprehensive Meta Analysis (CMA) software program as the effect size measurement. CMA, which is a software package for meta-analysis, uses the Hedges and Olkin approach [20].

Since the sample size in the selected studies is different, each correlation is converted into Fisher’s Z score before the effect sizes (correlations) of the selected studies are combined, and then, to give more weight to big sample than small sample, each correlation is weighted with its reverse variation [22]. Then, Z scores are re-converted into r correlations, and the average correlation and 95% confidence intervals are identified.

3.4. Statistical independence

The first of the two basic alternative options for meta-analysis is to use each research study as the unit of analysis. The second approach is to take each correlation as the unit of analysis. If there is more than one correlation in a study, one of these correlations is chosen or the average of the correlations is taken. In our study, only one study included two correlation coefficients. To ensure statistical independence, the average of these two correlations was taken as the unit of analysis.
3.5. Fixed and random effect models

To determine which model to choose between fixed and random effect models in the meta-analysis study, the variation among the effect sizes (correlations) was analyzed using the Hedges Q test [20]. The Q test uses the k-1 degree of freedom (where k is the number of the correlations in the analysis) chi-square statistics. If the result is not significant (p>=.05), the correlations are homogeneous, and it is said that the average correlation represents the population’s correlation [19, 25]. If the correlations are heterogeneous, the effect of moderator variables on the relationship between emotional labor and burnout should be examined. As the Q statistics was found to be significant in our study (p<=.05), only the random effects model was used while interpreting the findings and examining the moderator variables. All the meta-analyses were conducted using the Hedges and Olkin method [18].

3.6. Publication Bias

Begg and Mazumdar’s rank correlation method was used to test the publication bias in the study [20]. If the Kendall τ (tau) correlation is insignificant, that means there is no publication bias. Since random effects model was used in the meta-analysis study, the same model was used to measure publication bias. As p≥.05 in the Begg and Mazumdar tests conducted for all the effect sizes, there is certainly no publication bias.

4. Findings

As in many studies, the variables in this study (emotional labor and burnout) also have multiple indicators. In the study, the measurement of emotional labor was carried out with three dimensions, namely, surface acting, deep acting and expression of naturally felt emotions. Burnout, on the other hand, was evaluated as emotional exhaustion, depersonalization, and personal accomplishment. As a result, 162 correlations were coded. The average correlations obtained by using the CMA software package and their test of significance based on the 95% confidence intervals and random effects model were given in Table 1.

As seen in Table 1, the average effect sizes between emotional labor and burnout (the estimated correlations) changed from ρ= -.14 to ρ=.37 and 95% confidence intervals do not involve zero. Also, since the Z statistics values of all effect sizes are significant, it can be stated that effects sizes are significant and that there is a statistically significant relationship between emotional labor and burnout.

<table>
<thead>
<tr>
<th>Variable</th>
<th>K</th>
<th>N</th>
<th>Ave. r</th>
<th>Ave. ρ</th>
<th>SE ρ</th>
<th>%95 CI</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface Acting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>34</td>
<td>12450</td>
<td>.28</td>
<td>.29</td>
<td>.13</td>
<td>.24; .34</td>
<td>10.54**</td>
</tr>
<tr>
<td>Depersonalization Personal</td>
<td>17</td>
<td>4368</td>
<td>.29</td>
<td>.31</td>
<td>.13</td>
<td>.22; .38</td>
<td>7.15**</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>16</td>
<td>4271</td>
<td>-.15</td>
<td>-.17</td>
<td>.16</td>
<td>-.26; -.06</td>
<td>-.06**</td>
</tr>
<tr>
<td><strong>Deep Acting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>36</td>
<td>12105</td>
<td>-.13</td>
<td>-.14</td>
<td>.11</td>
<td>-.18; -.10</td>
<td>-.64**</td>
</tr>
<tr>
<td>Depersonalization Personal</td>
<td>17</td>
<td>4305</td>
<td>-.15</td>
<td>-.16</td>
<td>.14</td>
<td>-.22; -.08</td>
<td>-.42**</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>16</td>
<td>4203</td>
<td>.25</td>
<td>.25</td>
<td>.14</td>
<td>.18; .31</td>
<td>6.81**</td>
</tr>
<tr>
<td><strong>Expression of Naturally felt Emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>12</td>
<td>4116</td>
<td>-.19</td>
<td>-.20</td>
<td>.09</td>
<td>-.24; -.15</td>
<td>-.10**</td>
</tr>
<tr>
<td>Depersonalization Personal</td>
<td>7</td>
<td>1433</td>
<td>-.21</td>
<td>-.21</td>
<td>.13</td>
<td>-.32; -.08</td>
<td>-.34**</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>7</td>
<td>1433</td>
<td>.33</td>
<td>.37</td>
<td>.26</td>
<td>.12; .57</td>
<td>2.88**</td>
</tr>
</tbody>
</table>

** p<.01; GA: Reliability

The relationship between surface acting and emotional exhaustion is ρ=.29, while the relationship between surface acting and depersonalization is ρ=.31. According to Cohen [12], these relationships correspond to a medium effect size. There is a low negative relationship between surface acting and personal accomplishment (ρ= -.17). Both
emotional exhaustion and depersonalization have a low reverse relationship with deep acting ($\rho = -1,14$ and $\rho = -1,16$, respectively). It is seen that there is a positive and a more significant relationship between deep acting and personal accomplishment ($\rho = 0,25$). The third dimension of emotional labor, expression of naturally felt emotions, has the most significant relationship with personal accomplishment. $\rho = 0,37$ indicates a medium level effect size. There is a low reverse relationship between expression of naturally felt emotions, emotional exhaustion and depersonalization.

4.1. Findings on moderator variables

As it was mentioned earlier, in the Q homogeneity test carried out for the 162 studies used in the meta-analysis, effects sizes were found to be heterogeneous. In this case, it can be said that while accounting for the differences between the crossover research studies, factors other than sampling error ($\alpha = 0,05$) should be taken into consideration.

Some characteristics of the emotional labor measurement tool and the meta-analysis results for methodological variables like the country and the field of the research were given in Table 2 and Table 3. The analysis for the moderator variables was only conducted for the effect sizes between surface acting and emotional exhaustion and between deep acting and emotional exhaustion. No analysis was conducted for the other relationships since there was not sufficient data for the meta-analysis of moderator variables.

As seen in Table 2, Q-between values are significant, which indicates that the language used in the emotional labor scale in the meta-analysis, the country and the field where the study was conducted, and the researcher to whom the emotional labor scale belongs (Diefendorff or another researcher) all have a moderating effect in the relationship between surface acting and emotional burnout.

Table 2. The methodological characteristics of the moderator variables in the relationship between surface acting and emotional exhaustion

<table>
<thead>
<tr>
<th>Moderator variables</th>
<th>Categories</th>
<th>k</th>
<th>Q-between</th>
<th>Ort. $\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language of the measurement tool</td>
<td>English</td>
<td>16</td>
<td>46,75**</td>
<td>0,31</td>
</tr>
<tr>
<td></td>
<td>Turkish</td>
<td>13</td>
<td>19</td>
<td>0,19</td>
</tr>
<tr>
<td></td>
<td>Other (German, Chinese, etc.)</td>
<td>8</td>
<td>32</td>
<td>0,32</td>
</tr>
<tr>
<td>Country of the study</td>
<td>USA</td>
<td>7</td>
<td>3,5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>5</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turkey</td>
<td>13</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eastern Countries (China, India, Taiwan, Australia)</td>
<td>12</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Field of the study</td>
<td>Health</td>
<td>8</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education, Tourism, Banking, Marketing etc.</td>
<td>24</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manufacturing</td>
<td>5</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Type of the scale</td>
<td>Diefendorff</td>
<td>13</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other (Brotheridge &amp; Lee, German version, etc.)</td>
<td>24</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

* $p<0,05$; ** $p<0,01$

As the results of the study indicate, the studies in the meta-analysis were mainly conducted in the fields of education, tourism, banking and marketing ($k=24$), and Diefendorff’s emotional labor scale was used in only 13 of the studies. As seen in Table 2, when the scale was used in a language other than Turkish, the effect size is larger. Similar results were obtained in the effect size of 13 studies conducted in Turkey ($\rho = 0,18$ for Turkey). The effect size of the fields of health and manufacturing is lower than that of other service sectors such as education, tourism, and banking.

When the moderating effects in the relationship between deep acting and emotional exhaustion are examined (Table 3), it is seen that the language used in the measurement tool does not have a moderating effect (Q-between=3,21; $p>0,05$). Although the effect size is larger in the studies conducted in the US and Eastern countries, it is still low ($\rho = 0,20$ and $\rho = 0,19$, respectively).

The effect size in the field of manufacturing ($\rho = 0,08$) is lower than that in service fields. The effect size was found to be lower ($\rho = 0,12$) in the studies that used Diefendorff scale.
Table 3. The methodological characteristics of moderating effects in the relationship between deep acting and emotional exhaustion

<table>
<thead>
<tr>
<th>Moderator variables</th>
<th>Categories</th>
<th>k</th>
<th>Q-between</th>
<th>Ort. ρ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language of the measurement tool</td>
<td>English</td>
<td>16</td>
<td></td>
<td>-.13</td>
</tr>
<tr>
<td></td>
<td>Turkish</td>
<td>13</td>
<td>3.21</td>
<td>-.17</td>
</tr>
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** p<.01

5. Discussion

In this meta-analysis study, the true correlations between emotional labor and burnout constructs were tried to be predicted. Moreover, variation was tried to be explained through moderator variables by checking whether there is a significant variation (heterogeneity) in the correlations of the crossover studies. The results of the meta-analysis revealed that there is a statistically significant relationship between the three dimensions of emotional labor (surface acting, deep acting and expression of naturally felt emotions) and the three dimensions of burnout (emotional exhaustion, depersonalization and personal accomplishment) at different levels. The relationship between surface acting and emotional exhaustion and depersonalization is positive and moderate. When employees exhibit surface acting while doing their job, they feel burnout and are insensitive to the people around them. In the meta-analysis they conducted with 18 empirical studies in 2005, Bono and Vey found a relationship of $\rho=.34$ between surface acting and emotional burnout, which coincides with our results. In Bono and Vey’s study, only the relationship between surface acting and deep acting was investigated among other dimensions of emotional exhaustion and emotional labor because, as Bono and Vey say, they analyzed 18 empirical studies, six of which were theses and papers, and thus they did not have sufficient data to investigate the relationship between other burnout dimensions and emotional labor [14]. Also, Kammeyer-Mueller et al. [13] found a positive moderate relationship ($\rho=.39$) between surface acting and emotional exhaustion in their meta-analysis study.

In the literature, there are conflicting results about the direction of the relationship between deep acting and emotional exhaustion. While some researchers maintain that deep acting leads to emotional burnout in individuals [28], some other researchers argue that the effort an employee pays to understand the customer by forming empathy with him or her may foster emotional resources [26]. In our meta-analysis, a low reverse relationship was found between deep acting and emotional exhaustion. Conversely, Bono and Vey found a low positive relationship between deep acting and emotional exhaustion ($\rho=.14$).

As expected, depersonalization has a positive relationship with surface acting, and a negative relationship with deep acting. These results are logical because the employees who are more willing to show the feelings that the organization wants them to exhibit can put themselves in customers’ place. These employees can see the people they interact with as a human being rather than an object, and in this way, they can minimize their insensitivity.

Another finding of the study is that surface acting reduces personal accomplishment. Yet, this relationship is low. If the employees who exhibit deep acting try to communicate with customers emotionally, their personal accomplishment will also increase. Grandey [2] maintains that those who try to change their inner feelings by matching them with what is expected of them get used to such a behavior and do not experience too much burnout. In this meta-analysis, a low positive relationship was found between deep acting and personal accomplishment. In their meta-analysis study in 2013, Kammeyer-Muller et al. [13] found a low positive relationship between work performance and deep acting.
One of the interesting findings of our study is that there are few people who use the expression of naturally felt emotions dimension of emotional labor. Researchers usually investigated the dimensions of surface acting and deep acting, neglecting the expression of naturally felt emotions dimension. However, according to Diefendorff et al. [16], an employee who expresses his or her feeling in this way does not play-act while dealing with the customer; on the contrary, this employee behaves like this because he or she feels ready to help with positive feelings. In this meta-analysis study, it was found that employees’ exhibiting their genuine feelings when dealing with the customers decreases their emotional exhaustion and depersonalization, and fosters personal accomplishment.

This meta-analysis presents the empirical results as to how some methodological characteristics of emotional labor scale affect the power of the correlations. In the relationship between surface acting and emotional exhaustion, it was observed that the methodological variables that involve the country where the scale was implemented, the language used in the scale, the field in which the scale was used and the scale type play an important moderating role. The studies which used Brotheridge and Lee’s scale rather than Diefendorff et al.’s scale to measure emotional labor had a larger effect size. The studies which used the Diefendorff scale to measure the relationship between deep acting and emotional exhaustion have a lower effect size.

The limitation of the study is that the moderator variables were taken into consideration only in the relationship between surface acting and deep acting, and burnout. These variables could not be investigated for the relationships in the other dimensions due to the insufficient amount of data.

6. Conclusion

Emotional labor is recently a topic of interest for researchers as it has a two-sided effect. It affects employees’ well being negatively on the one hand, and affects the success of the company positively on the other. This meta-analysis study, which aimed to determine the level of linear relationship between emotional labor and burnout, reflects the more recent situation and is more informative compared to Bono and Vey’s study. Our study includes a larger sample size, and data from service sector and, although little, from manufacturing sector.

This study is also a guide to popularize the meta-analysis studies in Turkey. Similar studies may help to gain a better insight into emotional labor. This meta-analysis study examined the relationship between emotional labor and burnout, and the moderator variables in this relationship. As a suggestion for further research, a meta-analysis study involving the structural equation modeling that investigates the causes and the results of emotional labor together may be conducted. According to Groth, Hennig-Thurauf and Walsh [21], surface acting is interesting because it is generally related with negative results. When there is surface acting, it is likely to encounter burnout. An interesting finding of this meta-analysis study for managers is that deep acting decreases the level of emotional exhaustion and depersonalization, yet increases the level of personal accomplishment. Another finding that deserves attention is that employees who exhibit naturally felt emotions at work have a higher level of personal accomplishment. Thus, it may be more beneficial for companies to employ people who have a tendency to exhibit deep acting or naturally felt emotions.

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Abstract. As a result of global competition, organizations should serve their customers good quality, low price and short lead time. Therefore, many organizations in business world seeks for an approach to keep their pace with these changes and fulfill the demands. At this point, lean approach propose a production philosophy to manufacture the right product, to supply the right quality through and to minimize wastes and maintain the flexibility to adapt the varying requirements of production. Lean production, also known as Toyota Production System, is a production philosophy which is based on producing when the customer demand arises with instant deliver and no inventory. It aims to underuse of everything to eliminate waste from production process. This paper mainly introduces the philosophy of lean production and management by considering its history, principles, tools and techniques.

Keywords: Lean Production, Toyota Production System, Production Management, Lean Tools
1. Introduction

Lean philosophy is traced from Toyota Production System. However, it took its origins in Henry Ford’s integrated production system. He is the first person truly integrate an entire production system. He formed “flow-based” production management system. (Ogunbiyi, 2014) However, the production system of Henry Ford was not suitable for variable demands. Hence, Ford production system remained insufficient to handle increased market demand and moved its production line to mass production. Nevertheless, this production system bring about problems such as long lead times and poor customer satisfaction. (Codinhoto, Ricardo, Robert, & Jaakko)

On the other hands, after the Second World War, Toyota came to be in search of a more modern production system due to the economic crisis. Therefore, Kiichiro Toyoda, Taichi Ohno and others revised Ford’s initial idea and invented Toyota Production System. (Ogunbiyi, 2014) Toyota developed their own lean techniques in Toyota Production system to fulfil changing demands in the industry and costumer requirements. Lean production makes Japanese car manufacturers better than their Western competitors. In this way, lean philosophy has spread quickly to all areas of manufacturing process including the supply chain in the rest of the world. (Dao & Follestad, 2009)

Womack et al. (1990) published a book called “Machine that changed the world” and introduced the term “lean production” to the literature.

2. Lean Production

Lean Production is a philosophy based on Toyota Production System as well as some other Japanese management practices. It can be considered as a new approach to design and produce which aims performance optimization of the production process and provide a standard of perfection to achieve the needs of every single customer. (Howell, 1999)

Lean production basically rests on the idea of the production that takes place only when the need for it arises. (Dao & Follestad, 2009). As a result of this, it reduces the amount of time between the first costumer order and the delivery of the final product. Moreover, it identifies and eliminates the waste in all aspects of any businesses, and thereby enhance value from costumer viewpoint. Therefore, it uses less of everything when it is compared to mass production. Furthermore, it cuts the expenses and inventories immediately and consequently provides cash flow, which is very important. It also supports growth by enhancing productivity and quality, saving time and liberating huge amount of resources. (Modi & Thakkar, 2014)

2.1. Principles of Lean Production

The five principles of lean production aim to optimise the performance of the production system against a standard of perfection to meet unique costumer needs. (Womack & Jones, 2003). Dao and Follestad (2009) defined the principles of value as below:

Principle 1: Specify value
Value is specified on customer needs and the value they ask for.

Principle 2: Identify the value stream
Once the value is specified, all the step in the value stream should be identified to determine value added and non-value added activities to eliminate the waste.

Principle 3: Create Flow
Value should be identified in a flow of activities and processes to minimize delays, inventories, defects and downtime.

Principle 4: Use pull logistics
Production is made only when there is a demand from customer, not depending on predictions.
Principle 5: Pursue perfection
This principle is related to the continuous improvement since the organization should continuously endeavour for improvement, and perfection should be the ultimate goal in the process.

2.2. Seven wastes of Lean Production


Defects (Rework): Production of defective parts or trying to correct it is a wasteful spending. Repair or rework, scrap and inspection mean wasteful handling, time and effort. (Doa & Follestad, 2009)

Overproduction: Overproduction occurs when the production is phased ahead of the schedule instead of just meeting the specific demand. Codinhoto, Ricardo, Robert, & Jaakko. It causes overstaffing, transportation and storage cost (Doa & Follestad, 2009).

Waiting: Waste of time is the ineffective usage of time and involves a delay to value-adding activities (Codinhoto, Ricardo, Robert, & Jaakko).

Unnecessary transport: Transportation of people, products and information is related to waste since it does not add value to product. (Doa & Follestad, 2009).

Inappropriate processing: This waste is related to the inappropriate tools or equipment for a process which may cause coordination and organization problems. (Doa & Follestad, 2009).

Unnecessary inventory: This waste regards the materials stored on site long before they are actually needed. (Doa & Follestad, 2009).

Unnecessary motion: This type of waste occurs when the production process is arranged without considering the production line, layout and people, they create waste and also affect the quality and productivity of the products and outputs (Codinhoto, Ricardo, Robert, & Jaakko).

3. Lean Tools and Techniques

3.1. Elimination of Waste

The main aim of lean production is elimination of waste. 5S Plan and value stream mapping are designed to eliminate waste from production process.

3.1.1. 5-Step (5S) Plan

In Lean philosophy, 5S Plan is a workplace organization technique which is based on managing the production in the best possible way (B.Modi & Thakkar, 2014). 5S plan consists of several sequential steps:

Seiri (Straighten up): This step is based on segregating and discarding. It aims to get rid of anything unnecessary and to leave only the bare essentials in order to be more organized. Herewith it is applied to areas such as tools, products, documents and so on (Forbes & Ahmed, 2011).

Seition (Put things in order): The main objective of this step is to obtain neatness by reorganizing the production area and identifying suitable locations for materials and equipment. Moreover its target is the work flow as it places them in their designated locations. By this way, workers will find whatever they need without wasting their time and energy by looking for them (Forbes & Ahmed, 2011).

Seisu (Clean up): In order to avoid confusion and chaos in an untidy working area, cleaning and daily controls becomes crucial in this step, as clutter in the working area inhibits the application of working tasks. Therefore, unnecessary materials should be disposed and tools and equipment should be restored to their proper loc-
cation after the completion of each task. (Forbes & Ahmed, 2011)

Seiketsu (Personal neatness): This step aims to standardize the locations for tools, files and equipment. Visual adjustments such as colour, coding and labelling should be done by involvement of the employees’ creativity (Forbes & Ahmed, 2011).

Shitsuke (Discipline): Step 5 is about enabling the motivation for employees so that the enactment of the other four steps will be possible. In order to provide that, motivation recognition programs can be used by the management team (Forbes & Ahmed, 2011).

3.1.2. Value Stream Map

A value stream is the entire set of activities which describes the process of production from raw material to finished product. Value stream maps are visual tools to provide identification of waste and understand the flow of material and information. In other words, they are tools to present all steps for delivery of any value added non-value added product. (Modi & Thakkar, 2014)

3.2. Just-in-Time Production

Just in Time Philosophy is about producing minimum amount of units in the smallest quantities, at the latest time possible and with an elimination of the need of inventory. It aims the right quantity of goods at the right place and the right time. Moreover JIT includes: (B.Modi & Thakkar, 2014)

3.2.1. Pull Driven System

Pull system is a lean production strategy that aims to reduce waste in the production process. In this system, the process starts with the customer’s order, and then continue with the use of visual signals combined with Kanban method to prompt action in each previous step during the process. In other words, it is pulled through the manufacturing process on the basis of the customer’s demand (Sladich, 2010). Pull system standardizes the amount of inventory in the production process. Moreover, it uses visual controls to activate their replenishment process and decrease the batch or lot sizes in production.

3.2.2. Continuous Flow

Continuous flow means the linkage of manual and machine operations to provide a smooth production processes when there is not any work-in-progresses. To achieve this, the equipment and workstations necessary for the production should be arranged within spaces that are close to each other. Thus, the flexibility in production can be achieved. (Tezel, 2007)

3.2.3. Kanban System

Kanban System is a part of JIT production system with a very crucial role. This system is based on plastic cards that contain all the information related to the production/assembly of each stage and details of its path of completion. It also provides multistage production scheduling and inventory control system. (Kumar & Panneerselvam, 2007)

3.2.4. Heijunka

Heijunka is a technique to facilitate the just in time production aiming at production levelling, which is to find an average production volumes and keep it stable. Also, it is used to smooth out production in all departments as well as the supplier over a period time. Heijunka is used to solve the former by assembling a mix model within each batch and ensuring that there is an inventory product proportional to variability in demand. Furthermore, the failures in production flow is reduced to minimum by making sure that components are sequenced to be available in the right quantity and at the right time (McManus, 2013).
3.3. Jidoka

Jidoka understanding is based on stopping a process in case of a problem. In an all-machine process, machines are set to stop automatically. In this way, a single operator can control multiple devices in the process for visual inspection (Tezel, 2007). However, if it is an all-people process, all employees are authorized to stop the manufacturing line whenever any error or defect arises. Employees from every level have responsibility and authority to take immediate decision and stop the production line in the lean production philosophy. (Monden, 1998)

3.3.1. Poka-Yoke

Poka-Yoke is an error proofing tool that aims to reduce defects. According to Shingo (1986) human errors are inevitable; however, they can be reduced to minimum by keeping it under control. Therefore, Shingo developed Poka-Yoke tools to deduct and intervene in the errors of the workers’ behaviors during the operation. Poka-Yoke tools are used to stop the production line when any defects arises. (Bay & Cicek, 2007)

3.3.2. Andon

Andon is a lean production term which is based on an alert system in case of a problem. (Tezel, 2007) It provides instant, visible and audible warning for the operation team when there is a defect in the production. Andon tool is based on light bulbs on a board which gives information about production line by color coding. While green bulb shows that there is no problem in the process, yellow bulb signals a problem and then workers ask for help to fix it. In addition to that, if the line is stopped, red bulb is on. Subsequently, quality inspection is done. If any defect is detected in the quality, the production is shut down until the problem is solved. Andon is a result of zero tolerance culture of lean production. (Moralioglu, 1999)

3.4. Standardized Work

The standardized work is based on performing efficient production in consecutive sequence by focusing on operator movements and systematically combining work tasks. Standardization in production sets up the best work sequence in each step of process. Once it is determined, the same sequence is repeated by each employee for each process of the same product. In this way, unnecessary motion and wasted effort is avoided. Besides, the quality and efficiency of the production is increased. Moreover, standardization provides safety and prevents equipment damages (Piatkowski, 2004)

3.5. Visual Management

Visual Management is a system to provide the employees with regular information so that the workers will have a working environment where they understand and manage their own work in a safe, clean and organized way. It enables open communication and continuous improvement. It lets everyone in the production area know what the current status is and what to do next. (Modi & Thakkar, 2014) Thus, the production is actualized as effectively as possible (Tezel). Moreover, visual management reveals the problem in the production stream immediately and that makes it possible for everyone to analyze it and fix the problem. (Modi & Thakkar, 2014) Visual management is based on large visual displays rather than written reports and guidelines. The targeted and current situation on production level should be made visible by charts, metrics, cards and tables. Additionally, process and procedure documents can be provided extensively to achieve more transparent working environment. (Tezel, 2007)

3.6. Continuous Improvement (Kaizen)

Kaizen is originated from Japanese management concept word for incremental change which means continuous improvement. KAI means take apart and make new and ZEN means
think about so as to help other. It is used worldwide currently by many organization as an important strategy to achieve their long term competitive strategy. (Modi & Thakkar, 2014)

3.6.1. PDCA Model

Continuous improvement takes place within Plan-Do-Check-Act (PCDA) Model. It is designed by W. Edward Deming to manage the quality and the control of the process (Arveson, 1998). According to PCDA Model, repeatable and clearly defined processes provides quality. Furthermore, it helps change the management in organizations and problem solving. PCDA cycle has four phases (Mind Tool, 2013).

Plan: Identifying and analysing the problem
Do: Developing and testing a potential solution
Check: Measuring the effectiveness of the solution and analyse if it can be improved in any way.
Act: Implementing the improved solution

4. Conclusion and Discussions

This paper provides brief knowledge of lean production and its tools & techniques. Lean production thinking is dedicated to the decrease of variability and uncertainty and managing them in the application of the projects (Ballard, Tommelein, Koskela, & Howell, 2002). It helps to reduce lead time for costumers, decrease the inventories for producers and develop knowledge management. Moreover, it reduces the errors in production so that there will less rework (Melton, 2005) As a result, the quality of the production will be higher.

Lean production provides improved visual management by giving a chance to the evaluation of the production with a visual scan. Also, as a result of a standardized work, the efficiency will be increased and manpower will be reduced. Lean production is easier to manage because the standardized work lets people know what to do while facing a problem. Lean production forces to analyse the problem and investigate it until the cause is found. Furthermore, lean production provides more suitable team to face these problems. Lean management promotes the participation of the whole team in the process, which means each member of the team will feel as a part of the organization. This situation provides improved employee morale, even when there is a resistance at the beginning of the implementation. But once it is accepted by employees, they will feel as a contributing part of team (Melton, 2005).

Today, as a result of the change in the requirements and needs of customers, push the organizations to change their traditional production system. At this point, lean production provides an approach which produces only the customer’s value in the right time with less resources. Moreover it focuses on how to sustain this value. By this way, organizations may achieve the efficiency in their process and sustainable advantage in today’s competitive environment.

References


FACTORS AFFECTING PURCHASING POWER OF CUSTOMERS

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Abstract

Necessary information on potential factors having been primarily addressed in this study that we discussed the factors affecting the purchasing power of consumers has created the infrastructure. The detailed information on the subject carried out in accordance with the literature study has been initiated by the analysis of hypotheses generated after related acquisition. Research hypothesis then joined participants on the analysis of the demographic characteristics of emphasis factor analysis was performed. This is on line with the outcomes of the analysis of the factors affecting consumers in order to make a purchasing power and the impact force is intended to be identified.

Introduction

Nowadays marketing sector grows one step further, and its area of influence expands one step further each day. In the television programs we watch, on the newspaper we read, in the social media tools we follow, on billboards, in the busses we get on, minibuses, taxis, in short in every part of life, brands try to convince us in order for us to prefer their products; they unfold before us with attractive offers. Of course, while some initiatives become successful, some cannot reach the targeted success. Over this fine line the main factor that takes brands to success or failure is customer preferences. And basic elements affecting customer preferences are our main topic.

All efforts and initiatives create various effects on customers. While some of these effects cause an increase in sympathy, trust and current demand towards the brand, some of them cause moving away from the brand. In this study, factors affecting purchasing power of customers, high impact elements among these factors and the effect of this factor-element combination on consumption decisions of customers were researched.

Problem detection

With the growth of advertising and marketing sector, investments into these fields have increased and as a result an expectation was led to. This expectation was naturally the benefit outweighing the investment. In the direction of these investments and expectations, market research also started to be an important information repository and an important source of support of the brands. The most important problem here is whether to focus on the right factors or not while addressing the consumers. Brand and advertisement owners aim to make the right move by determining the factors which are of high impact on consumer decisions. And this intention and initiative constitute the emerging point of this analysis.
Aim of the research
As a result of all these initiatives, there is a determinant factor which is whether the consumer decisions could be affected or not. The aim of the study is to determine the factors that affect the purchasing decisions of consumers correctly, effects of these factors on customer decisions and determine the cause and consequence of these effects.

Research questions
Q1. Which factor has the largest share that affects the purchasing decisions of consumers?
Q2. How effective are personal factors among factors that affect the purchasing decisions of consumers?
Q3. How effective are psychological factors among factors that affect the purchasing decisions of consumers?
Q4. How effective are social factors among factors that affect the purchasing decisions of consumers?
Q5. How effective are cultural factors among factors that affect the purchasing decisions of consumers?

Hypotheses
H1. Personal factors are effective in the purchasing decisions of consumers.
H2. Psychological factors are effective in the purchasing decisions of consumers.
H3. Social factors are effective in the purchasing decisions of consumers.
H4. Cultural factors are effective in the purchasing decisions of consumers.
H5. Purchasing decisions of consumers differ according to their gender.
H6. Purchasing decisions of consumers differ according to their marital status.

The Importance of the Research
The importance of the research is performing a right marketing and product development process by determining the factors that affect consumer decisions on behalf of brands. In terms of customers; for the fact that correct knowledge of the factors that affect their purchasing decisions will pave the way for carrying out actions successfully to increase their satisfaction, it is important in order to increase personal satisfaction.

LITERATURE REVIEW
Consumers are expected to achieve their aim and meet their needs by the help of consumer activities specifications through a means of consumer. However, it is possible to find dozen of substitutions in wide market conditions. Among these substituents, there are various factors providing choices for customers. (Ersoy and Ersoy, 2004). These factors are: 1. Personal factors, 2. Psychological factors, 3. Social factors, 3. Cultural factors

1. Personal factors: Personal factors can be collected in 5 main headings.
Since social interaction will vary depending on age, pleasure can also vary according to that. Consequently, consumers’ tendency, pleasure and preferences can vary depending on age (Tek, 2004).

Occupation also affects the consumers’ decisions. For example, a company owner’s consumer preferences may be different from a worker’s or an officer’s. (Özcan, 1996).

When varieties in the global market are analyzed, income and economic conditions of
consumers are main factors on both product and brand preferences. It is getting more visible in income-based products, which are referred as luxury products as well.

In case of recession and excess supply in the markets, sellers aim to deplete stock by arranging a new pricing. (Cemalcılar, 1998).

Preferences in daily life reflect people’s lifestyle. While money is undoubtedly the most determining factor in it, time also has an important role in it. The main aim of the marketing is maximizing customer satisfaction. It should be known that customer satisfaction is a distinctive factor in increased competition circumstances. Marketing aims customer satisfaction by providing products or services according to their lifestyle and internalizing the life style of costumers at the same time. However, an analysis only depending on the income of the customer may not give the right results. The area, city, working atmosphere, social status, family traditions, cultural attachment are just some of the factors which affect customer preferences. (Tek, 2004).

Characteristics mean a combination of thinking, feelings and behaviors. In this combination there are a lot of factors such as pleasures, habits, sympathies or prejudices. All of these factors affect people’s consumption preferences directly (Ersoy and Ersoy, 2004).

2) Physiological factors: It is possible to categorize the physiological factors into 4 main subtitles.


Motivation can be defined as taking action, personal focus, providing moral support in pursuit of a certain aim (Ersoy and Ersoy, 2004). Perception in the general sense means awareness of individuals of their inside and outside worlds. It is the process of choosing, comprehending, regulating and interpreting the information in their surroundings. (Paksoy, 1996). In other words, perception is choosing, regulating and interpreting the meanings of stimuli generated by individuals’ sensory organs (Blotnicky, 2003). At the same time, perception can depend on past experiences, motivation, beliefs, attitude and learning capability (Smith, 1994). According to Solomon (1994) perception can also gain learning, experience, passion, motivation and learning capabilities for future.

The most obvious way of learning is repetition. No matter what level of intelligence somebody has, contribution of repetition to learning is undeniable. For example, advertisement of a product can be learnt better by consumer when it is repeated a few times (Ersoy and Ersoy, 2004). The process of learning has an important role and place in directing human behavior. This is the reason why businesses reserve a very important portion of their investments for their advertisement expenditures. In line with the studies in the psychology field, it introduces the importance of experiences in the process of learning in the human psychology (Mucuk, 1999).

Attitudes and beliefs are the thoughts of individuals on subject phenomenons depending on their experiences and knowledge. These can be effective in creation of both product and image. Further, attitudes can be influential in whether to accept or decline the individuals, objects and ideas. (Kılıç and Göksel, 2004). In
other words, attitude is the way of properly determining one's thoughts, emotions and behaviors in face of an objective situation (Apaydin, 2002).

Social factors: It is possible to categorize the social factors into 3 main subtitles.

1. Consultation groups (Reference groups), 2. Family, 3. Social roles and statues

Consultation groups are environmental groups influencing individuals' ideas, pleasures, preferences; creating perception consciously or unconsciously. When individuals are able to see themselves inside these communities in the future, they happen to be influenced by that particular community more. Families appear to be the primary consultation group. Family members who live longer years together influences each other’s preferences. The main reason is that since early ages, majority of their behaviors are shaped by characteristics acquired from the family members they live with (Yükselen, 2006).

It is possible to talk about roles and statuses being a combination of one's responsibilities in family and responsibilities at work and the influence on consumption decisions of the decision mechanisms caused by these responsibilities (Ersoy and Ersoy, 2004).

4) Cultural Factors: It is possible to categorize the cultural factors into 3 main subtitles.

1. Culture, 2. Sub-culture, 3. Social class

Culture is combination of things that communities have, which individuals share and transfer from individuals to individuals, experiences, knowledge and pleasures of people who lives in the same geography (Şahin and Özer, 2006). Social norms, law, rules, religion, moral, art, customs and traditions, holidays are reflections of their cultures. People who are a part of a common culture are in a constant interaction with each other (Tek and Özgül, 2005).

Subculture is the state of a geographical area with a common culture formed by regionally dividing it within its own body which shows various diversities without moving away from the main culture (Eru, 2007). Attention is given to cultures as well as subcultures in marketing management; studies are developed in products and services in this concern (Erdem, 2006). Groups having common properties like religion, race, nationality, region affect costumers' clothing, eating and drinking, entertainment and job preferences, etc. (Tek and Özgül, 2005).

Social class is strongly connected with social status and it is defined by varieties such as culture, environment, occupation, age range, income distribution. This community also has specific pleasures, products and brands that they prefer. Naturally, in different social classes, different pleasures, products and brands are a matter of subject (Aktuğlu and Temel, 2006).

METHODOLOGY

Research Strategy

To achieve the aim of this research, survey methods have been used and various survey questions under 4 different categories have been undertaken by 750 people who live in Istanbul. Surveys have been sent and delivered by means of emails and one to one personal relations. These questions have been conveyed by analysis of different sources, books and essays by
deciding on possible factors which affect the purchasing power of consumers.

**Number of Participants**

More people were tried to be reached in this research but due to culture of questionnaire filling not being very progressive in our country and people being very busy, the desired number could not be achieved. It was delivered/sent to 750 people for the research. At the end of the allotted time, 503 participants answered in positive way.

**Data Collection**

Survey questions in this research were prepared with benefit from studies and literature reviews. Survey questions were asked one by one to collect data and these data were collected from the given answers. Especially, surveys were delivered with a cover letter which explained the aim and field of the research to people by email and personal relations. At the end of 15 days, surveys (which are 8 pages long) were taken back. 50 questions were made with dependent variables and independent variables. The questions were prepared under 4 groups. 1. Personal factors, 2. Psychologic factors, 3. Social factors, 4. Cultural factors

**Analysis Process**

Most of the surveys were re-collected via email and personally. During this period, it was continued to keep in contact with the people who received the surveys to maximize the feedback. The reminders were made by reminder notes through emails, personal visits and phone calls. However, despite all these efforts, 503 people answered positively.

**Data Analysis Process**

As explained in the methodology section, the answered surveys and its data were transmitted in silico to SPSS program to have right results and analyses were performed by SPSS program. After a wide literature review, researcher developed a few hypothesizes about this study. Based on survey results, to decide whether hypothesizes were approved or denied; sample one t-test and independent sample one t-test were performed. Factor analysis was performed to find out the relationship between variables and effects.

**Response Rate**

The number of people who received the survey was 750. Hence in this context survey study were sent to 750 people but only 503 people answered. Response rate in this study is %67.

**RESEARCH ANALYSIS**

**Age Distribution**

501 people out of 503 who participated in the survey preferred to answer the question about their ages. Age range of the participants in the survey: The age range of 106 (%21,1) people is 18 - 25, the age range of 236(%46,9) people is 25-40 and the age range of 115 (22,9) people is 40-50. Finally 44 (%8,7) people are 50 years or over.

**Marital Status Distribution**

2 participants did not give any answer to his/her marital status like the questions about their ages. For rest of the participants, 207 of them (%41.2) are single, 33 of them (%6,6) are divorcee and 261 of them (%51,9) are married.

**Gender Distribution**

298 people (%59,2) out of the survey participants are male and 202 people (%40.2) are female.
**Income Distribution**

4 participants did not answer the question of “what is your income level?” The ranges of income level: ranges are for 41 (%8,2) people, it is 100-530 TL, for 133 (26,4) people, it is 530-1600 TL. When their majority is concerned, 252 (%50,1) people are in 1600-3000 TL range and 73 (%14,5) people are 3000 TL and over.

**Other Income Distribution**

3 participants did not answer the question of “Do you have any other income? While 108(%21,5) people mentioned that they have other incomes, 392 (%21,5) people mentioned that they have no other income.

**Type of Income**

The type of income was asked to 105 people who mentioned that they have other income. 13 of the participants mentioned it-to be interest income, 44 of them mentioned it to be rent income, 12 of them mentioned it to be agricultural income. 79 participants preferred the “other” option because of their other income is none of the mentioned.

**Household Size Distribution**

15 of participants did not answer the question about household size that was directed to the participants. 180 (%35,8) participants mentioned their household size to be within 1-3 range, 279 (%55,5) participants have a household size within 3-6 range. 29 (%5,8) participants mentioned that their household size is 7 and over.

**Effect to Purchase Distribution**

It was asked to participants “while buying goods, what kind of influences do you have on yourselves?” 101 (%20,1) participants mentioned “recommendations by family members”, 55(%10,9) participants mentioned “they have seen on someone” 71 (%14,1) participants mentioned “getting knowledge from advertisements”, 59 (%11,7) participants mentioned “recommendation by sales people”, 83 (%16,5) participant mentioned their inner circle is influential for purchasing. The most chosen answer was experiences on the goods with the answer from 132 (%26,2) participants.

**Effects of Personal Factors to the Decisions**

Eight questions were asked participants to determine the influence of personal factors on participants’ consumption decisions. It was requested to answer using the following options 1: Strongly disagree, 2: Disagree, 3: No idea, 4: Agree and 5: Strongly agree. When we observe the answers of these 8 questions that were asked to the participants, among the personal factors majority of the preferences were affected by “When I choose a property, the most important factor for me is the easy accessibility of the property”, when I choose a property, the most important factor for me is the trustability of the property”, “when I choose a property, the most important factor for me is the popularity of the property”.

**ANOVA**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>197,242</td>
<td>4</td>
<td>49,310</td>
<td>163,616</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>148,580</td>
<td>493</td>
<td>.301</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
H1. Personal factors are effective in the consumer’s purchasing decisions, hypothesis was accepted because of sig. <0,05.

Effects of Psychological Factors to the Decisions
Eight questions were asked participants to determine the influence of psychological factors of participants’ consumption decisions. It was requested to answer using the following options 1: Strongly disagree, 2: Disagree, 3: No idea, 4: Agree and 5: Strongly agree. When we observe the answers of these 8 questions that were asked to the participants, among the psychological factors majority of the preferences were affected by “When I choose a property, the most important factor for me is its certain prestige” and when I choose a property, the most important factor for me is its privilege.

ANOVA

<table>
<thead>
<tr>
<th>Psychologic factors</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>136,120</td>
<td>4</td>
<td>34,030</td>
<td>61,642</td>
<td>0,000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>270,510</td>
<td>490</td>
<td>552</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>406,630</td>
<td>494</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H2. Psychological factors are effective in the consumer’s purchasing decisions, hypothesis was accepted because of sig. <0,05.

Effects of Social Attitude to the Decisions
8 questions were asked participants to determine the influence of social factors on participants’ consumption decisions. It was requested to answer using the following options 1: Strongly disagree, 2: Disagree, 3: No idea, 4: Agree and 5: Strongly agree. When we observe the answers of these 8 questions that were asked to the participants, among the social factors majority of the preferences were affected by “When I choose a property, the most important factor for me is its suitability in the society” and “when I choose a property, the most important factor for me is whether I have a recommendation”.

ANOVA

<table>
<thead>
<tr>
<th>Social factors</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>123,012</td>
<td>4</td>
<td>30,753</td>
<td>58,143</td>
<td>0,000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>258,643</td>
<td>489</td>
<td>529</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>381,655</td>
<td>493</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H3. Social factors are effective in the consumer’s purchasing decisions, hypothesis was accepted because of sig. <0,05.

Effects of Cultural Structures to the Decisions
Eight questions were asked participants to determine the influence of cultural factors on participants’ consumption decisions. It was requested to answer using the following options 1: Strongly disagree, 2: Disagree, 3: No idea, 4: Agree and 5: Strongly agree. When we observe the answers of these 8 questions that were asked to the participants, among the cultural factors majority of the preferences were affected by
“When I choose a property, the most important factor for me is its suitability to western society” and “when I choose a property, the most important factor for me is its ability to conceal my flaws

ANOVA

<table>
<thead>
<tr>
<th>Cultural factors</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>146,981</td>
<td>4</td>
<td>36,745</td>
<td>76,055</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>237,222</td>
<td>491</td>
<td>.483</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>384,203</td>
<td>495</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hₐ: Cultural factors are effective in the consumer’s purchasing decisions, hypothesis was accepted because of sig. <0.05.

Effects of Gender in the Consumer Decisions

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchasing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>202</td>
<td>3,2304</td>
<td>1,30724</td>
<td>.10155</td>
</tr>
<tr>
<td>Men</td>
<td>298</td>
<td>3,2044</td>
<td>1,37808</td>
<td>.11774</td>
</tr>
</tbody>
</table>

Independent Samples Test

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>Purchasing decisions</td>
<td></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>2,376</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>1,609</td>
</tr>
</tbody>
</table>

H₀: There was no significant difference between the average of two groups.

Hₐ: There was no significant difference between the average of two groups.

Hₐ: Consumer’s purchasing decisions are variable according to gender of people.

Sig (2-tailed) = 0.108 > 0.05 H₀ cannot be rejected, there was no significant difference between the average of two groups.

Table 14: Effects of Marital Status in the Consumer Decisions

| Group Statistics |
|-------------------|-----------------|-----------------|
| Gender            | N   | Mean | Std. Deviation | Std. Error Mean |
|                   |     |      |                |                 |

8
<table>
<thead>
<tr>
<th>Purchasing decisions</th>
<th>Single</th>
<th>240</th>
<th>3,3604</th>
<th>1,19821</th>
<th>.10155</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maried</td>
<td>261</td>
<td>3,068</td>
<td>1,396</td>
<td>14</td>
<td>.11774</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Purchasing decisions assumed Equal variances</td>
<td>2,126</td>
</tr>
<tr>
<td>Purchasing decisions not assumed Equal variances</td>
<td>1,609</td>
</tr>
</tbody>
</table>

\[ \text{Lower} = \text{Upper} - .55523 \]
\[ \text{Upper} = .05490 \]

\[ \text{Lower} = \text{Upper} - .55619 \]
\[ \text{Upper} = .05586 \]

H0: There was no significant difference between the average of two groups.
H1: There was no significant difference between the average of two groups.
H0. Consumer’s purchasing decisions are variable according to marital status of people.
Sig (2-tailed) = 0.182 > 0.05 H0 cannot be rejected, there was no significant difference between the average of two groups.

**CONCLUSION AND RECOMMENDATION**

When the survey results have been analyzed, it has been observed that all 4 factors among the factors that affect the participants’ decisions have been effective in consumer’s decisions. According to the result of the Independent Samples One t-Test which was performed to see whether there is a change in consumers’ decisions according to gender and marital status, it was found out there is no significant difference among both factors.

Participants answered that 6 out of 8 questions about cultural structure were effective in their decisions. Social attitude is notable as the lowest factor in participants’ consumption decisions. If we need to sort among the other two factors, personal factors are more effective than psychological factors.

It is possible to sort the most important 5 factors which affect the purchasing decision of participants as follows:

As a result of performed factor analysis, it was observed that the biggest effect on consumption
decision of participants is cultural structure. Consequently, recommendations that could be given are to take decisions in order to conceal flaws; which are close to the western culture and away from the influence of social environment.

In addition to this, when we look at the similar researches, it can be seen “Factors determines the consumer behaviors: The effect of culture on consumer behaviors by Kahramanmaras Sütçü İmam University and the importance of brand addiction between University Students in terms of purchasing behaviors: An application on West Mediterranean University by Süleyman Demirel University.

In the study undertaken by Süleyman Demirel University, it was observed that as brand addiction increases, customers have been found to have lesser sensitivity to changes on rival products. In the study undertaken by Sütçü İmam University, determinant effects to purchasing behaviors are defined in order of priorities as follows: 1. My own experience about the product, 2. Recommendations by family members, 3. Recommendation by close circle, 4. Walk around shops, 5. After seeing on someone, 6. Getting information from advertisement, 7. Buying from an acquaintance, 8. Recommendations by salespeople.

In the direction of the research, it was concluded that cultural factors have a lot effect on consumers’ behaviors.

Limitations

The research was applied to a group of 503 people; from the age of 18 to 50 and over, in both genders, married, single and divorcee, income range from 100 TL to 3,000 TL, people who were born in city, town or village.

REFERENCES


THE ROLE OF PERSON-ORGANISATION FIT IN THE EFFECT OF CAREER SATISFACTION ON TURNOVER INTENTION

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Labor Economics and Industry Relations
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omerturunc@sdu.edu.tr²

ABSTRACT
The purpose of this study is to determine the role of person-organization fit in the effect of career satisfaction on turnover intention. An empirical study was carried out to determine this relationship. In this context, four hypotheses were tested within the scope of the data obtained from the research in which approximately 284 health officials in public and private hospitals in Isparta, in Turkey participated. SPSS and Amos computer programs were used for statistical analysis in the research. As part of the analysis, Hierarchical regression analyzes were made and a structural equation model was established. The findings showed that an inverse relationship exists between the turnover intention and career satisfaction. Moreover, the person-organization fit was found to have a moderating role in career satisfaction-turnover intention relationship and the results were demonstrated with in-depth analysis.

Keywords: Job Satisfaction, Turnover intention, Person-Organization Fit, Health Sector

1. INTRODUCTION
Retention of qualified employees within the company is a major problem for the organization. Therefore, determining the factors that leads to quitting job, that is, increases the turnover intention the job has been the subject of research by many scientific disciplines. There are many factors that influence the intention to leave. Job dissatisfaction is one of these factors. The employees' satisfaction with their current career and the fact that their future career pathway is clear are two of the factors that can reduce the turnover intention the job. Although job satisfaction has a positive impact in keeping the skilled labor within the company, there are other factors that affect this relationship in a positive direction. Person-organization fit is one of these positive factors. Person-organization fit is the compatibility between the values of people and the values of the organization. The higher this fit is, the more satisfied people will be with their job and the lower the intent to leave become.

2. CONCEPTUAL FRAMEWORK
2.1. JOB SATISFACTION
Job satisfaction is an indication of whether the person has reached his/her career goals or how many of these goals have been achieved so far, and is the result of the feelings they have for their career [13-11]. The concept of career satisfaction, in other words, is can be defined as the satisfaction individuals get from their career and the career success they achieve now and the hope perceived by them for their future career goals [14]. According to another researcher, career satisfaction is the
determinant of the life satisfaction of employees and is a summary of their perception towards career [17].

While employees now contemplate to work in a job that fits with their career goals and expectations, they assess all of the opportunities to advance their careers and intend to be satisfied with the career levels they achieve [12]. Since career satisfaction contains what people perceive of their own careers by comparing their career development with the other persons' success, employees compare their careers with those of their colleagues. Social interaction is an important factor for career satisfaction. People, by comparing their performance with others', become satisfied or not on their hierarchic level. Individuals decide their own career success by comparing themselves with others. Here are the differences between the current outputs and the outputs employees’ desire. Employees are satisfied with their career if they see themselves more advantageous than others or, if not, they their satisfaction levels fall [8].

Career satisfaction, enjoyment of the job done, their interactions with colleagues, is satisfaction factors that provide continuity of a desire to go to work the next day. Career satisfaction is the most important principle of being satisfied with their career in line with the experiences that individuals gain throughout their entire working life. In short, career satisfaction, is the result of how individuals, in general, perceive their career personally, and the balance they achieve between work and non-work factors.

2.2. INTENTION TO LEAVE

Turnover intention comes in the first place among the organizational variables that the researchers in the field of management science study the most. Turnover intention is a significant problem that cannot be controlled in some cases for almost every industry and organization, and many cases including the problems in the beginning of the hiring process, business atmosphere etc. can be considered among them [3]. Turnover intention is a desire to leave the organization willingly and deliberately, and is linked largely to leaving the organization [18]. Intention to leave, by another definition, is the individual's conscious and planned desire to leave the organization in a given time [6]. Turnover intention has been the focus of attention of a number of administrative scientists and sociologists. The most important reason for this is the findings in empirical studies that turnover intention creates a negative impact on corporate activity. Turnover intention raises many negative consequences such as; corporate information - which is highly important today- loss of ability and thus loss of intellectual capital, orientation and training costs resulting from re-hiring [10]. The problem of turnover intention is one that is faced by almost all organizations in today's world. A high level of turnover intention reduces customer satisfaction, and the revenues and profitability to be gained decrease in time [21].

2.3. PERSON-ORGANISATION FIT

Person-organization fit, as stated by Chatman [5], is defined as the compliance between the organization's cultural characteristics and the values and traits of the person. Cable [4] illustrates person-organization fit, based on various studies conducted on this issue, as the compliance between the values of individuals and organizations. On the other hand; Christopher (1996), making a broader definition, describes person-organization fit as the affinity between the attributes, values and goals of the person and organization, and the affinity between the person's characteristics and organizational culture. Ensuring compliance between the values, requests and expectations of the employee and the organization, that is, the person-organization fit can be expressed as the compatibility of personal values with organizational values. Many authors have used similar definitions. Christopher (1996) argues that formation of certain conditions is necessary for the realization of person-organization fit, and, primarily, the employee and the organization should be able to respond to each other's priorities, be able to share fundamental factors, person-organization expectations are expected to take place at the same time and at the same level. So, it can be said that person-organization fit occurs if the employee meets
the organizational goals and the organization meets the employee's expectations, under the condition of sharing the basic elements.

Within the scope of all this literature, the following hypotheses have been created to be tested in the health sector. Hypotheses are clearly presented in Fig. 1:

**Hypothesis 1:** Career satisfaction of employees affects the turnover intention in a negative and significantly.

**Hypothesis 2:** Career satisfaction of employees affects person-organization fit in a positive and significantly

**Hypothesis 3:** Person-organization fit in employees affects the turnover intention in a negative and significantly

**Hypothesis 4:** Person-organization fit has a moderating role in the relationship between career satisfaction and turnover intention.

### 3. Research Methodology

**Method**

Primarily, the sample and measurements which are used in the research are explained. Then, the research model and analysis' methodology is explained. And it is conducted confirmative factor analysis, correlations and hierarchical regression analysis. All hypotheses and the moderation hypotheses are tested with the hierarchical regression analysis. In the end of analysis, it is tried show the moderating effects by regression graph [1]. The model is shown in Fig. 1.

![Fig. 1. Research Model](source-image)

**Participants and procedure**

In this study, the data is collected from the employees of the healthy sector located in Isparta/Turkey. A lot of people work in this sector. In the research, 295 surveys are returned and 284 of them are used in the analysis [16].

**Measures**

Questionnaire method is used in this research. Cronbach's alphas of measures are analyzed using SPSS and the CFA is realized by AMOS. Likert-Scale is used. KMO level and Barlet test result are found in an acceptable level and significant for all measures. 

**Career satisfaction (CS):** After validation procedure, the five-item measure, developed by Greenhaus et al. [9] and used by Hofmans et al. [2008], is used. They record Cronbach's Alpha as .74. According to DFA analysis, the data is compatible with the one factor structure of the measure.

**Person- Org.Fit (POF):** The four items measure developed by Netemeyer et al. [15] and used by Vilela et al. [19], is used. It is validated by Turunç and Çelik(2012), They record Cronbach's Alpha as .90. According to DFA analysis, the data is compatible with the one factor structure of the measure.

**Turnover Intention (TI):** After validation procedure, the three-item measure, developed by Wayne et al. [20] and used by Kucukusta (2007) is used. He records Cronbach's Alpha as .69. According to DFA analysis, the data is compatible with the one factor structure of the measure. As a result of CFA, it is found that all data are fit level (RMSEA ≤ .08 and CMIN/DF ≤ 5).
Findings

The results of mean, SD and correlation values of the variables are demonstrated in Table 1. The results show that career satisfaction has a negative relationship with POF and TI. And it is found that CS has a positive and significant relationship with POF.

Table 1. The results of correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Means</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TI</td>
<td>2.55</td>
<td>1.14</td>
<td></td>
<td></td>
<td>.89</td>
</tr>
<tr>
<td>2. POF</td>
<td>3.18</td>
<td>.91</td>
<td>-.24**</td>
<td></td>
<td>.84</td>
</tr>
<tr>
<td>3. CS</td>
<td>2.95</td>
<td>1.02</td>
<td>-.22**</td>
<td>.39**</td>
<td>.89</td>
</tr>
</tbody>
</table>

Note: The Cronbach’s Alpha shown in parentheses and all p are < .01

The hierarchical regression analysis is used to analyzing the hypotheses. CS is included as independent variable; TI is included as dependent and POF is added as a moderator variable in the research model (Table 2). CS and POF variables are centralized during for prevent from collinearity [7]. The results show that the relationship CS and TI is negative and significant and CS explain over 09% of the variance on the TI. So, Regarding to Table 2, Hypothesis H1 and H3 are supported; CS and POF have a negative effect on the TI.

Table 2. Results of moderating analysis

<table>
<thead>
<tr>
<th>Değişkenler</th>
<th>1.step</th>
<th>2.step</th>
<th>3.step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Satisfaction (CS)</td>
<td>- .20***</td>
<td>- .14*</td>
<td>- .14*</td>
</tr>
<tr>
<td>Person-Orf.Fit (POF)</td>
<td>- .16**</td>
<td>- .16**</td>
<td>- .19***</td>
</tr>
<tr>
<td>CSxPOF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.04</td>
<td>.06</td>
<td>.09</td>
</tr>
<tr>
<td>Düz. R²</td>
<td>.03</td>
<td>.05</td>
<td>.58</td>
</tr>
<tr>
<td>F</td>
<td>12.1***</td>
<td>9.5***</td>
<td>10.4***</td>
</tr>
</tbody>
</table>

* p<.05, ** p<.01, ***p<.001

In addition, it is conducted a regression analysis for determine H2 and the results demontrated in the tabel 3. The results show that POS has a CS has a positive and significat effect on POF(β = .36, p<.001). So, Hypothesis H3 is supported

Tablo 3: Regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>R²</th>
<th>Düz. R²</th>
<th>F</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>.13</td>
<td>.13</td>
<td>42.2***</td>
<td>.36***</td>
</tr>
</tbody>
</table>

***p<.001

The variable can affects the relationship between independent and dependent variables can be “The moderator variable” [2]. The moderating effects of POF is examined in order to test hypothesis 4. According to the results of hierarchic regression analysis (Table 2) POF has a moderating role in the relationship between CS and TI. In order to determine the direction of moderation, the process advised by Cohen et al. [7] is followed. In this process, the significance of the relationships between the CS and TI in case of POF is low and high is tested by drawing regression graphs [1] (Figure 2). As shown in Fig. 2, CS and TI’s relation is negative and significant in case of POF is high and low. But, it is observed that the relationship between CS and TI is stronger when POF is low. It is also determined that over 09% of the variance of the model is explained in case of the exchange of LS and POF variables. Thus, Hypothesis H4 is supported. So the POF has a moderating effect in this relationship.

(1 Source: It's drawn by excel)
4. CONCLUSIONS AND RECOMMENDATIONS

In the study of the role of person-organization fit in the effect of career satisfaction on turnover intention; analyses were made to determine the role of person-organization it in career satisfaction- turnover intention, and it was concluded that the perception of person-organization fit plays a moderating role in this context. This finding was examined in depth, and its effect on the situations where person-organization fit is perceived highly and lowly were attempted to be determined. The results obtained are remarkable. Because; the perception of person-organization fit has a moderating effect when it is both high and low, however, career satisfaction, in a low perception of person-organization fit, seems to be more effective in reducing the turnover intention. This is an expected finding. The fact that the study was conducted in one sector and in a limited location and the lack of longitudinal research are the most important limitations of this study. But the study is expected to contribute to the literature since such a study had not been conducted empirically and due to its different methodology and findings including moderator analyses. It is recommended that further studies should focus on the moderating effects of the demographic elements on the relationship between perceived organizational support and turnover intention.
KAYNAKÇA


The Changing Approach of Consumer Society to Packaging Design: Recyclable Packaging

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Abstract. While the packaging was used to protect and store the products at the beginning, its function has changed together with changing needs of the society and developments in the technology. Package design needed to follow these changes; as a result, innovations with materials, color and shape have been employed on packages. While the primary concerns in package design were usage and material problems, the focus is on design concerns of products today. What is more, package design has gained another aspect which is communication. Beside the functions of protection, conservation and transportation, the package has had another important function: informing. Package design has been approached together with brand identity as a result of consumerist society and stands in an important point in terms of reaching the target group. Another transformation in package design has come out as an answer to the question that how the demands and need of the World and increasing population would be met: environment friendly recyclable package. This paper summarizes the historical development and changes of packaging with some specific examples.

Keywords: Packaging, Packaging Design, Sustainable Packaging.

1. Introduction

It has been quite a long time since humankind started to put the things they own and/or they want to carry in a package. The first materials that people used for packaging were animal skin, small or big leaves and sun-dried vegetables and fruits offered by the nature. When time passed and trade appeared and goods needed to be transported to distant places, additional precautions such as salting and drying were used in order to prevent goods from spoiling and infection and to prolong their lives. After a great development in agriculture along with industrialization in the 18th century, great emphasis was laid upon the problem of hygene which appeared in the previous centuries and this problem was expected to be solved by packaging. In the 19th century, packages had the function of informing and attracting the customers as well as storing the product [1].

In the cold war period after two world wars, the competition among the nations was moved to a new level and commercial competition came forward. This competitive environment in the 20th century was transferred to the companies which represented the countries with their size and national borders were replaced by commercial borders such as customs union. Expansion into the international markets brought the competition in the national level to a wider area, thus forcing reforms in the marketing methods. With
the end of cold war and the start of globalization, the value added to the product by the design reached its peak in the 21st century and design became a crucial element of the customer world. As a consequence of perceived value created by the design and aesthetic sensitiveness demonstrated by the customer in the modern world, the effect of packaging design on the purchasing decision was recognized [2].

The word “ambalaj”, originally “emballage”, was borrowed into Turkish from French language. The word was derived by the combination of the words “en”, which means “with” and “at/in” – and “balle”, which means baling. Like many words that were borrowed from French into Turkish (example: empirique > ampirik = empirical in English), the word was settled in our language with phonetic change. The formation of the etymological meaning of the word in the historical process allows the concept of packaging to be understood better [2].

Packaging is one of the most important components of the product and production. While containing and storing the product in itself, the package must protect the product from external factors and convey what the product inside is in the most clear and effective way. Besides, the concept of package includes all of the industrial and marketing techniques that facilitates the sales and distribution of agricultural, industrial and consumer products by protecting, storing and identifying them [3]. According to a general definition, packaging is all the methods that are used for the promotion and protection of the product on the way that it is brought to the consumer from the producer [4].

The history of packaging design is closely related to almost all characteristics of developing cultures of humankind. Developments in technology, materials, production and the conditions of evolved consumer societies made it compulsory to use packaging for protection and storage of products. Packaging design has become a tool of visually conveying the contents of the products. This historical perspective explains how the development of trade between people, discoveries and inventions, technological inventions and numerous global events helped the emergence and evolution of packaging design [2].

Since the beginning, the humankind has been concerned about protection and storage of many different things. This concern has been revealed sometimes for creating clothes from the things they found in order to protect their body from cold and sometimes for preserving their products for later use [5]. The use of package began with people accidentally using the containers and wrapper materials found in the nature [6].

In the prehistoric ages, people tried to preserve the extra food they found by hunting or fishing in case they would have problems about food in the future. They used the leaves they picked up from the trees, baskets and animal skin. Later on, they started to use pots (Figure 1) to carry drinks on ships [7].

Figure 1. Early period commercial Greek amphora

Animal skins, horns, bamboos, broad leaves, baskets, leather bottles were used in the beginning; later on amphoras, ceramic covers, wood boxes and barrels were used in around 5000 B.C. Mass production ceramics, glass covers, inflated glasses of Phoenicians and fibers of paper and
cellulose in China were used for packaging in around 2000 B.C. [8].

Glass packages are known to have been first used in Egypt in 1500s B.C. In those years, Egyptian craftsmen mixed limestones, carbonated water, sand and silicate and after they melted them, they gave form in high temperature and shaped the glass packages. As late as 1200 B.C., they started to make containers and cups from the moulded glass (Figure 2). Researchers suggest that the production of completely transparent glass began in the Common Era, after the Phoenicians invented the glass blowing mould in around 300 B.C. [3].

![Figure 2. First glass production plants](image)

The Chinese made paper from the peels of mulberry tree in around 200 B.C. (Figure 3). While the greatest benefit of this was that it could be used for texts and figures, it proved to be a very useful material for packaging after a short while [5].

![Figure 3. The first paper made from the fibers of papyrus](image)

Cities were established along with the permanent settlements in the course of time. While there were many social changes in the world, the changes in the packaging industry were often related to the quality and quantity of existing packaging practices [9].

Earliest examples of the oldest packages are observed in around 700 A.D. These are ceramic and clay pots. However, ceramic pots began to be considered as packaging material after the name of their owners were written on them. At those times, only expensive cosmetics products and high quality foodstuff were packed by ceramics. The production of tin plates was discovered in Bohemia in 1200 A.D. Later, tin cans were introduced in Bavaria at the beginning of 14th century [3].

After the Industrial Revolution, workers who were engaged in agriculture in rural areas started to move into cities to be employed in factories. The cheap mass production goods were offered to the use of the majority of the population, therefore the foundations of consumption society were laid. Also, a lot of new shops and stores started to open in order to serve the working class which had only recently been emerging [10].

Although information such as name or address did not exist on any of the products on the market shelves, package content as well as details like name or address became standard after the second half of the same century. The biggest event that affected the glass package was that the automated rotary glass making machine patent was received in 1889. Glass packages, which became more widespread in the protection of high value products after the 1970s are currently used in many areas. Milk bottles were introduced first in the U.S.A. in 1879 (Figure 4). It is known that glass was used in packages of many products such as food, chemicals, etc. until tin can was produced and used in the 18th century [3].
Peter Durand went down in history as the man who first introduced tin can in the U.S.A. The first pressed can in the history of metal packaging was made in the U.S.A. in 1866 (Figure 5). It is known that hammer and nails were used in order to open metal packages until 1866. Later, covers that could be torn and opened were produced [3].

Rapid changes started in the lives and shopping styles as well as new packaging materials, shops and supermarkets were established where thousands of products are sold at the same time. The importance of packages in terms of marketing and informing function has become clearer. The package had to sell the product, give the consumer correct information and convey the message appropriately by the graphic design on it. In this respect, the fundamentals of the Packaging Design concept were laid [11].

In the 1900s, it was acknowledged by a great majority that the package has the function of contributing to the sales of the product in addition to the function of protecting the product. The perception of package started to change with the new materials machines to be used in package production. Selection of appropriate materials and production techniques for the right package for the product has gained importance. The advancements in technology not only caused mass production to grow and prices of products to decrease but also allowed a consumption society which had the notion of disposable [12]. In such a society, the consumer can no longer consider the product and package as separate things and this situation requires that the aesthetical and visual attributes of the package should be considered important as well as its functional attributes. Packaging designs of consumer products illustrated for newspaper ads, catalogs and posters. This increase in pictorial advertising has had a big influence on the development of packaging design [13].

In the years 1920-1929, the packages of the foods became smaller in the houses after World War I since the number of people living in the houses had dropped. Packed little foods, biscuits, chocolate became more common and different types of packages emerged [8].

More attractive packages were introduced in 1950s, when supermarket self-service systems started. The competition caused by this trend brought about more development and more creative new designs. Thus, consumer satisfaction and preference gained more importance. Apart from the variety in packaging, concepts related to design and graphics also were exposed to change. Packaging design became the most important branch of general industrial design. The use of computers in designing brought about infinite forms and many applications that could
not be made in the past. Modern machines and the ability of today’s designers to use different packaging materials together has made packaging art more effective [9].

The next great development regarding paper and similar materials is the discovery of laminated carton. Laminated carton was used in drink packages. The TetraPak Company, which was established in Sweden in 1951, suggested that the tetrahedron form (Figure 6) was the most suitable form for milk and created the carton package for milk [3].

![Figure 6. The first laminated carton package for milk in tetrahedron form produced in 1951](image)

The years 1960-1969 were considered the modern age. During this time, refrigerators, deep freezes, fast food and diet food changed the eating habits and lifestyles. Drinks were preserved in corked bottles made from glass and disposable boxes. Cellophane, plastic and aluminium were covered so that they could protect freshness and designers tried to convey the message of “buying” [8].

At the end of 20th century, rapid changes had occurred in the developed western society, the population had grown older and habits had started to change, families had become smaller, houses for single people had increased. Since more and more women started to play active role in the business life, the words comfortable and fast became the common words for people who lived in cities [11]. Infinite number of product alternatives required the designers to use attractive images and advertising tricks and thus larger products were introduced. With the pressure of environmental issues, the manufacturers had to produce recyclable and environment friendly products. They started to create authentic and independent identities with minimum, pure and clean products [8].

The power of changes on behaviors and habits also affected packaging design. To illustrate this with an example, the rising environmental awareness in the recent years and the increasing importance of this issue resulted in significant changes. These changes that occurred in the target audience forced the packaging designers to work on this topic. Firstly, materials became recyclable. Besides, the importance of natural paper packages increased. Plastic bottles were replaced by glass bottles and additive containing packaging papers were replaced by natural and primitive papers [14].

Diesendorf defines sustainability as types of social and economical development which protects the natural environment and creates social justice. World Sustainable Development Council has defined sustainable development as meeting existing needs without preventing future generations from meeting their needs [15]. The concept of sustainability helps the social culture to be considered as a perspective, ecological principles as part of science and science as part of human culture and helps people understand that sustainability is a part of the social structure of modern science. From this perspective, sustainability has had a place in all the vital human activities and it is used in many areas such as sustainable development, sustainable cities, sustainable agriculture and sustainable architecture. Therefore, it is not possible to make a single definition of the concept of sustainability [16].

With the increasing population of the world and the unplanned production to meet the needs of this population, packaging also acts in the stage as one of the actors of global warming. The designers created the concepts of “Ecodesign” and “Sustainable Packaging” to
answer to this concern. Sustainable packaging [17]:

1. is useful, safe and healthy for individuals and societies
2. must be suitable for market criteria in terms of performance and cost
3. uses renewable resources and is produced, transported and recycled by using renewable energy
4. maximizes the use of renewable or recyclable resources
5. is produced by using clean production technologies and best practices
6. is produced from materials that will stay healthy in all possible ends
7. is designed in such a way that will optimize matter and energy in physical sense
8. is renewed or used in an effective way both in biological and industrial terms

Sustainable innovation and design is not only related to new technologies, it is related to thinking how needs will be met and how the negative environmental and social effects resulting from this will be decreased, in other words, linking economic growth and environmental destruction [18]. Sustainable design means aiming to use design in a planned way with minimum harm to the environment. Until recently, the attitude of sustainable design towards environmental issues was directed to the decrease of pollution. Nowadays, it takes into account more environmental friendly production processes that can result in less waste and air pollution (Figure 7-8). Thus, sustainable design means allowing the integration of the product with the life cycle by taking into consideration the environmental effects as well as social, cultural, economic effects and social and ethical elements [16].

Sustainable design is the one that has the best social economical and environmental performance or the least social economical and environmental cost. Sustainable design is the use of design without putting environment in danger for meeting the human needs in the future in a strategic manner. It is the re-design of products, transactions, services and systems (Figure 9-10-11-12). It is interested in the imbalance among the demands of the society, environment and economy and involves the consideration of the effects in all three areas now and in the future [15].
Figure 9. Seed pen, Ümit Altun, 2010

Figure 10. HangerPak hanger design, Steve Haslip

Figure 11. LG mobile phone package design with 2010 “Red Dot Design Award”
2. Conclusion

The form along with the function of packages experienced great changes in time. At first packages were a tool of carrying and storage. Later, more functions were added such as adapting to the product in various ways (shape, temperature, etc) and attracting the target audience after the increase in product variety and mass production. When the packages were affected by the environmental concerns in the 21st century, the concept of sustainable packaging emerged and many characteristics such as being recyclable, being made from renewable resources and using renewable and less energy in production also were included in required characteristics of packages. Another change brought by the current century to packaging design is the concept of “smart package” which emerged as a result of technological advancements applied into packaging design. Smart packages gives the customers the most up-to-date information about the product and allows videos including advertisement. They have brought many other innovations as well. It is quite important that the designers both take into consideration the environmental concerns and catch up with the latest technological advancements as well.

References


Values of corporate reputation: a study based on similarities and differences of brand image and employer brand image

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Abstract
The catalysts of tomorrow in the age of information and globalized economy are, undoubtedly, brands. Brands, the principal actors of the marketing world, which becomes increasingly complicated in the changing world order, are positioned at the center of the production and consumption network. The primary competitive advantage of brands that secure their position in the market is, without a doubt, their reputation. For this highly significant investment tool, brands should deliver values that mean something for their target audience and promise the differences and privileges, which is its main function. Accordingly, the image and meaning of the brand are shaped by the assessment by its target audience. This is also seen in the employer brand in which businesses, as well as products and services, become brands. A brand is an element which, by granting a unique identity and image, distinguishes a business from its competitors. In this respect, both the product brand image and employer brand image show similarities and differences in terms of their rational and emotional values, objectives, and goals. Accordingly, as part of the study, similar and different points between the two concepts were comparatively studied. As a result of a general comparison, while both brand image and employer brand image gaining meaning by the combination of associations within the mind of the target audience is one of the most apparent similarities, their functional and emotional promises are among the key differences.

Keywords: Corporate Reputation, Brand, Brand Image, Employer Brand, Employer Brand Image

1. Introduction

Businesses, which are the powerhouses of the marketing world, have inevitably been affected by the recently occurring rapid changes. It is a fact that increasing opportunities and threats with each passing day turn the current market into a risk market. In such a risky market environment, corporate reputation, undoubtedly, plays a determining role in the businesses, which are at the center of the production and consumption network maintaining their existence. Businesses must manage their several physical and non-physical values, particularly the brand, in order to secure their position today and in the future. At this point, it is inevitable for the businesses that generate values that go much beyond their time to put emphasis on the employer brand image as much as brand image. That is because brand image (products-service) and employer brand should support each other in a certain harmony in order to achieve success.
Today, when gaining profits with the product-centered perspective is a thing of the past, businesses that severely experienced that making a difference with only product designs is insufficient are focused on investing in their reputation as a whole by branding themselves as well. Employer brand, which is conceptualized as a strategy, is an important value of corporate reputation which especially big businesses take great care of, but one that small- and middle-sized businesses are just starting to adapt. In this respect, our study focused on the conceptual framework of the brand image and employer brand image, and the similarities and differences between the above-mentioned images that feed corporate reputation. The first chapters of the study includes general definitions, while the last chapter presents the different and similar points between brand image and employer brand image in table form.

2. Corporate Reputation

Corporate reputation was first used in some studies with the concept of “organizational reputation” in the 1950s, and became an important concept in management-organization and the sub-specializations of other management sciences [8]. It can be defined as a perceptual indication of a corporation’s past actions and its general attractiveness for the future when compared to other competitor corporations [12]. When the literature is studied, it is seen that the concept of corporate reputation is explained by simultaneously discussing other such concepts as corporate image, corporate identity, corporate communication, and corporate unity, even sometimes by equating these concepts [17]. Some of the definitions of corporate reputation, which have been gaining increasing importance since the 1990s, are as follows:

Corporate reputation is the historic notion of a corporation, all its actions, and the consistency demonstrated while performing these actions [20]. Corporate reputation is the way that a corporation is perceived by internal and external shareholders, and a result of a corporation’s past actions [5-31]. On the other hand, in another definition regarding the concept, it is stated that “it can be defined as the corporation’s image, but expresses the public value about a corporation’s characteristics, consistency, and long-term stability and reliability” [22]. A high corporate reputation, which is also defined as a power that can reduce the negative impacts of a crisis [28], provide advantages including higher pricing for similar products compared to competitors, easier access to markets, being able to convince the investors about the corporation, and the ability to attract qualified people to the corporation [4]. In the most general sense, it is the expression as a whole of the assessments that were made over time about to what extent a corporation is perceived by its all shareholders as reliable, reputable, and valuable [18]. In light of these definitions, it is possible to say that, in essence, it acts as a de facto manager of the business and its success depends on various parameters. Businesses that are aware of and understand this know that a lack of reputation inhibits growth and trust, and their values can disappear over time. Businesses that have experienced illumination are aware that corporate reputation can provide multidimensional gains with the investors, customers, and internal and external employees (potential employees); while businesses that lack a reputation cannot feed their corporate images in the long term and therefore cannot maintain their existence. In fact, corporate reputation is directly connected to brand image and employer brand image. The associations that are attempted to be created within the mind of the target audience and the associations that are created within the mind of any corporation’s target audience directly serve brand and employer brand image. That is because target audiences assess businesses, products, and brands according to the image that they create in their mind and make their choice accordingly. Every implementation within and outside the business, every strategic decision made and the results produced by these decisions positively or negatively affect the corporation’s reputation/standing. Therefore, brand and employer brand image should be brought together in order to maintain a corporate reputation. Businesses at any level should design the product brand and employer brand image in line with holistic strategies and ensure coordination between the two.

3. Brand Image

The formula of keeping alive a brand representing the cultural symbol of the modern age is, undoubtedly, becoming increasingly complicated with each passing day. The
multiplication of alternatives in today’s market understanding brings together a cutthroat brand congestion. The unstoppable rapid increase of needs and opportunities, changing consumer awareness and behaviors direct the consumers to expect more than commercial gains from brands. These expectations are the satisfaction of emotional gains that the brands wish to achieve as a result of close contact with the consumers. The most critical factor in the consumers choosing, among the various brands, the brand with which they have established an emotional bond is their perceptions and associations related to the brand. In this framework, the concept of brand image comes into prominence. Brand image has critical importance in terms of influencing consumer preferences and purchasing decisions.

Brand image, which is connected to the associations, beliefs, and perceptions regarding the brand, slowly being established as a result of the interaction of some elements within the mind of an individual, is traditionally one of the most basic and most known concepts related to the brand.

In 1955, when David Ogilvy [16] defined the concept of brand image in a speech to the American Association of Advertising Agencies, he emphasized that consumers do not buy products only for their functions, but also because of the meanings assigned to the brand [7]. In this respect, brand image is established over time as a result of the unison within the mind of controllable perceptions, such as a brand’s strengths-weaknesses, and positive-negative aspects, and the direct or indirect experiences with the brand [3]. In other words, consumers’ previous experience with the brand and whether or not the brand meets the consumer’s needs affect the image [21]. Brand image, which is the complement of beliefs for a brand’s features and its associations [19], is a subjective and perceptual concept established mostly by the interpretation of the consumer, whether realistic or emotional [31]. Considering these definitions, brands that directly influence the lifestyle and the psychology of people, and their images, are built within the minds of a consumer by various associations regarding the brand. Brand image is directly linked to brand identity and brand personality, which are a brand’s qualitative image that is not objective, and based on how a consumer perceives the brand, what kind of meanings they attribute to it, and which gives an emotional satisfaction that is beyond physical attributes. Alexander L. Bie states that brand image has three main components and these are producer image (corporate image), user image, and product image. In general, it is stated that product image and brand image are confused. While product image is used to explain consumer attitudes and thoughts for a rather certain product line, brand image emphasizes the total of factors that add value and meaning to a brand in that product line [2]. In this respect, our study will consider additional meanings and values of a brand while comparing brand image and employer brand image.

4. Employer Brand

What separates brands in today’s competitive world is their uniqueness. It is a factor that ensures creating lasting value in the minds of a target audience, gaining a differentiated viewpoint, carrying an approach that is imprinted into the broader company going beyond products and services, and providing reliability in word and deed. However, one of the frequent mistakes by businesses and brands that cause rapid depreciation in the market is, undoubtedly, their behaviors not matching their brand discourse. Accordingly, employer brand has become a new focus point to increase the possibilities of strategic success for the businesses. Employer brand should be presented in a unique way, according to the internal and external requirements, objectives, and goals of the businesses, and the image that they desire; this is because the image that is intended to be created and the image that is established within the minds of the target audience should be consistent. While the branding efforts of the businesses thus far have been limited to products and services, marketing activities with the changing world and market conditions have also directly reflected on these businesses themselves. Its projection on business management is the employer brand. Employer brand is a concept that invests in people as much as in their products and services, and brands, which spends its energy on and pays attention to branding itself and helps attract and retain employees who will best represent this. In this respect, employer brand, which first came out during the war for talent in the 1990s [23], is one of the most important items of investment for businesses and is defined through the vision of different researchers as follows:
According to Barrow, the creator of the concept, it is the package of functional, economic, and psychological benefits provided by the employer [27].

Employer brand is based on the development of business identity in persons seeking employment and the improvement of image [25].

The process of the employer creating an image related to their company and turning this image into a business relationship between the company and their potential employees concerns employer brand. Employer brand is defined as the image projected by the employer through their procedures, policies, and actions. This image is reinforced by the company culture to affect the perceptions, attitudes, and attraction of the employees towards the employer brand [30].

As the employer, it is developing company culture and transferring this culture to the market. It expresses the collectivity of company culture, systems, attitudes, and employee relations in order for the employees to experience success, productivity, and satisfaction, both personally and professionally [1].

It expresses the organization’s intentional strategy to create a unique perception related to employment. It is the projection of a certain image [24].

It is a bilateral agreement between the corporation and its employees [14].

It is an emotional bond between the employer and employee. As this bond becomes stronger, employer brand also becomes stronger, becoming preferable for potential employees over time. That bond makes the corporation more attractive [10].

It is a concept that allows an organization to differentiate itself as an employer [26].

It is the influential associations that are established between the name of the company and those who work or will work in the company [11].

It is defined by brand strategists, on the basis of brand identity in terms of receiver (employee) and provider (employer), as a structure in accordance with the brand DNA. In other words, the concept of employer brand cannot be isolated from the concept of brand alone, and it identifies with the relationships between employer and employee [13].

It would be more appropriate to define the concept through perception, since it presents a more realistic assessment regarding company brand, and its real status and value. It helps companies realize that people are not only influenced by what messages their brand is intended to give, but also by what people hear about the company and how they experience the company, and its products and services [26].

The assumption that underlies employer brand is that human capital will create value for the company and company performance can also be improved by investing in skilled workforce capital [15].

Employer brand is the complement of the distinguishing characteristics that potential candidates and current candidates perceive about working life experience provided by an organization. Employer brand covers concrete advantages such as salary, benefits, and bonuses, as well as abstract features such as the organization’s culture, values, form of management, opportunities for development, and recognition [9].

In light of the definitions, it is possible to define employer brand as a strategic road map that targets the most valuable asset of businesses, which is humans. Brand companies that draw their strength from human resources need to differentiate, generate value, and clearly define the value generated. Just like product and service brands, employer brand also aims to ensure distinctiveness for the companies acting as employers and improve their competitiveness, and be one of the limited options for the target audience, like product-service brands. At this point, human resources and marketing have an important function for the employer brand.

The increasing dependence of businesses on communication practices to become a brand
makes it especially necessary for human resources to rebuild itself. Human resources has gone through a serious transformation by reproducing its own dynamics, expanding its limits, and internalizing the employer brand approach. In this context, it is possible to consider employer brand management approach as a deep insight of human resources. However, the projection of employer brand on businesses find life in human resources applications; in fact, it has a role that is beyond the function of human resources. Through employer brand management strategies, businesses can implement their branding works and brand themselves, and thus establish strong identity, image, engagement, and attraction that they intend to give in their messages to the potential target audience.

At this point, it should not be ignored that every business has actually an employer brand image. The discourse of employer brand should carry the mark indicating the identity of the business in the eyes of the target audience. These marks that project business identity put the employer brand image into form within the mind of the target audience. Considering the fact that employer brand image is completely under the control of the target audience, there is a need for an employer brand identity for a positive employer brand image that shows who the brand is. This is because a strong identity and strong employer brand image will help businesses position themselves in the market, build a reputation, and develop a sense of loyalty in the target audience over time. In addition, businesses need to display consistent behaviors within and outside the organization in order to keep their promises to their target audience, and to attract and retain great talents materially and non-materially. Businesses that reflect this in their strategic map, in word and deed, which can effectively manage the expectations of current and candidate employees, gain greater internal and external customer satisfaction, employee trust and engagement, as well as high financial gains and can thus feed employer brand image.

1. Similarities between Brand Image and Employer Brand Image

In such a complicated and ambiguous atmosphere, it has become increasingly difficult to influence and gain the trust of consumers who have plenty of alternative brands to choose from. In such a compelling atmosphere, being a lasting and self-sufficient brand is directly proportional to being able to maintain the image and value in the long term. Brands are required to act with collective and sustainable skills in order to have an attractive and unique identity and image, because brands that desire to have a central role and their target audience put increasingly greater emphasis on distinctiveness.

Brands that dominated millions of people for the last half a century are a symbol that guarantees that stability, quality, and products-services are not under a certain scale, and represents the benefits profited to the target audience. This situation has affected businesses that represent a service or any function. In this context, an employer brand that has, for so long, aimed to create deep thought and broad trust, increased its sphere of influence as much as product-service brands. Just like product and service brands, employer brands also seek to influence intellectual processes of the target audience, and establish a cognitive and emotional bond with the target audience. Also, in the most basic sense, creating a sense of trust between the target audience and the brand, and making promises based on trust are factors that directly affect the image of both the image of product-service brands and employer brand. It also needs to be said that at the current point, the similarities between brand image and employer brand are not limited to these. Similarities between employer brand image and brand image, which form the mainframe of the study, are presented in a table as follows:

<table>
<thead>
<tr>
<th>Table 1: Similarities between Brand Image and Employer Brand Image</th>
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<tbody>
<tr>
<td>Brand image and employer brand image;</td>
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<tr>
<td>• They are shaped by the perception of the target audience and</td>
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<tr>
<td>continuously updated based on their experiences.</td>
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<td>• They must have distinctive features that are different from</td>
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<td>other product brands and other businesses.</td>
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<td>• Psychological features are determinants.</td>
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<td>That is why they correspond to abstract characteristics.</td>
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<td>• The relationship with target audience starts first at the</td>
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<td>functional level, then passes to</td>
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the emotional level. Therefore, they evoke emotions rather than rational thoughts.

- Experience represents opinion and relationships.
- They are process-centered and require systematic effort.
- They conduct image studies considering the characteristics and needs of the target audience.
- They are affected by the changes and are resistant.
- They develop a sense of engagement and loyalty.
- They are connected to brand identity and personality.
- Their key points are to develop an identity that can manage the image.
- Potential changes related to image depend on brand identity.
- They require consistent discourse and action.
- They use various communication channels. They are important for sustainable growth.
- They provide emotional satisfaction for the target audience.
- They create value in the target audience. This value stems from experience.
- They are based on bilateral communication.
- They make promises that have meaning for the target audience.
- They require sensitivity and the commitment of top management.
- They have symbols including brand name, emblem, logo, character, and color so they both present a visual identity.
- They ensure identification of the target audience with that image.
- They serve as a reinforcer for corporate reputation.
- They carry the responsibility for the target audience to be transparent and reliable.

In the context of brands that are an indispensable part of human life, it is impossible to ignore image. In this new age, creating effective brands and images requires taking action with accurate and firm strategies. Presenting a stable, balanced, lasting, and rich value, instead of temporary emotional satisfaction that fulfils instantaneous needs will feed brand and employer brand image. Although these two concepts, which require a series of skills, share similar points of contact, there are differences that separate the two. One of the key differences is showing oneself before the target audience. While the target audience of product-service brands are current and potential customers, the target audience of employer brands are current and potential employees. At this point, it is important that brand and employer brands build meaningful relationships through experience that add value to their target audience. The differences between brand image and employer brand image are not limited to the target audience. The differences are presented in detail in the following table:

Table 2: Differences between Brand Image and Employer Brand Image

- Brand image differentiates between products and services, while an employer brand image differentiates between businesses.
- Brand image provides consumption benefits, while an employer brand provides experience benefits.
- Brand image tries to attract new customers, while employer brand tries to attract potentially high-quality employees.
- The brand image is largely determined by consumer perceptions of the company products and services, while the employer brand is mainly determined by the perceptions of current and potential employees towards the employer.
- In brand image, the functional benefits provided to consumers are quality and ease of use, while in an employer brand, functional benefits provided to current and potential employees are working environment, social facilities, and salary.
- Brand image is the main argument of
integrated marketing communication, while for an employer brand is that of human resources and marketing.

- Brand image gives an idea about product-service quality and standards, while an employer brand gives information about the company, business, and employment.
- Brand image is a process that needs to be managed outside to inside, while an employer brand image is managed inside to outside. Therefore, it is possible to say that the primary area of movement for product brands is a foreign market, while for the employer brand, it is primarily a domestic market.
- Brand image creates value in consumers, while an employer brand image creates value in current and potential employees.
- Brand image creates willingness to purchase products and services, while an employer brand creates willingness to work in that company.
- In brand image, image advertisements are the driving force, while for an employer brand image, the news, rumors, employee experience, and social networks are the driving force.
- While for brand image, accurate, incorrect, missing, or excessive messages can be given in communication practices, an employer brand can only be successful by reflecting the facts.
- In brand image, the field of competition is rival brands, while the field of competition for an employer brand is rival businesses.
- Brand image provides consumer engagement, while an employer brand image increases employee engagement.
- Brand image feeds on the reputation perception within the mind of the consumer, while an employer brand image feeds on the reputation perception of the current and potential employees and of those who have left the company.

### 3. Conclusion and Evaluation

Brands, which are frequently discussed in the literature and have influence almost everywhere, carry a broad variety of meanings for millions of people. In the globalized economy and information age, the instinct to create new brands in the world economy every day continues at full speed; but what sets the course for the brands is the target audience. Therefore, brands that seek ways to limit options in a market with too many current options, without leaving it to chance, resort to defining their brand identities in a clear way with their distinctive features. In fact, it is quite difficult for brands to overcome this highly-changeable and compelling process in a fluctuating system that is full of tides. However, having a strong brand identity serves as a bond for the brand to maintain its life. Every brand uses a unique branding and identity guideline in determining brand identity. Firstly, creating a complete, special, and unique verbal and visual identity is a key stage. Therefore, being different is the sole rule of branding. Creating a unique brand identity also affects brand image directly.

Image is an abstract strength of brands, because image manifests itself completely within the mind of the consumer as a result of associations and perceptions. What a target audience says about a brand, as well as the personal connection they see with the brand, is closely associated with the ideas and emotions the audience harbors towards the brand. Addressing the emotions and passions of the target audience creates a positive perception for the brand, feeds brand image, and reinforces trust. This also applies to the employer brand. The discourse of an employer brand is concerned with how the target audience perceives the company as an employer and what its image is, and what associations it makes within the mind of target audience when the company name is mentioned. Such that, at this point, the associations that are established within the minds form the image of an employer brand.

Despite not having a long history as a concept, awareness of the concept has increased, but understanding has not completely developed yet. Employer brand, which is directly related to the identity and image of the businesses, is a
managerially comprehensive strategic approach. Employer brand, which has become one of the main elements for employers, addresses all aspects of businesses at a terminological level. Employer brand, which is based upon the fact that every business has a unique discourse and distinctive features, serves as a bridge between the expectations of current employees and candidate employees and employee behaviors. Also, a connecting framework is presented, which allows the development of employees devoted to creating brand representatives within and outside the business. In this context, it can be said that every business has an internal system of values.

As part of the study, corporate reputation, brand image, and employer brand image were discussed, and these concepts were analyzed in detail. Similarities and differences between brand image and employer brand image, which constitute the main theme of the study, were studied intellectually. Similarities between product-service brand and employer brand can be listed as both of them establishing an emotional interaction with their target audience; making reliable, functional, and psychological promises; requiring a systematic effort and developing a sense of engagement and loyalty within the target audience as a result of these systematic efforts; creating a strong defense mechanism in crisis; and the image being shaped by the association within the mind of the target audience and by their experience. While product brand image and employer brand image share similar elements, there are some important details that separate the two concepts. Some of these differences can be listed as follows: difference in the target audience; the product brand heavily provides consumption benefits, while the employer brand provides experience benefits; qualitative and quantitative differences between the functional and emotional benefits provided; integrated marketing playing a greater role in the product brand, while human resources and marketing communication play a greater role in an employer brand. The product brand creates a willingness among the target audience to purchase a product or service, while the employer brand creates a willingness to work in that particular company.

As can be seen, while there are similarities and differences between brand image and employer brand image in some aspects, both concepts find meaning, within the understanding of corporate identity, in a corporation’s corporate behavioral patterns, corporate philosophy, ways of doing business, and in terms of mission-vision, and principles. In today’s world, which is becoming unlimited in information-communication technologies, both product brand image and employer brand image display a powerful influence together for either consumers or employees and potential employees through production quality, human resource policies, understandings of social responsibility, and communication structures.

This comparative analysis aimed at expanding the field of thought for brand image and employer brand image and also conveying their apparent features in terms of their functionality. Brand image and employer brand image, which project the key characteristics of both products and businesses as an employer as a whole, were studied by way of interpretation. These concepts were comparatively studied for their unique characteristics. In this respect, it is thought that the study can be beneficial for future scientific studies and as a conceptual framework.

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Operational Efficiency And Management Of Organizational Conflict

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Abstract. A conflict within an organization, which can be defined as an economic, social structure formed by individuals to carry out a purpose, affects the performance of the personnel and efficiency of the organization directly. The conflict, breaking out within the organizations which are established especially for economical purposes, decreases the efficiency and endangers the sustainability of the organization. The loss of efficiency of the establishments which are economical organizations and holding an important place in developmental state, constitutes a problem not only by establishment’s side, but also in terms of economical development and belates to achieve the economical development goals.

Thus, against competitive working conditions resulting from globalisation and liberalism, conflicts occurring within the individuals themselves in the organization, between each other, between individual and the group, within the group, between separate groups, between separate divisions or between organizations have to be prevented.

In order to provide the efficiency and sustainability of an organization, the conflict types, occurrence and reasons of the conflict occurring or likely to occur in an organization have to be analysed and prevented by the authorities or a pre-occurred organizational conflict has to be terminated. In both situations, the conflict has to be managed ideally without losing the efficiency of the organization.

In this study, Organization Conflict concept, the effect of the conflict on organizations and administrative institutions, organizational performance relationship, conflict types, the reasons of occurrence of conflicts, the ways of conflict management needed to provide the sustainable efficiency of the businesses which are economic organizations, will be examined.

Keywords: Economic Organization, Organizational Conflict, Efficiency, performance, conflict management

1. Introduction

Sometimes, conflicts occur inside organization, which is one of the basic functions of the management. These conflicts that occur inside the organizations have a direct effect on operational efficiency, both positive and negative. Therefore, managing these conflicts has a great importance in terms of enterprises. While positive conflicts inside enterprises may increase efficiency, negative conflicts may bring serious damages to enterprises in various extents and fields. In order to convert the effects of negative conflicts to a positive situation for the enterprise or in order to remove the conflict, the enterprise organizations should have a clear knowledge of Organizational Conflict Management. Besides, in order for Conflict Managements in Enterprises to be successful, the concepts of conflict, organization and management should be analyzed in all aspects by the enterprises. According to Başaran, “there is no compromised common definition of organization, which is defined as a structure of relationships, goals, targets,
roles, communications and similar elements that occur when people are working together. Disciplines, define the concept of organization, which does not have a compromised mutual concept, in different ways according to their own ways. Such as “People who come together for specific goals, willingness, communication, human + material, organization = structure”.

Despite of all the different definitions, organizations continue their existence as long as they accomplish their goals and organizations do not remain the same as the moment they come into existence due to the continuous change in the human behavior (Başaran, 1984:45; Korkmaz, 1994: 10-14; Kilç, 2004:41; Savaş, 2004:3).

Entire actions that should be taken in order to achieve organization’s goals are called “management process”. Management is the operation of using this process in the most effective way and making the organization achieve its goals. On the other hand, conflict concept can be defined as disagreement, discrepancy and reaction that occurs in the current situation. Conflicts may occur between employees, group or employees and the management due to different reasons inside enterprises. Actions to be taken in order to prevent damage in operational efficiency are detecting the conflict and finding a solution to it (Şimşek, 2005:7-12; Tokat ve Şerbetçi, 2001:145).

2. The Effects Of The Conflict On The Operational Efficiency And Managing The Conflict

Conflicts inside the organization affect the organization both in positive and negative ways. While positive effects are preferred, negative effects are not preferred for the organization. The constructive or functional conflicts are preferred due to the fact that they speed up the organization’s achieving their goals, improve the performance. On the other hand, destructive or non-functional conflicts are not preferred due to the fact that they block the performance. Gordon Lippitt listed the positive and negative effects of the conflict in the organizations as below (Korkmaz, 1994:17-18).

Positive results of the conflict:
- a. Brings the subject up in a compromising way.
- b. Helps the subject to be clarified.
- c. Increases participation.
- d. Improves the quality of problem solving.
- e. Increases simultaneous communication.
- f. Contributes to development.
- g. Amplifies relationships when solved in a creative way.

Negative results of the conflict:
- a. Diverts the energy of the task.
- b. Demoralize.
- c. Make the individuals and the groups be opposed to each other.
- d. Deepens the discrepancies.
- e. Prevents the improvement of the cooperation movement.
- f. Leads to irresponsible behavior.
- g. Creates suspicion and distrust.
- h. Decreases the production.

Figure 1

Organizational efficiency

Too high or too low conflict levels are not preferred. ‘B’ point in Figure 1 shows the most appropriate spot about conflict. The
manager should encourage the conflict in the area between the ‘A’ point to the ‘B’ point. Conflict level should be decreased on the left side of the ‘B’ point. (Savaş, 2004:5).

Figure 2

The intensity of the conflict and the management manner are the signs of the fact if that conflict will have functional / non-functional quality for the organization. If the conflict progresses like the shape of upside-down U as in the Figure, it is constructive and it encourages individuals for more effort, cooperation and creativity. Conflicts that progress too slowly or at too low levels are harmful for the organization (Altuğ, 1997:113).

It can be understood from both of the above Figures that a specific amount of conflict has a positive effect on the performance but if the conflict is not managed well and kept at the level which is beneficial for the organization, it is harmful for the organization.

For an effective fight against the conflict or conflict management, the organization should keep the conflict at a medium-level and should not take it further. The organization should try to manage the conflict by preventing it, decreasing it or increasing it or warning. The two approaches that are shown in Figure 3 is being used in conflict management.

Figure 3 - Two approaches used in managing the conflict

<table>
<thead>
<tr>
<th>Behavioral approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The purpose is to change individual behaviors.</td>
</tr>
<tr>
<td>- It is relatively quick.</td>
</tr>
<tr>
<td>- It is a short term effective model.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitudinal Approach</th>
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</thead>
<tbody>
<tr>
<td>- The purpose is to change the attitudes of the individuals towards conflict.</td>
</tr>
<tr>
<td>- It is time consuming.</td>
</tr>
<tr>
<td>- In terms of its consequences, it is valid in long term.</td>
</tr>
</tbody>
</table>

The important point in conflict management is to decrease the existing conflict to be able to manage the conflict well or to prevent a conflict to occur inside the organization. Decreasing and preventing conflicts methods are categorized as in Figure 4.

Figure 4 - Decreasing and Preventing Conflicts Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>B: Behavioral, A: Attitudinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying the Rules (B)</td>
<td></td>
</tr>
<tr>
<td>Distinguishing (B)</td>
<td></td>
</tr>
<tr>
<td>Highlighting the task and clarifying (B)</td>
<td></td>
</tr>
<tr>
<td>Competition with a mutual enemy or an outsider (B or A)</td>
<td></td>
</tr>
<tr>
<td>Rotation of the members (A)</td>
<td></td>
</tr>
<tr>
<td>Increasing resources, Rewarding Association (B or A)</td>
<td></td>
</tr>
<tr>
<td>Building teams, Problem Solving, Organization development (A)</td>
<td></td>
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</tbody>
</table>
### Efficiency

<table>
<thead>
<tr>
<th>Efficiency</th>
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<tbody>
<tr>
<td>- We can solve the unimportant issues.</td>
<td></td>
</tr>
<tr>
<td>- It provides short term results.</td>
<td></td>
</tr>
<tr>
<td>- It distinguishes the conflicting groups from each other.</td>
<td></td>
</tr>
<tr>
<td>- It can be used in the unrelated situations.</td>
<td></td>
</tr>
<tr>
<td>- The reason of the conflict is uncertainties.</td>
<td></td>
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<tr>
<td>- The tasks may be clarified.</td>
<td></td>
</tr>
<tr>
<td>- It can be used if competition is one of the goals of the organization.</td>
<td></td>
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<tr>
<td>- It can be used if there is a conflict between departments.</td>
<td></td>
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<tr>
<td>- It can be used if it is a matter of reciprocal training in improving skills.</td>
<td></td>
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<tr>
<td>- It can be used if the resources exist and available.</td>
<td></td>
</tr>
<tr>
<td>- Its use is appropriate if a conflict arose upon competition.</td>
<td></td>
</tr>
<tr>
<td>- It can be used if the conflict has complicated and important effects.</td>
<td></td>
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<tr>
<td>- It can be used if there is enough time.</td>
<td></td>
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<tr>
<td>- It can be used after the discovery of the long term effects.</td>
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</tbody>
</table>

### Results

<table>
<thead>
<tr>
<th>Results</th>
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<tbody>
<tr>
<td>- It takes to the conclusion quickly.</td>
<td></td>
</tr>
<tr>
<td>- It does not show the source of the conflict.</td>
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</tr>
<tr>
<td>- It is not effective in long term.</td>
<td></td>
</tr>
<tr>
<td>- The conflicts may occur again.</td>
<td></td>
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<tr>
<td>- It does not take to the source of the conflict.</td>
<td></td>
</tr>
<tr>
<td>- It is not effective in long term.</td>
<td></td>
</tr>
<tr>
<td>- The conflicts might occur again.</td>
<td></td>
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<tr>
<td>- Long term changes cannot be provided.</td>
<td></td>
</tr>
<tr>
<td>- It increases the dependency on the group.</td>
<td></td>
</tr>
<tr>
<td>- The source of the conflict is not certain. A conflict may arise again when the outside threat is removed.</td>
<td></td>
</tr>
<tr>
<td>- It increases understanding other’s feelings.</td>
<td></td>
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<tr>
<td>- It has a flexibility increasing role.</td>
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<tr>
<td>- It increases the training costs in short term.</td>
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<tr>
<td>- It provides a change in long term.</td>
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</tr>
<tr>
<td>- The conflict might be removed if resources are available. If there are no resources, the conflict cannot be removed.</td>
<td></td>
</tr>
<tr>
<td>- It does not show the source of the conflict.</td>
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</tbody>
</table>

Conflict Management is manipulation the conflict that arise due to various reasons inside the organization to a beneficial way for the organization or removal of the conflict which is harmful for the organization by the managers. There are several definitions of Conflict Management. According to Robbins’s definition, conflict management is “Manager’s providing an environment where there are sound conflicts and no extremeness. According to Koçel, managing the conflict is “bringing the conflict to a conclusion, therefore, identifying the conflict management process, investigating the reasons, specifying solution alternatives and monitoring the results”.

According to Şimşek, there are three ways of Conflict Management:

1. **Encouraging the conflict**
   - Hiring new external employees to the organization as a new blood.
   - Making new arrangements in communication inside the organization.
   - Reconstruction of the organization.
   - Encouraging the competition.
   - Electing appropriate managers.

2. **Decreasing the conflict**
   - Providing a smooth communication process between the groups.
   - Preventing the increasing and settlement of Win-Lose feelings.
   - Setting a mutual and brand new goal for the groups.
   - Pointing a mutual target outside the organization to the groups to make them direct their destructive efforts to this target and concentrate on the positive effects of the competition to the organization.
- Setting a mutual and brand new goal for the groups.

3. Resolving the conflict
   a. Domination and Pressure Method
      - Compulsion or Enforcement
      - Softening
      - Avoidance
      - Majority vote rule
   b. Compromising Method
   c. Associative Problem Solving Method

Some of the conflict management ways are given below:

**Avoidance and commitment method.** Here, although the manager is aware of the conflict inside the organization, he/she stays away from resolving the conflict as if he/she is unaware. He/She avoids the conflict. This behavior of the managers puts everyone in the organization in an unsatisfied situation. In this case, the decisions that should be made to resolve the conflict are delayed.

**Softening method.** Here, the manager tries to solve the problems between the conflicting parties by ignoring the differences between the parties, trying to reach a compromise, trying to provide solidarity and trying to make them accept his/her own solution. It is a matter of highlighting the common values the conflicting parties share and ignoring the differences. The reason behind this is to encourage the conflicting parties for unity.

**Problem solving method.** In this method, a solution which is beneficial for both parties is searched. None of the parties gets harm. A common ground is tried to be found by the parties. Here, the reason why the conflict occurred is exactly known and a solution is searched. The manager wants the conflicting parties to decide together and meet on a common ground to solve the conflict.

**Changing the conflicting parties’ method.** It is changing the task the parties are working on. Or removing all the elements that might lead to conflict by making the parties participate in training and development programs.

**Identifying more important and more comprehensive goals methods.** It is the organization manager’s pointing more important and comprehensive goals than their own goals to the employees inside the organization and organizing the employees. Here, “the aim is to put the differences between the conflicting parties aside to make them unite for more important and comprehensive goals and assist each other. This method does not provide a permanent solution to the conflicts, but it provides a temporary delay by suppressing the conflict.”

**Using force and authority method.** In this method, the manager solve the problem by using his/her authority. While one of the conflicting parties might be pleased, the other party might not be pleased. The conflicting parties are obliged to do what the manager asks. Here, the manager can bestow a privilege upon one of the parties. The aim of this method is not to solve the conflict but to neutralize the conflict by using force. But this attitude will result in one of the conflicting parties to lose. The losing party may maintain a hostile manner, so it is not a very healthy method.

**Appeasement method.** It is the appeasement of the conflicting parties to find a solution. Both parties appease. Conflicting parties decide on a mutual ground. The appeasements depend on how strong the conflicting parties are. Both parties need to abandon some of their demands in order to come to an agreement and solve the conflict.

**Political approaches method.** Organization manager makes promises to put the conflicting employees off the
conflict. They discontinue this conflict as they know it would be more profitable for them if they did so.

**Changing the organizational relations method** Changing the organizational relations conflicts and the sources that might lead to conflict. With the help of training group of the organization members (T-Group), changing the behaviors that might lead to conflict. In this training group, sensitivity, case study, role-playing, group discussion training methods are applied.

**Amplifying the resources method** The conflict occurred due to limited resources will end with amplified resources. In the conflicts that occur due to limited resources, the success of one party leads to losses of the other party. Resources need to be increased in order to solve the conflicts due to limited resources.

**Compromise method** In the current conflict if both parties will lose or appease, compromising is chosen. “Compromise is uniting for the mutual benefits by giving up their own benefits of both parties. For example, the agreements between the labor unions and the employers.”

**Arbitration method** Here, the conflicting parties are unable to come to a conclusion and they ask a third person who both parties trust and would accept the decisions to find a solution to the problem. In this case, the conflicting parties are obliged to accept and respect the decision that is made. “Today, this method is seen frequently especially in employee-management conflicts. It is a more beneficial method in terms of productivity, efficiency and time saving than resorting to the jurisdiction upon problems.

**Majority vote method** It is the method of following the way the majority wants in order to resolve the conflicts. It is ending the conflicts by the decision of the majority with free and fair votes of the group members. This method is more successful if the group members trust the voting. If the conflicting parties are aware of the existence of an enemy which is a threat to the interests of both parties, they give of conflicting and unite against this enemy.

**Other methods** Many other methods other than the ones mentioned above are being applied in solving the conflicts and new solution methods occur in accordance with the continuously developing and changing world. Some of the other existing solution methods other than the methods mentioned above are as such: Superior Goals Method, Casting Lots, Remaining Indifferent, Retreatment, Abstraction, Identifying a Mutual Enemy, Negotiation or Debate Method, Removing the Conflict Source, Encouraging the conflicts, Making Difference by Hiring New Employees, New Regulations in Communication Fields, Reconstruction, Encouraging the Competition, Electing Appropriate Managers, etc.…

3.**Conclusion**

Organizations never remain the same as the time they were first founded. They keep changing and developing in time. This results in the organizations’ become more complicated in time. Conflicts are inevitable inside the organizations between the organization managers and employees, employees and employees and employees or department managers in the organization and departments inside the organization who have different characteristics from each other. The managers’ duty is to manipulate the conflicts that occur inside the organization to the most beneficial way for the organization and keeping these conflicts at the most beneficial level for the organization. The managers should also permanently resolve the conflicts that are harmful or that may be harmful for the organization. In order to prevent the conflicts or to resolve the conflicts, the
manager should choose the most appropriate one for the organization structure. Because, the organization will not adopt a solution method that is inappropriate for itself. Therefore, this will lead to more damage to the organization. A manager who is unable to manage the conflict well will fail and will give irrecoverable harm to the organization. In order to be able to manage the conflict, the manager should not be indifferent to the conflict in the organization, should pay attention to the conflict and should pay an effort to decrease the existing conflict or make the conflict beneficial for the organization. Because, a certain level of conflict will lead to beneficial competition and make the organization employees eager. Organizations also keep changing in accordance with the changing and developing world. This leads to emergence of different conflicts inside the organizations. The manager should also acknowledge these new conflicts and adopt solution methods, and change and develop with the organization.

References

Identifying a brand, a person or a corporation

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Abstract. The Effect of Plastic Items On The Audience In Corporate Identity Creation Process Corporate Identity is seen as its name of exposed face in marketing, the way that the corporation express itself and its signature. Corporate Identity Design, is more than an ordinary graphic design work; it is a product identification application which provide identity a soul and a personality to the product. Only with a correctly worked and visualized identification, without needing anything else, target audience can be determined, a planned judgment can be constituted according to the reliability in the public. Including the price policy, most of qualification of a brand can be transmitted to the target audience via corporate identity work. In this article, the effects of color, form and typography items on the audience are analyzed in various research methods. On the other hand as such an important and significant corporate identity are designed, the meaning of certain plastic items and the way of their typography transmits, the meaning of the colours are exemplified and explained in details. The research area is limited to Starbucks, Shell and Ikea.

Keywords: logo, type, branding, identity, corporate

1. Introduction

There are many ways to sale a product. One of these ways is to establish rapport. It is possible to say that a brand who establish rapport with the buyer or when the buyer loves a product and feel close it to himself/herself it is sold easier. So in order to promote and ingratiata a brand, the brand should be identified and it should be given variety of personality characteristics. In this point, the need to stroke the basis of the identification operation arises.

In our life today corporations and brands are known by their identity; they owe their image in consumers mind to the shapes and colors. “Corporate identity; has been emerged by an idea which aims to introduce who they are and scare the others [1]. Vikings who carry scaring birds on their sails, king who has crosses and eagles on their on the shield in battle were recognized by their supporters on the other hands they send messages via these symbols they used.[2]”. While the situation in the historical process was so, today logos which have a memorability and aesthetics functions and called as the transfer of brands to plastic elements, assume the task of identification depend on today’s needs.

It can be mentioned that logos are the smallest element which indicate the identity of the brand. Being simple, memorable and capable to reflect the general characteristics of the institution can be mentioned as a preferred logo features.
One of the best examples for this can be the difference between trade ship and a pirate ship which has a pirate flag in the years when pirates ruled the seas. It reflects a situation which requires a fear by raising a pirate flag to one of two ships appearing the same in physical properties. In the same way, people have their first impressions by receiving visual messages when they meet someone new or they go somewhere new. So the difference between two goods or services which appear the same can be distinguished by logos. Only one logo which contains its consumers’ trust and quality difference may easily transfer a product from one to another.

While an identity is being designed, first of all, the idea or the judgment that was aimed to transfer is calculated and studied previously. After the product’s target audience is defined, a concept is determined in accordance with this audience. Then colors and forms are determined according to this concept.

As a good example Adidas can be given with its logo that includes a simple minuscule typography, looks like a high top sneaker including three diagonal lines which make feel the power, speed, movement and acceleration.

By having a logo which is the most important element of the corporate identity, as much as eloquent, the brand or the corporation can draw away in our accelerating life.

In recent years, many companies simplified their logos. As an example to these changes Starbucks who changed its logo 4 times between 1971-2011 can be given. It has simplification of typography and graphic notions. In this process, firstly brown which reminds coffee was changed into green which is the color of the joy and inner peace, “spices” and “tea” words were taken out and its typography was redesigned by bold more powerful letters by only including “coffee” word in circular forms. Secondly, in 1992, being exaggerated the illustration of the mermaid, its importance for the company pointed out. In 2011 circular shapes and brand typography of the brand which was assumed as placed in people’s perception were removed from the logo and brand has started to be served with “Siren” on a simple green ground. The importance of the Siren for the company comes from Greek mythology which mentions a mermaid attracts sailmen and prevents their homecoming. By associating Sirens songs with Starbucks coffees, the aim is to give the coffees of Starbucks are indispensable.

Even it turned into a logotype in recent years, as everyone lived his/her childhood in 90s may easily remember; in Nestle’s logo there was a bird figure who feeds her babies was ingraved with its slogan says “Good food, good life”.

![Adidas Logo](image1)

**Figure 1: Adidas logo, 2016 [3]**

![Nestle Logo](image2)

**Figure 2: Nestle Logo, 1998 [4]**

![Starbucks Logo](image3)

**Figure 3: Starbucks Logo Evolution, [7]**
There are some forms and colors that evoke some meanings in human mind. As mostly known, yellow and red appetize people quickly and most of fast food restaurants use these colors. But Dominos that is a very assertive about take away service, takes attention with its blue color. By choosing blue color as a prestigious and cold color, it is aimed to people eat them not in the restaurants but in their relax, comfortable environments.

![Dominos Logo](image1)

**Figure 4: Dominos Logo, 2016 [8]**

In contrast people doesn’t hesitate to spend time in Pizza Hut which was designed with hot colors and with comfortable sofas.

![Pizza Hut Logo](image2)

**Figure 5: Pizza Hut Logo, 1999-2010 [9]**

Green and blue colors in cleaning materials evoke feelings such as airiness and cleanliness. When we look at the Protex logo, asserted antibacterial function is given with dark blue on white ground and for different fonctions green, pink and red are used.

![Protex Logos](image3)

**Figure 6: Different Kind Protex Logos, [10]**

It is possible to observe that technology companies prefer silver gray, companies who desire to be received as prestigious prefer black, luxurious and highfalutin companies prefer golden color and gilts.

Since green refers inner peace, hope and nature, from hotels with clean air, natural holiday promises to room air fresheners we can see green color in their corporate identity. To talk about the shapes, circular drawings may remind organic structures or humanistic products. The sharp angular forms may be preferred for a more serious and sedate image.
The elements which are supposed to used in corporate identity can have different meanings in different cultures. For example, white color is used as a positive meaning in western culture, although it is the mourning color in eastern cultures. These cultural codes have a great importance in design process.

Typography as one of the most important notion of corporate identity besides its information giving function, it constitute a perception about the brand in people’s mind. Font choosing should be done according to the emotional transmission. Fonts reflect the properties of their respective eras. For example, Times New Roman characters have properties of the age that they were designed. But they were adapted to our time in a way to overcome readability problems. For this reason minuscule letters were also added.

Today lots of company uses logotype without emblems. The reason is to perceive them faster and easier. Both in small or big sizes logotypes which explains their aim without being superfluous are used widely by lots of brand and people. Typographic elements with hand writing used to create a romantic and humanist judgment in human mind, while rounded letters can be used to create a more fun atmosphere.

For prestigious, established companies spiky majuscule antic letters can be used. Fonts are chosen according to the emotion to transmiss. For example while Comic Sans characters cannot used for a serious message, spiky letters can be inconvenient on a book for kids.

2. Conclusion

Corporate identity work further than just a graphic design work, with its visual elements it has a power to constitute a new perception. Besides this, it may help to change current perception of the brand. Any item can not be included randomly to the study about logo design considered as one of the most important parts of corporate identity.

Each shape, color or element has their own meaning. In order to analyze them a cultural or psychological study is required.

Designing corporate identity is one of the most important works for the designer, brand and corporation. By searching step by step a correct work should be bring out. Corporate identity can change the value of the brand on consumer’s mind and effect the sales rates.

References


Caution, Emoji Crossing: Employing Emoji to Improve the Effect of Advertisement

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Abstract. Emojis create a communicative space worthy perhaps of tens of words. Ever since their invention, emojis have been prevalent and in great demand among the young generations. The symbolic communication created by emojis has contributed to the development of a new language in marketing and advertising. This new way of communicating needs less space and fewer words, but more importantly makes room for greater creativity in transmitting the message and convincing the target population. The purpose of the current study is to analyze the effects of the use of emojis as a tool of advertising in the press on consumers. There are no studies on the use of emojis in advertising in Turkey. By adopting an experimental approach, the participants in experimental group were asked to expose an ad that involved emojis, while the participants in the control group provided feedback on an ad that did not involve emojis. Afterwards both groups completed a survey. It was found that the ad including emojis received greater positive feedback; their message is considered clearer and more convincing.

Keywords: Emoji, advertisement, social ad, advertisement’s effect

1. Introduction

Technological developments have always affected human life. Smartphones, internet, texting apps and social media have ensured access to products and services to all ages, from 7 to 70 while concurrently making life easier. On the other hand, to be “online” all the time means that the language modern people use does not suffice to express their feelings, even as it creates the need for faster and easier ways of communicating. This is the need that contributed to the invention of emojis. The first examples of the emojis we use today originated in Japan, in 1999, in a telecommunications company. Their creator aimed to facilitate and improve the communications between employees. The demand for emojis grew parallel to the widespread use of smartphones. Emojis went global at the beginning of 2010s; they penetrated word texts and filled up a space we did not even know we needed (think of the tone of voice, body language that cannot be transmitted through words); simultaneously they give the following message: the content of what you are saying is just as important and the form in which you say it. Given that in digital communication among young people employing emojis has become compulsory, what are the effects on consumers of the use of emojis in advertising? This is the question that this study asks and it suggests that the results are well-worthy of note and beneficial for both academics studying the field of advertising and professional practitioners.

1.1. The digital world and the birth of the concept of emoji

Communication is just as important today as it was 20 or 200 years ago. The only thing that has changed is how communication occurs. Today we can express happiness, disappointment, ideas, news, status, thinking perspectives, courage, or knowledge through many channels. This communications can happen through blogs, mail, the internet, and smart phones, to name but a few but expedient media of expression. The moment you press enter on your keyboard, you know that the message was delivered to the other end. What is also expected is that the receiving person will reply back just as
promptly. The time involved is so brief that there is no place to consider whether the message will be understood or not, and not even to gauge how you should reply. Therefore in order to increase the complexity of the message that one wants to transmit, we can use emoticons to express our feelings and emojis to indicate our mood, emotions, or tone whether it is ironic, happy, or angry [1]. Ours is not simply an age of communication but of interaction and we seem to be approaching the point where words are no longer needed. This age has its own brand-new language which individuals who think digitally and speak digitally have commonly created. It involves emojis, a feature that we cannot evade even if we wished to do so [2].

More than 6 billion online texts that include emojis and stickers are shared every day in the world. The reason for this is that people are no longer patient. Voicemail, calling, and e-mail take time but texting is simpler and emojis appear as the most practical approach to all. One single emoji that express all the feeling that would take one sentence to communicate! [3]

The Oxford Dictionary of English defines emoticons as “a representation of a facial expression such as a smile or frown, formed by the various combinations of keyboard characters and used in electronic communications to convey the writer’s feelings and intended tone.” An icon of emotion is “a small digital image or icon that is used to express and idea or feeling in electronic communication” [1]. When the emotion icon consists of a picture then it is called an emoji. Moreover an emoji, first designed in 1995 by Shigetaka Kurita, can be downloaded on a mobile phone and can be part of a series of icons [1]. There are approximately 2 billion smartphone users in the world and according to the digital company Swyft Media every day 41.5 billion texts and 6 billion emojis or stickers are exchanged through mobile texting applications. [2]

According to the Encyclopedia of New Media, “emoticons (a contraction of the words “emotional icon”) are glyphs used in computer-mediated communications that represent facial expressions” [3]. “Emojis are often confused with emoticons, which are expressed through punctuation marks and are still widely used today” [2]. Emoji characters are often thought as a happy and even funny way of communicating; however they also have complex socioeconomic past that predates their current extensive use in mobile devices. Emojis are a common expression of friendship; their duty is to soften the sharp corners of today’s digital life [4]. Individuals who prefer to use emojis do so in order “to express feelings better,” “to support their ideas,” “say a lot in a short time.” [3] “Without emoticons communication would be boring and serious” [5].

According to the results of Kang’s [6] study which examined the usage of emoticons in computer-mediated communication: “When Internet users are faced with pure text, without emoticons, most people cannot perceive the correct emotional, attitude, and attention based intents. However, when emoticons are added in the same context, the receiver’s perception of the messages starts to significantly change. Also, when opposite-meaning emoticons are used, the receiver shows an extreme difference in perceptions. Emoticons allow receivers to correctly understand the level and direction of emotions, attitude, and attention expression. These results prove that emoticons perform non-verbal communication functions” [7]. In addition, these results also show that emoticons belong to non-verbal communication. However, in time emoticons have become a part of expression language and so have also done emojis [2]. Emotion icons are used more often and generally among friends to express a feeling, or to strengthen a message, or to add a bit of humor. Less emotion icons are used if the content of the message is negative than when the content is positive [1].

1.2. The increased use of emojis

In everyday life the verbal communication between people is supported by nonverbal cues. A person’s words are accompanied by mimics, tone of voice and body language; they all contribute to giving more feeling and meaning to the content of the words. Albert Mahrebian, a scholar of communications, has found that facial expressions weigh 55%, the tone of voice weighs 38% and words weight 7% [8]. Written communication however has only the written word to rely upon in order to convey emotions, and most of the time words do not suffice to express emotions. “Emotions are always hidden in text like books, papers, stories and even the words and expressions people post online. A short sentence may imply lots of complex emotions, which also means one world could have double or even multiple meanings” [5]. “Emojis allow us to express effortlessly which word or feeling we wish to emphasize in a sentence. Another reason behind the success of emojis is that they carry with them the spirit of the digital age communication: they are fast and fun but they also offer alternatives to users” [9].

To sum up, the creation of a language composed of emojis is the dual product of the insufficiency of written communication to express feelings and increased use of technology. “Emojis assign a different meaning to the message; they speed communication and make talking enjoyable. Therefore we hide within the colorful characters of emojis what we mostly cannot utter” [2].

How can we explain the effortless way in which emojis that penetrated the daily life of the young generations and of all the individuals who want to keep up with the digital age? The diffusion of innovations carries the traces of technological determinism. How do innovations enter a society, how do people appropriate these innovations or how do they reject them? These are some of the questions that concern communications research [10]. The adopting of innovations involves the following steps: knowledge, persuasion, decision-making, implementation, and confirmation. Individuals at first are exposed to the new, afterwards they adopt either a positive or a negative attitude towards it, and finally they either appropriate or reject the new as they make up their minds about the innovation. At the stage of implementation they begin to use the innovation. The diffusion of the innovation has to do both with the spread of technology and ideology [11]. Emojis appeared as a result of a technological innovation had been firstly appropriated by Generation Z. The emojis that are prevalent among the young people are used all over the world and have almost the same meaning in all languages. We are now at the point where brands want to learn this new language produced through technological developments so that they can use it in their ad campaigns. This is contributing to the transcending of both country borders and generation gaps. This is being supported by recent research by Zhu [7]. A study analyzing text-based communication has found that women tend to use more emojis than men; more than half (50.5%) participants who use emoji are under 22 years old, and more than 70% are under 37; younger people are more likely to be emoji users. The average age of all the emoji users is 27.79, while the average for non-emoji users is 35.11 [7].

Researchers have started to explore the role of emojis in text-based communication with the increased popularity of emojis. Kelly and Watts [12] found that beyond expressing emotions, emojis are used for other purposes such as maintaining a conversational connection, keeping the interaction playful, and creating a shared and secret uniqueness within a particular relationship.

Nowadays emojis do not have to ‘look the same’ as was the case when Shigetaka Kurita designed them in order to be called emoji. There are many different types of emojis which can be downloaded in various smartphones or computer operating systems [1].

To understand affect’s current place within contemporary capitalism we need to consider this face: 😄. These symbols do considerable work to underscore tone, introduce humor, and give individuals a quick and efficient way to bring some color and personality into otherwise monochrome networked spaces of text. Yet emoji also do more than this. Beyond their adorable exuberance, emoji can act as an emotional coping strategy and a novel form of creative expression, even if,
in both cases, working within real limits. Emoji create new avenues for digital feeling, while also remaining ultimately in the service of the market [4].

During their daily interactions individuals imitate each others’ mimics as they talk unconsciously. This is a significant part of empathizing and developing relationships. However, up until the invention of the emojis this crucial piece of our interaction was lost during online communication. Scientists tell us that when people see a smiley online the same part of the brain is activated as when they see a real person smiling. Both stimuli cause change in emotions and people change their facial expression to experience the same emotion as the stimuli [2]. Studies show that user who rely heavily on emojis and stickers in their online conversations visualize first the symbol of emojis while expressing their emotions during offline conversations. In other words, when these users want to express their sadness, the brain brings up the frown face that the users commonly employ in Facebook or Whatsapp [13]. A similar striking example is the fact that the best word of the year 2015 according to the Oxford English Dictionary was not a “word” but rather Face with Tears of Joy, an emoji 😂. This was also declared the emoji most frequently used in United States and Great Britain. The president of Oxford Dictionaries, Casper Grathwohl, said in a statement that the demands of 21st Century communication cannot be met through traditional words, so emojis have stepped in to fill these needs.

1.3. Using emojis in marketing and advertising

For neuromarketing emojis are not a fashion; rather they are a tool that works better with cognitive processes in comparison to words. The relation of our brains is newer to words than to images. Words and visuals also activate to different areas in the brain. Visual images are processed in the area that engages with emotions, words on the other hand are processed in the area that deals with logic. Words take longer to construe and they may even fly over our heads without leaving an impact. Images impinge swiftly and leave deeper marks in people. In short, visual images are more effective in affecting the emotions of individuals and in transmitting the desired message [14]. Therefore brands attach importance to friendly and effective symbols, which affect consumers emotionally.

Emojis are the representatives of a cultural development that offer a new way of merging verbal and visual communication while simultaneously providing brands the opportunity to be more creative. Linguists argue that emojis add energy to communication and go beyond the semantic process of language by making language both more enjoyable and more expressive.4 We have all hear the phrase a picture is worth a thousand words. Emojis are the next evolutionary step in communication. Moreover, due to emojis language barriers are about to disappear. A smiley is universal and also it is one of the examples of thousands of emojis that are able to ensure communication all over the world.5 Nowadays there are thousands of emojis that are known to have the same meaning in every country of the world. This development has made brands eager to learn the new language of emojis, which is able to cross both generation and linguistic borders [15]. Emojis have become mainstreamed to the extent that brands are attempting to personalize emojis so that they will carry the trademark of the brand. This demand has given rise to a small platform industry that deals exclusively in producing the personalized brand version of the popular emojis, stickers and GIFs. Brands like Mentos, Ikea, Domino’s, Coca-Cola, Starbucks, Burger King and Comedy Central, and most recently Swyft Media are cooperating with the emoji inventing platforms in order to produce their own trademark emojis. Snapchat has also newly added emojis to its platform and shows people emoji icons instead of pictures of “the best friends.”6 At an age when emojis are

4 http://digiday.com/brands/emojification-brand-advertising/ (Accessed on 30.03.2016)
6 http://digiday.com/brands/emojification-brand-advertising/ (Accessed on 30.03.2016)
pervasive the fact that brands use emojis makes consumers see brands as "one of them" and also increases and smoothens the interaction between brands and their followers [16].

Millennials (Generation Y) are known to live and shop through their emotions; accordingly emojis that appeal to them have taken their place in the world of marketing. While everyone sees emojis as small, sweet characters, for marketing people emojis are money producing machines. Brands that are in constant touch with their consumers through social media have not shied from employing emojis in order to speak the same language and to express the emotions of their target group. Brands search for means of expression that convey truth and emotions in a brief but striking manner. Therefore, as they show their ability to keep up with technology, brands also opt for emojis because through emojis the message is transmitted in a simpler language [2].

Very different categories of brands work wonders and turned expressing themselves through emojis into art as they convey their message especially to a young audience. The magazine of advertising industry Campaign prepared an extensive feature on this topic and concluded the two following points. Firstly, brands are eager to take advantage of this opportunity that brings a whole new dimension simple communication. Secondly – and this point carries with it the opposite logic of the first point -- simple and cute icons launched the "puzzle solving game", increasing the interest in the message, but also ultimately facilitating the sharing and dissemination of messages on social media (GQ, 2015).

In everyday life consumers come across not only SMSs but also emojis. Big brands and companies use emojis extensively in their ad campaigns. In fact, we are at the point where brands are creating their own emojis in order to differentiate themselves. Consumers can see packages with emojis, ad campaigns, commercials, movies, jewelry, and even online banking passwords that include emoji. Therefore brands who what to catch the trends of their target consumers apply emojis and attempt to go beyond words.

2. Aim of the study

In digital communication emojis are in demand. They have been filling the gap created by words however they have done so unwittingly to the point of dominating everyday life and becoming part of the official language. This is the starting point of this study. Given that emojis have become the official language of digital communication, particularly among young people, the purpose of this study is to uncover the potential effects on consumers when emojis are used in advertising. To this end it asks the following questions:

1. How does an ad that uses emojis differ on means in terms of affective response, substance assessment and persuasive impact when compare to an ad that does not use emojis?
2. How does an ad that uses emojis differ on means in terms of affective response, substance assessment and persuasive impact due to gender?
3. How does an ad that does not use emojis differ on means in terms of affective response, substance assessment and persuasive impact due to gender?
4. How does an ad that uses emojis differ on means in terms of affective response, substance assessment and persuasive impact when compare to an ad that does not use emojis when the participant is a licensed driver compared to a non-driving participant?

3. Methodology

This study adopts an experimental approach. In this kind of studies the researchers are authorized to control and manipulate the stimuli to which the participants are exposed. Therefore this approach is inherently comparative. In this case, the independent variable is the use of emoji in the ad and the dependent variable is the participants’ reaction towards the ad. The participants are 80 students from KTU

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7 http://www.askolsunparistanbul.com/#!Markamoji-Bu-markalar-ne-diyor/ckod/56e89d2e0cf22a61ccd2ea8 (Accessed on 05.04.2016)
Karadeniz Technical University), who have taken different sections of the same course. 40 of the participants were female and 40 of them were male. Students in Section A have seen the ad that has an emoji in it; the students in Section B have seen an ad with no emojis in it. All students were asked to fill a questionnaire. Before the experiment there was no data whether participants were drivers or not. Nevertheless after the administration of the questionnaire the data that was gathered from sample unit is presented in table 1.

Table 1. A Cross Table of the Type of Ad * Gender and Car Possession

<table>
<thead>
<tr>
<th>Ad type</th>
<th>Gender</th>
<th>Car</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Ad with Emoji</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Ad without Emoji</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

3.1. Stimulus design

The ad, which is selected to be shown to participants, was part of Volkswagen outdoor campaign aiming to raise awareness about not texting while driving. The message of the campaign was “Don’t text and drive” and in order to strengthen the message an emoji was used. For the purpose of this study the slogan was translated into Turkish and the Volkswagen logo was erased and substituted with the logo of the General Directorate of Security. In order to control for the past experiences of the participants with the car brand, the ad was transformed into a social advertisement. The control group was shown the very same ad, expect that instead of the emoji the slogan appeared on a board.

3.2. Measurement tool

The measurement tool to assess the effects of emojis in ads was taken from a study conducted by Pham & Avnet [17]. The scale was translated into Turkish and pilot tested on 20 participants. The reliability of the scale is the following:

- Affective response: .842
- Substance assessment: .730
- Persuasive Impact: .855

The internal validity has been reported at critical alpha value .70 and higher [18]. Based on these figures it is possible to state that the scale used in this study is very reliable in measuring affective responses and persuasive impact and reliable in measuring substance assessment.

3.3. Data collection

The steps followed during data collection include designing the ad, pre-testing the ad, preparing the questionnaire, applying the pilot case, and applying the experiment. The data from the experiment has been analyzed through SPSS 20.0; the dependent variables: the affective responses evoked by the ad, the substance assessment of the ad, and ad’s persuasive impact have been analyzed with independent samples of t-test.

4. Findings

Table 2, Table 3 and Table 4 presents the finding of the t-tests analyses for the evoked affective responses, substance assessment and persuasive impact of the ad with and without emoji. It was found that there is statistically significant difference between the ad with and without emoji in terms of evoking affective responses, substance assessment and persuasive impact. As shown in the tables, in each case the mean of the ad with emoji is higher compared to the other ad. In other words, the reaction towards the ad with emojis is more positive.

Table 2. Affective responses Scale t-test Analysis based on Ad Type

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>df</th>
<th>T</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad with emoji</td>
<td>40</td>
<td>5.13</td>
<td>1.53</td>
<td>78</td>
<td>3.312</td>
<td>.05</td>
</tr>
<tr>
<td>Ad without emoji</td>
<td>40</td>
<td>3.77</td>
<td>2.17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3. Substance assessment Scale t-test Analysis based on Ad Type

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>df</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad with emoji</td>
<td>40</td>
<td>5.37</td>
<td>1.70</td>
<td>78</td>
<td>2.087</td>
<td>.05</td>
</tr>
<tr>
<td>Ad without emoji</td>
<td>40</td>
<td>4.59</td>
<td>1.68</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Persuasive Impact Scale t-test Analysis based on Ad Type

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>df</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad with emoji</td>
<td>40</td>
<td>5.28</td>
<td>1.67</td>
<td>78</td>
<td>3.58</td>
<td>.05</td>
</tr>
<tr>
<td>Ad without emoji</td>
<td>40</td>
<td>3.90</td>
<td>1.75</td>
<td></td>
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</tr>
</tbody>
</table>

Table 5 presents the findings of t-test analysis with regard to male participants and their reactions to the ad with and without emojis in terms of evoked affective responses, substance assessment and persuasive impact. There are statistically significant results between the answers given to the ad with and without emojis. Moreover the ad with emojis received more positive scores. On the other hand, female participants’ reactions to the ad with and without emojis show no statistically significant results in terms of evoked affective responses, substance assessment and persuasive impact.

Table 5. T-test Analysis of Affective responses, Substance assessment and Persuasive impact Scales among Males based on Ad Type

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>df</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective responses</td>
<td>Ad with emoji</td>
<td>20</td>
<td>5.48</td>
<td>1.17</td>
<td>38</td>
<td>3.049</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Ad without emoji</td>
<td>20</td>
<td>3.98</td>
<td>1.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance assessment</td>
<td>Ad with emoji</td>
<td>20</td>
<td>5.53</td>
<td>1.55</td>
<td>38</td>
<td>2.464</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Ad without emoji</td>
<td>20</td>
<td>4.37</td>
<td>1.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persuasion impact</td>
<td>Ad with emoji</td>
<td>20</td>
<td>5.57</td>
<td>1.64</td>
<td>38</td>
<td>3.640</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Ad without emoji</td>
<td>20</td>
<td>3.75</td>
<td>1.50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of t-test analysis for drivers based on ad type are presented in Table 6. The results show that in the substance assessment and persuasion impact scales the ad with emoji was reported as more positive. However, the affective responses scale shows that there is no statistically significant difference among drivers based on ad type in terms of the evoked emotions.

Table 6. Drivers t-test Analysis of Substance assessment and Persuasive impact Scales based on Ad Type

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>df</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance assessment</td>
<td>Ad with emoji</td>
<td>21</td>
<td>5.62</td>
<td>1.62</td>
<td>35</td>
<td>1.119</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Ad without emoji</td>
<td>16</td>
<td>4.50</td>
<td>1.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persuasion impact</td>
<td>Ad with emoji</td>
<td>21</td>
<td>5.52</td>
<td>1.55</td>
<td>35</td>
<td>1.607</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Ad without emoji</td>
<td>16</td>
<td>3.92</td>
<td>1.58</td>
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</tbody>
</table>

The results of t-test analysis for non-drivers based on ad type are presented in Table 7. The affective responses scale shows that the ad with emoji has been reported as more positive. However, there is no difference based on ad type among non-drivers in terms of substance assessment and persuasive impact scales.

Table 7. Non-drivers Based on Ad Type Affective Responses Scale t-test Analysis

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>df</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective Response</td>
<td>Ad with emoji</td>
<td>19</td>
<td>5.07</td>
<td>1.60</td>
<td>41</td>
<td>2.50</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Ad without emoji</td>
<td>24</td>
<td>3.54</td>
<td>2.24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Conclusion and discussion

Early human beings expressed their feelings and experiences by drawing images on cave walls. This was before the invention of the written word. With the advent of the technological age, new means have developed and are still being developed to relay emotions to other people and communicate with them. Between the internet, smartphones, short text,
and voicemail it seems as if text is on the way to disappear. Through digitalized communications and in this age of speed people are reluctant to write long texts and even read them, therefore they opt for using symbols which are brief and succinct. The cave people are being rediscovered in the digital age, human beings have gone back to using signs and symbols and words are being transformed into emojis.

The ability of emojis to respond to the interactive need by representing emotions through simple visuals was the reason for the invention of emojis [14]. Emojis are the future of communication and a global language. They have become part of everyday communication through social media in particular. Emojis are also the proponents of a new tradition that reduces cultural differences. They reduce the need for words thus turning phrases into narratives. The new generations type quick and brief texts through continuous finger movement and use emojis to transmit their feelings to their correspondents. Therefore it appears that emotions and feelings have become more important than texts. “Human emotion itself is quite complicated and associated, which means the expression of emotions (e.g. facial expression, body expression, and voice expression) are not accurate and would change randomly under different context. Both emotion detection and recognition are still challenging works” [5]. Brands have understood the importance addressing feelings and have not remained passive in the face these new developments. We encounter emojis everyday in our lives and it seems that they are aiming to getting a leading role in advertising as well. Lengthy slogans are make way to icons which express emotions in the message of the adverts.

This study shows how emojis have become a significant part of our lives. A didactic slogan like “Don’t text and drive” becomes cute, friendly and persuasive through emojis. This is because emojis are perceived as comfortable and easy. Participants find the ad with emojis more affective and its meaning clearer and more persuasive. This is because the message is put succinctly through symbols. As Kang’s [6] research shows human beings are incapable of perceiving the feelings, attitudes, and points of attention when presented only with a text. However, when an emoticon is added to the very same text the recipient perceives the text differently and more correctly.

Emojis encompass in one character an emotion that would require a lengthy sentence to transmit. This is why emojis are loved. Linguists have pointed out that emojis make communication energetic and move beyond common semantics by making language more enjoyable and expressive. In our day and age, how something is said is as important as what is said. The young people are the first to adopt and spread novelty and innovations. Formulating a message through emojis, is the sincerest way of showing young target group that we are using the same language with them. Brands that want to exist in today’s market conditions have to use well the opportunity to adopt emojis by showing that they are speaking the same language as the target group to which they are appealing and are aware of the trends. In advertising the space is limited and art directors are constantly looking for inventive ways of reaching the targeted audience. There is truth in the phrase “a single emoji can express the feeling that resides in a long sentence”[9] and advertising agencies need to benefit from it. This study has proved through testing that the ads using emojis are found to be more positive in every sense. Future studies should explore the application of other aspects of including emojis in marketing and advertising.

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8 http://digiday.com/brands/emojification-brand-advertising/ (Accessed on 30.03.2016)


Abstract. Development of communication technologies has enabled brands to reach their consumers. Especially with the increase of social networks, it has become easy for people to connect other people without any place or time limit by using a single button. “Connecting”, and “stay connected” which are the two most important features of social networks, have become more possible with the virtual brand communities. A virtual brand community is a community that enables consumers or admirers of a brand to gather on a virtual platform and share their ideas interactively. Establishing sameness and sense of belonging between the community members, supply the needs such as creating emotional bonds and norms, symbols, interpersonal relationships, feelings, ideas and sharing experiences. In this study, basic elements of forming consumer engagement have been analyzed by lying emphasis on created interpersonal relation networks and the interpersonal relation process between consumers in the virtual brand communities. For this purpose, Facebook posts of a virtual brand community of Starbucks will be analyzed by using qualitative content analysis technique to reveal which of the online consumer engagement sub-processes is denser and how these sub-processes are used.

Keywords: engagement, consumer engagement, brand, community, brand community

1. Introduction

With the development of the internet, it has become impossible for consumers to be excluded from the process related to the brand. Institutions, which create values by establishing a connection between their customers and their brands, can be successful. In this sense, with brand communities, individuals have become more than a customer even further, they have become a defender or a representative of the brand.

Social networks enable consumers to share posts on internet without time or place limit, get or share information about purchasing a product or buying a service by communicating with multiple people at the same time. Brand communities, which have been created especially via social networks, have importance to give consumers the opportunity of minimize risks about purchasing decision, along with the opportunity to socialize.

2. Consumer Engagement in Online Brand Communities

2.1. Online Brand Community

Virtual communities are networks that enable people to establish social connections with other people who have similar interests with them. Virtual communities have both business and social functions. Social function can be described as creating bonds, and interactions between people, and making contin-
uous communication possible for the people. Business function is on the other hand is to provide interaction between the groups/institutions that a company has a commercial relationship such as customers and suppliers of the company. In virtual communities, there are lots of information and feedbacks about products and services. Besides, institutions can have detailed information about their customers and access their potential customers through virtual communities [1].

While the term community is used to define people who live in the same geographical region, are acquaintances and connected to each other with emotional bonds throughout the history, the term online community was first used by Muñiz and O’Guinn [5] as “specialized, non-geographically bound community, based on a structured set of social relations among admirers of a brand”.

A brand community is described as a specialized, non-geographically bound community that is based on an established social relationship among brand’s consumers [2]. McAlexander, et. al. [3] argue that “a brand community from a customer-experiential perspective is a fabric of relationships in which the customer is situated”. In this sense, they also argue that “communities tend to be identified on the basis of commonality or identification among their members, whether a neighborhood, or devotion to a brand”.

Schau, et. al.[4] define brand communities as a circle that is developed through social bonds, and create values. Brand communities enable people to share cognitive and emotional resources also create meaning. Muniz and O’Guinn [5] explain that basic elements of brand communities are sense of sameness, rituals, customs and moral obligations. In addition, important features of brand communities are their relations that focus on the brand’s product or services, commercial nature, bond, admiration and sympathy towards the brand [6].

In literature, online brand communities have been categorized according to the features such as initiator, duration visitation, relationship, thematic. By taking initiator feature into consideration, Jang et. al. [7] divided brand communities into two categories: company initiated and consumer initiated brand communities. In this sense, company initiated online brand communities are created by brand communities in order to manage and maintain the relationship between the customers. Consumer initiated brand communities on the other hand are created by the consumers voluntarily in order to form an interaction and sharing with a specific brand.

Burnett [8] has stated that brand community members may not always be active, on the contrary, some of them could be non-active (passive participants). Ridings et al. [9] named the active members ‘posters’ and non-active ones ‘lurkers’. Non-active members only read posts and follow the discussions on forums. On the other hand, active members support the community and interact with the community members. Non-active members can become active members as a result of their interactions with the brand over time.

The question of why people sign in to brand communities is answered by social capital and social identity theories. According to social identity theory, brand communities provide the need of recognition through symbols and groups [10]. Brand communities offer people to create a social identity. In this context, they enable customers to share rituals, pass on moral responsibilities and values such as consciousness of kind. Also, since customers have a sense of belonging to the brand communities, they feel different than other customers [5]. And the capital theory, explains that people who are in the brand communities create an economic value by forming a network [11]. Virtual brand communities are basically commercial and they provide establishment of a sense of unification for a common purpose among their members.

Social interactions depend on mutual exchange of sources. In brand communities it is seen that people share their certain sources with other people. It is observed that these sources can be broad in scope from product/service information to affinity [12]. Repeated interactions establish strong emotional and psychological bonds among people, and in a sense, reveal an environment created around the consumers of the brand.

Online brand communities stand out with their feature of interaction and communication with their members and create a consumer-consumer interaction. Brogia [6] has stated that online brand communities establish four kinds of interpersonal relationships. These interactions are as follows:

Level of participation and interaction: Members participate in the community within the context of their interest in the brand and social interest within the society.
• Level of quality of relationships: Members continue to be a member of the community based on their satisfaction with their relationships within the community and level of gains from participating in the community.

• Level of identification: Members identify themselves with the similarities with other members and have a sense of belonging parallel to these similarities.

• Level of quality of communication: Quality and frequency of this communication, which has no limitation of time and space, satisfaction of the members to be in this communication, have a positive impact on members’ sense of belonging and staying within the community.

Madupu and Cooley [13] proposed information, self-discovery, social integration, social enhancement, entertainment as motives for participating in online brand communities and stated that length of relationship proposes consequences both for community and the brand. They have mentioned community consequences as consciousness of kind, shared rituals and traditions and moral responsibility, and brand consequences as oppositional and sustainable brand loyalty, brand recommendation intention.

2.2. Online Consumer Engagement

In literature, consumer engagement was studied by disciplines such as psychology, management, information systems, marketing, education etc., and made contributions to these areas. Customer engagement is basically related with relationship management and deals with creating a positive relationship with the customer and sustaining this relationship.

Emotional bond that emerge through relational experiences among brand community members is the most important element in forming engagement. The concept of “engage or engagement” defines specific interactions of interactive experiences between people. The concept engagement was started to be used in 2005 for the first time in the academic marketing literature [14]. Engagement plays an important role in understanding and demonstrating the results related to the customer.

Customer engagement is generally described as a process of affective and calculative commitment, trust, involvement of the customer and customer delight, and repurchase or customer loyalty [15]. Kumar et. al. [16] have stated that customer engagement is active interactions with customer company, and closely related with interactions between customer expectations and other customers. According to Van Doorn et. al. [17] customer engagement contains customers’ company oriented behaviors and motivational drives, and includes interactions beyond purchasing behaviors.

Customer Engagement has emerged as a “more dynamic and holistic concept through which to understand the building of strong, enduring and loyal customer relationships”[18].

Zailskaitė-Jakštas and Kuvykaite [19] “Consumer engagement in virtual space is becoming particularly relevant since it is valued as reliable and capable of influencing consumer decision to buy one good or another… Consumer insights, comments and remarks provide goods developers with information of what should be improved in goods itself”.

Vivek et. al [20] have argued that customer engagement is closely related with the connection and participation between consumer and the organization, and positive relationships established with current and potential customers. Therefore, they argued that it is important to establish experience-based relationships between the potential and current customers. In this process, it has been stated that it is important for customers to have unique experiences and intense participation with the organization’s offerings.

Online consumer engagement is a “cognitive and affective commitment to an active relationship with the brand as personified by the website or other computer-mediated entities designed to communicate brand value” [21]. The concept of consumer engagement in virtual brand community is on the other hand defines interactions of the customers with the brand. In other words, the concept of virtual brand community is customer’s sharing their experiences related to the brand by using the virtual platform. Consumer engagement is a multidimensional concept which includes cognitive, psychological, and behavioral dimensions and based on relational exchange related to the brand [14].

Hollebeek [22] has stated that engagement process emerges as a result of the relationship between engaged customer and the engaged object –brand. Also, consumer engagement emerges as long as the customer is in communication with the brand. Consumers express their admiration and demands in the communication process and identify themselves with the brand in a sense. Rosetta Consulting conducted Customer Engagement Consumer Survey, 4,800 U.S. consumers about their experiences with 83 market-
leading brands in 2014. In the survey, participants’ attitudes (including perceptions, feelings and opinions) and behaviors (including advocacy, interactions) towards brands in 15 different industries were analyzed. As a result of the research, it has been found out that “Engaged consumers sense both the tangible and intangible value a brand provides and highly engaged customers have a personal connection with a brand, built on experiences that drive affinity with its ethos”.

Zalskaite-Jakste and Kuvykaite [19] state consumer engagement stages and company engagement actions as follows:

• **Watching stage**: The company usually focuses on increasing the brand awareness of the customer within this period and try to determine the contents they view, how the customer communicate with the brand, in what way they want to engage with the brand. In this process, social media make it easier to gather information and obtain specific information about the consumers.

• **Sharing stage**: At this stage, consumers update their profiles, download videos or information and thus get motivated with the sharing about the brand. Also in this process, consumers feel connection to the brand, share positive or negative comments or experiences. At this stage that consumer-consumer communication occurs in the company, creating sharing tools on virtual environment and making it easy for sharing become important aspects.

• **Commenting stage**: At this stage, consumers share about brand and brand services, support the brand by making personal evaluations. The company needs to maintain its connection with the customers and create opportunities for them to make comments and enable customers to interact with the brand.

• **Producing stage**: At this stage, consumers know the brand really well and share their comments about the brand on social media. In a sense, the brand becomes a tool to express them. Consumers become loyal to the brand and create fan pages, share videos and comments on social media.

• **Curating stage**: At this stage, consumers actively make comments and inform people about the brand. They express their trust in the brand and motivate other consumers. Consumers become an advisor of the brand and sustain brand communication.

Customer engagement is a process that provides establishing emotional bonds between company and customer through relational exchanges. Customer engagement focuses on creating customer’s loyalty and gaining trust by creating long-term relations. Engaged customers reach the position of becoming a spokesman of both other customers and company and they almost become the partner of the company. Social media gives an opportunity for reaching customers, building close relations that are based on trust and maintaining these relations in terms of company. In this regard, Sashi [23] indicates that customer engagement cycle on social media consist of phases such as connection, interaction, satisfaction, retention, commitment, advocacy and engagement; and states that this process contributes differently from conventional platform. Customers can be characterized with different features according to the degree of relational exchange and emotional bonds between company and customer in customer engagement cycle. Sashi [23] states this as delighted customers, transactional customers, loyal customers and fans in customer engagement matrix.

![Customer engagement matrix](image)

Table 1: Customer engagement matrix
Source: Sashi [23]

As it is seen from the table 1, delighted customers achieve considerable satisfaction and they have strong emotional bond with the company. It is stated that these customers play a part in customer engagement of advocacy stage and they carry out word of mouth communication. Even though transactional customers have not strong ties with the company, they create a resource for other customers and they may turn into loyal customers. Although loyal customers have not strong emotional bonds with the company, their rational bonds are strong. Therefore, they enable other customers’ trust and commitment to improve and help create relational bonds. Fans have very strong emotional and relational bonds with the company; their relations are usually defined as cooperative action or mutual adjustment. Fans are both delighted and loyal.
3. Consumer Engagement in Starbucks Online Community: Starbucks Facebook

3.1. Starbucks’ Customer Engagement Approach

The first Starbucks was opened in Seattle Washington, Pike Place Market in 1971 [24]. “Today, we are privileged to connect with millions of customers every day with exceptional products and more than 17,000 retail stores in over 55 countries” [25]. “Starbucks has built a billion-dollar enterprise on more than just coffee; it has succeeded in creating a unique Starbucks experience in its stores and online. Today, 94% of all Facebook users are either a Starbucks fan or are friends with one”. [26]. In this sense, on March 2012, Starbucks was chosen as the most socially engaged company by PhaseOne. Starbucks’ consumer engagement, especially on social media, was stated as a major success [27].

It can be said that Starbucks’ success lies within their experience-oriented customer engagement and their desire to stay connected with their customers all the time. The company’s mission statement “When our customers feel [a] sense of belonging, our stores become a haven, a break from the worries outside.” [28].

It has been stated that Starbucks’ customer engagement is related with social marketing. It has also been stated that Starbucks aims their customers to feel that they not only buy something necessary but also they buy uniqueness. It has been observed that placing the customers in the center, and word of mouth have a great impact on establishing this engagement. Customers can create their own drink and they can even name it. This drink can appear in the menu and customers can share their own creation or favorite drink on social media platforms and talk about their unique drink or satisfactions with other customers [28].

3.2. Research Methodology

This study aims to determine Starbucks’ online consumer engagement dimensions and in this regard, answer for “which consumer engagement dimensions does Starbucks Facebook online community has?” has been sought.

In accordance with the purpose of the study, phenomenological research design and content analysis method have been used in the research. Creswell [29] defined phenomenological research design as “a phenomenological study describes the meaning for several individuals of their shared experiences of a concept or a phenomenon”. Since the study reveals social and psychological phenomena and studies human interactions within its social context, phenomenological research design was chosen for the research design [30], [31]. Content analysis method was used in order to analyze the consumer engagement dimensions of Starbucks Facebook online community. Cohen et al. [32] defined content analysis method as a process of summarizing the basic elements and the messages within a written document. Krippendorff [33] explains the "content analysis as the use of replicable and valid method for making specific inferences from text to other states or properties of its source."

Data was obtained by collecting and analyzing 5 topics related to the product/service (brand, business, café etc.). posts that were shared by the consumers between October 1- November 30, 2015 from Starbucks Facebook page.

Number of likes, shares of the 5 topics that were shared between October 1 and November 30, 2015 as follows:

“cozy goals- Chailatte”; the post of a customer who is seen with a cup of coffee in hand got 230,872 likes and has been shared 203 times.

“The quiet moment right before beautiful beans turn into cozy coffee.”; the post about a new product has been shared 2598 times and got 115,382 likes.

“A taste of Ethiopia, a taste of coffee history. #StarbucksReserve Ethiopia Bitta Farm is a bright, tangy coffee with notes of berries and cocoa”; the post got 100,475 likes and has been shared 1587 times.

The red Starbucks paper cup photograph has been posted as “Welcome back, red cups!” and it got 434 likes and has been shared 20.106 times.

The photograph in which Christmas-related Starbucks cup posted with a caption saying “A canvas with which to create your own story” and this post got 7,374 likes and has been shared 438 times.

Obtained data, which was acquired from customers’ posts, was categorized based on online consumer engagement dimensions (Brand influence, Brand passion, Connecting, Helping, Like-minded discussion, Rewards(hedonic), Rewards (utilitarian), Seeking assistance, Self-expression, Up-to-date information, Validation) which were discussed in study by Baldus et al. [34] “Online brand community engagement: Scale development and validation” published in Journal of Business Research. Distinct themes and concepts in the content were grouped according to con-
sumer engagement dimensions that Baldus et. al. [34] determined. After one of the researchers finished the coding process, the second researcher repeated the process. After the different codes were discussed and negotiated, 8 themes/ dimensions (Brand influence, Brand passion, Connecting, Like-minded discussion, Rewards (hedonic), Rewards (utilitarian), Self-expression, Up-to-date information, Validation) were created. Each theme/dimension was explained with an example post.

3.3. Research Findings

After the posts about five topics that were mentioned above have been analyzed, the following data and examples about the 8 consumer engagement dimensions have been obtained:

• **Theme 1-Brand influence:** It defines to what extent consumers are influenced by the brand. What the brand Starbucks members have shared shows that they love the brand and they are in a way interacting with the brand. It can be seen that they share ideas as if Starbucks was a person. “I find this idea better then the Christmas symbols. You get to express what it means to you. Very creative idea Starbucks.”, “Wow!!! Coffee for life for sure”.

• **Theme 2-Brand passion:** It means that consumers are exited and passionate about having a brand. Starbucks online community members clearly express their enthusiasm and excitement in their comments. They mention their pleasure in being together. Some of them are: “Hello Starbucks, my old friend, I've come to talk with you again”, “I wish there were an emoji for Starbucks! Love Starbucks”, “I knew it was intentional! Also, their regular cups are just plain white....maybe they were also trying to save on printing by going with the simple red. Haha”.

• **Theme 3-Connecting:** It means the satisfaction consumers get from being together with those who use a brand and sharing comments about that brand. Starbucks brand community members express that they are pleased with both products and services of Starbucks and love being together at Starbucks, as well. The related examples are such as: “Love my Starbucks”, “This comment just made me want to be your friend.”, “Thank you for your service as well shipmate!”, “Omg I love Starbucks Customer service and admin team, you guys are great!” “Hello starbucks my good friend its nice to you again when I need a break from work or a girls day out with mom the sounds of the music playing in the back ground is always like the sound of silence from some of drama in the world still remains a place that refreshes me thank you my old friend.”

• **Theme 4-Like-minded discussion:** Like-minded discussion defines sharing positive or negative ideas about a brand. It can also be observed that some consumers share all the positive and negative emotions or thoughts explicitly; they even discuss different subjects by replying each other’s comments. Expressions regarding these can be listed as, “Don't support them they don't back our troops”, “How many times did your parents willfully drop you on your head as a child Ka Maybe next year, Starbucks should do purple cups! Every year, a new color! Red is overrated lolthy?” “Hey …! I am a US Army veteran and a veteran of the Iraq war. I am not sure where you get your "facts", but I personally remember drinking some hot Starbucks coffee in Ramadi”.

• **Theme 5-Rewards (hedonic/utilitarian):** Rewards define gains of being a member of a brand community such as friendship, entertainment, money, and rewards. Being a Starbucks member means having a Starbucks card and getting rewards by reaching certain levels. It is also stated that Starbucks membership enables friendships, and a fun environment. Yes, a great cup of coffee and a good book-----with the snow falling outside the window”, “I just reached Gold level status and I am so excited!!!”, “You guys should have a contest, people win free coffee just a thought”, “I am fiending for a caramel apple spice with extra whip! My fall fave! Yum! I have a gift card, maybe I will stop in today”.

• **Theme 6- Self-expression:** Self-expression allows community members to express their feelings and thoughts. Most of the posts made by Starbucks brand community members are about product and services, and some of them are about Starbucks’ attitude towards various events. “I prefer single-source coffee (reading Bulletproof Diet) but the words "bright tangy" makes me think of acid”, “Can you please make your milk organic so I can order lattes instead of Americanos?”, “It’s a minimalist design that captures the season and their style. I think it’s the perfect shade of Christmas red.”, “I don't think I have ever seen the red cups before! That must also mean that I haven't been to Starbucks enough. And peppermint mocha??? Where has this been all my life??!!?”.
• Theme 7-Up-to-date information: This expresses consumers’ comments and experiences about new products or services. It is observed that Starbucks brand community members share lots of comments about a new product or a change in a product. Expressions regarding these can be listed as: “Chai latte is my fav! Tastiest this time of year too.”, “Love my chai! No water, no foam, perfect!”,”Chai latte is the best, add pumpkin flavor and it’s amazing!”,”Please, Starbucks, come out with more sugar free syrups!!!”, “My fav. Fall drink: Chai latte with a pump or two of pumpkin spice! Yum!”, “I this real and when can get one Starbucks”, ”Fan-tastic Frappucino” and “I like trying different types of coffees”.

• Theme 8-Validation: This means validation of feelings and thoughts of consumers by other members of the community. There are some expressions that show Starbucks brand community members’ seeking for validation on some subjects about product or service or other issues. These expressions are “I feel a little silly for asking this but......what exactly a chai latte is? Tea & coffee combined? Is it sweet? I usually always get a white peppermint mocha & occasionally tea when I’m feeling under the weather. I’ve never tried a combo. Should I give it a try?”,”Leah, I have heard the same thing! Starbucks supports Planned Parenthood, gay marriage. It does not limit our troops or conservative who believe in ports Planned Parenthood, gay marriage. It does not support our troops or conservative who believe in traditional marriage between a woman ands man.”What is the purpose of the red cup?”.

3.4. Conclusion and Discussion

According to content analysis of posts on Starbucks Facebook online community page, the shared posts are mostly about self-expression, up to date information, validation, connecting, brand passion, brand influence, rewards (hedonic/utilitarian). It has been detected that there are no posts about consumer engagement helping, seeking assistance. Main reasons behind this lacking can be seen in the blogs on My Ideas Starbucks which was written by the community members about the issues of consumer engagement helping and seeking assistance. My Ideas Starbucks is a virtual area where members share different ideas and feelings on services, experiences and involvements. Therefore, it is highly possible for online brand community page not to have posts on these subjects. It is seen that members share their own feelings and thoughts through products and services on Starbucks Facebook page, and they identify themselves with the feeling of consuming a product. Besides, it is also seen that apart from presented rewards, the main point is connecting and it is usually used with expressions such as “friends, guys, my Starbucks”. In addition to these, given responses/feedbacks on online community members’ posts by Starbucks were examined, it has been observed that Starbucks have responded these regardless of negative or positive reactions, explanations, questions, and these responses are more like statements and are always have a positive attitude.

Effects of interpersonal relations defined as participation and interaction, quality of relationships, identification, quality of communication by Brogia [6] have been analyzed, it is seen that Starbucks Facebook online community is identified with connecting, like-minded discussion, rewards, self-expression, in terms of consumer engagement.

Conducting the research by collecting shared posts between October-November 10, 2015 can be considered as the limitation of the research. Besides, My Idea Starbucks community, which was created by the customers, and customers sharing Starbucks related subjects on the website can be considered as another limitation of the study.

For future study, an analysis on Starbucks online community members and development of customer engagement matrix (delighted customers, transactional customers, loyal customers and fans) can be proposed.

References

Influence of Brand’s Environmental Sensitivities on Brand Image: The Example of Volkswagen Emission Test Fraud

Mehmet Baş¹, Mine Kanoğlu² and Merve Nalbant³

Abstract. On 18 September 2015, it was revealed that German automobile manufacturer Volkswagen Group had been using a software on its cars, which made them appear cleaner in emission tests than they actually were. With this software, Volkswagen cars passed the tests successfully, but in fact cars pumped out nitrogen oxide (a pollutant) at up to 40 times the legal limit. The company admitted using this software on 11 million of its diesel cars, which was considered as a scandal and had serious impacts on Volkswagen’s brand image and reputation. This study aims to find how this fraud affects Volkswagen’s brand image and purchasing decisions of Turkish consumers regarding its cars.

Keywords: Brand, brand image, emission test fraud, Volkswagen, environmental awareness

1. Introduction

In today’s market place, imitating of goods and services has become quite easy which has increased the number of same or similar products and services. In a world full of alternatives, it is difficult for consumers to decide which one to purchase. At this point, ‘brand’ concept, which can be considered as a fingerprint of the businesses, can help consumers.

Briefly, brand is a combination of emotional and functional features. The functional features of the brand are relevant to the purpose of goods and services. Emotional characteristics, on the other hand, are consumers’ perception of the brand. These characteristics are called as brand image and consist of the associations consumers make with the brand [1]. Therefore, the brands, that create meaningful images for the target audience, can make a difference and are able to survive tough competition.

Nowadays one of the top strategies chosen by businesses to improve their brand image is to be in eco-friendly activities. When the increase of the consumers’ environmental awareness is taken into consider, having an eco-friendly brand image seems to become a necessity to win the competition.

This study focuses on the German automobile giant Volkswagen, who has succeeded in creating a strong brand image especially related to environmental consciousness until 18 September 2015. On this day the U.S. Environmental Protection Agency (EPA) stated that Volkswagen had been using a software that made its cars look like exhaling less nitrogen oxide in emission test than they actually did. Aim of this study is to show how consumers’ trust in the company and the brand image are affected by the fraud. In order to find the impacts of this fraud on the brand image and purchasing decisions of Turkish consumers, a survey was conducted with 187 consumers. The data is analyzed by IBM SPSS 20.0 application.

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³ Gazi University Institute of Social Sciences, Marketing.
2. Literature

2.1. Brand and Brand Image

Branding has been around for centuries as a means to distinguish the goods of one producer from those of another. In fact, the word brand is derived from the Old Norse word *brandr*, which means “to burn,” as brands were and still are the means by which owners of livestock mark their animals to identify them. According to American Marketing Association (AMA), a brand is a “name, term, sign, symbol, or design, or a combination of them, intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competition.” Technically speaking, then, whenever a marketer creates a new name, logo, or symbol for a new product, he or she has created a brand [2].

The Oxford American Dictionary (1980) contains the following definition:

*Brand* (noun): a trade mark, goods of a particular make: a mark of identification made with a hot iron, the iron used for this: a piece of burning or charred wood, (verb): to mark with a hot iron, or to label with a trademark.

Similarly, The Pocket Oxford Dictionary of Current English (1934) says:

Brand. 1. n. Piece of burning or smouldering wood, torch, (literary); sword (poet.); iron stamp used red-hot to leave an indelible mark, mark left by it, stigma, trademark, particular kind of goods, 2. v.t. Stamp (mark, object, skin), with b., impress indelibly (is branded on my memory).

These two entries, in the order in which they list the definitions and in the definitions themselves, illustrate how, over 50 years, the primary use of the word “brand” now has a commercial application [3].

The U.K. brand-planning guru Paul Feldwick defined a brand this way: “A brand is simply a collection of perceptions in the mind of the consumer.” What’s missing from Feldwick’s definition is the idea that this collection of perceptions must somehow make the associated product or service more salient, more interesting, or more compelling than it would be otherwise. These mental associations must make the branded product valuable to potential buyers, valuable enough to inspire them to choose it over alternatives. The associations people have with a brand must make them want to buy it [4].

Too often, brands are examined through their component parts: the brand name, its logo, design, or packaging, advertising or sponsorship, or image and name recognition, or very recently, in terms of financial brand valuation [5].

One vitally important aspect of the brand is its image, as reflected by the associations that consumers hold for it. It is useful for marketers to make a distinction between lower-level considerations, related to consumer perceptions of specific performance and imagery attributes and benefits, and higher-level considerations related to overall judgments, feelings, and relationships. There is an obvious connection between the two levels, because consumers’ overall responses and relationship with a brand typically depend on perceptions of specific attributes and benefits of that brand [2].

From a scientific point of view, brand image is explained as a symbolic construct that is created within the minds of stakeholders. It consists of brand information, associations and expectations. A brand image is influenced by its distribution and awareness. Brand image consists of the following three elements [6]:

<table>
<thead>
<tr>
<th>Brand image</th>
<th>Brand benefit</th>
<th>Brand attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personality</td>
<td>Functional</td>
<td>Features of a</td>
</tr>
<tr>
<td>traits of a</td>
<td>and symbolic</td>
<td>brand perceived</td>
</tr>
<tr>
<td>brand</td>
<td>benefit</td>
<td>by the demander.</td>
</tr>
<tr>
<td>perceived by</td>
<td>expectations</td>
<td></td>
</tr>
<tr>
<td>the demander.</td>
<td>of the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>demander.</td>
<td></td>
</tr>
<tr>
<td>Brand awareness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1. Elements of brand image

2.2. Environmental Sensitivities

Environmental sensitivities can be defined, as the response of the environment, or part of it, to a change in one or more external factors. The relationships between the cause of the change and the effect is often complex because separate environmental components respond directly, but with differing sensitivities, whilst, because of the interrelationships amongst the
components, they are also affected indirectly [7].

Nowadays, having a healthy environment and protecting it, considered as one of the most important concerns of human. Having access to a healthy environment has also been regarded as a human right just like the right of living and individual freedom and political participation [8].

Press groups have been campaigning vigorously for the environment; media reporting on environmental issues has increased dramatically; the environment has moved up on the agenda in political decision-making; numerous regulations and laws for the protection of the environment have been passed.

There is considerable evidence that most western markets have been affected by green consumer behaviour, that means by behaviour that reflects concern about the effects of manufacturing and consumption on the natural environment. Besides legal changes, over the past decade many companies began to feel the impact of market forces, such as changing buying habits of environmentally oriented consumers and boycotting behaviour that resulted from media reporting and pressure group activity [9].

Social and environmental concerns have assumed a greater level of importance in customers’ product choice, and supplier selection decisions. Sales of “green” consumer products have been growing rapidly; initial estimates of worldwide expenditures related to eco-friendly products, and services in the mid-1990s were as high as $280 billion [10].

The more competition increases; the more brand image becomes important. The value that consumers give for brand image and environmental sensitivity today, is an opportunity for growing and developing brands to strengthen their brand images via eco-friendly activities.

3. Methodology

3.1. Research Structure

This research is mainly to investigate the relationship between Turkish consumers’ environmental sensitivities and their attitudes toward Volkswagen emission test fraud. It also studies the influences of this test manipulation on purchase intentions of Turkish consumers. The research structure is given below (Fig. 2.)

![Research structure](image)

**Fig. 2. Research structure**

3.2. Measurement of Research Variables

This study has four parts. The first part consists of the questions between 1 and 4. First question is to determine consumers’ gender. Second and third questions are to understand whether the customers define themselves as green consumers and consider environment when buying a car. Forth question is to find out if the consumers think that they can protect the environment by buying eco-friendly cars.

In the remaining parts, that include the questions between 5 and 20, Likert scale were used to analyze. A 3-point Likert scale ranging from “strongly agree” (3 points) to “strongly disagree” (1 point) was applied to the measurement of each item. Then the measures were tested for reliability.

The measurements of variables related to Likert scale are explained as follows:

1) “Consumers’ attitudes toward eco-friendly cars” variable: A total of 5 items were used for measuring consumers’ attitudes.
2) “How Turkish consumers perceive the Volkswagen” variable: A total of 6 items were used to measure brand image of Volkswagen in Turkey.
3) “Effects of Volkswagen’s emission manipulation on consumers’ purchasing decision” variable: A total of 4 items were used to measure consumers’ purchase intention.
3.3. Research Scope and Sampling

The sample for this study consisted of students who studied at Gazi University, and convenience sampling method was used. The survey conducted for this research was filled out by 200 people. After 13 invalid questionnaires were excluded, there left 187 valid questionnaires. IBM SPSS 20.0 was used to analyze the data in this study.

3.4. Reliability Analysis on the Questionnaire

Reliability coefficient Cronbach’s $\alpha$ was used to measure the consistency of questionnaire items of “consumers’ attitudes toward eco-friendly cars”, “how Turkish consumers perceive the Volkswagen” and “effects of Volkswagen’s emission manipulation on consumers’ purchasing decision.” According to the reliability analysis, Cronbach’s $\alpha$ value of consumers’ attitudes toward eco-friendly cars’ is 0.80. $\alpha$ value is 0.76 for how Turkish consumers perceive the Volkswagen was; and 0.75 for the effect of Volkswagen’s manipulation on consumers’ purchasing intention. Since the Cronbach’s $\alpha$ of this research is higher than 0.7, the study is reliable. Furthermore, all of the scales mentioned above were developed based on the relevant studies, so this work has high content validity.

3.5. Research Findings

3.5.1. Descriptions on Sample Structure

In this section, the results of frequency and $X^2$ test analysis are explained. First, frequency distribution of different variables used in this study is inspected. These variables are consumers’ gender and attitude towards eco-friendly cars, brand image of Volkswagen, and Volkswagen’s reputation compared to its competitors’ after the manipulation. After then, connection between consumer and their purchase decision regarding eco-friendly cars is discussed.

3.5.1.1. Frequency Analysis

Findings of the first question show that 47% of sampling group are women and approximately 53% are men. According to answers given to second question, the frequency of consumers, who define themselves as green consumers, is nearly 80% of the group. The frequency of consumers who prefer to buy eco-friendly car is 68%. Most of the participants (52.4%) think that they protect the environment by purchasing eco-friendly cars. On the other hand, about 48% of whom do not think that buying eco-friendly cars has significant help to protect the environment.

44% of the participants say that if they find out the car, which they consider to buy, harms the environment, then they won’t buy it. Approximately 66% of the people surveyed state that, when they buy a car, they consider the influences of it on the other consumers’ health, as well. Also, the majority of the participants (nearly 68%) thinks that car’s emissions is another important parameter to take in consideration when purchasing cars.

Finally, 43.8% of the participants state that not only automobiles but also their manufacturers should be eco-friendly.

3.5.1.2. Chi-Square Analysis

1) Is there any relation between the damage that Volkswagen’s brand image got after the scandal and the consumers’ preferences to eco-friendly cars?

$H_0$: There is no meaningful difference between the consumers who prefer to buy eco-friendly cars and lost their trust in Volkswagen’s brand image because of the scandal.

$H_1$: There is a meaningful difference between the consumers who prefer to buy eco-friendly cars and lost their trust in Volkswagen’s brand image because of the scandal.

According to Pearson Chi-Square ($X^2$) test, Sig. = 0.008. In this case, there is a meaningful difference between the consumers who prefer to buy eco-friendly cars and lost their trust in Volkswagen’s brand image because of the scandal.

$H_0$ hypotheses rejected.

2) Is there any relation between the consumers who think that Volkswagen is a brand with environmental awareness, and the consumers who lost their trust in the brand after the emission manipulation?

$H_0$: There is no meaningful difference between the consumers who think that Volkswagen is a brand with environmental awareness, and the consumers who lost their
trust in the brand after the emission manipulation.

H₁: There is a meaningful difference between the consumers who think that Volkswagen is a brand with environmental awareness, and the consumers who lost their trust in the brand after the emission manipulation.

According to Pearson Chi-Square (X²) test, Sig. = 0.039. In this case, there is a difference between the consumers who think that Volkswagen is a brand with environmental awareness, and the consumers who lost their trust in the brand after the emission manipulation.

H₀ hypotheses rejected.

3) Is there any relation between the consumers who always consider buying eco-friendly cars and the consumers who do not buy the car if they find out that it harms the environment?

H₀: There is no meaningful difference between the consumers who always consider buying eco-friendly cars and the consumers who do not buy the car if they find out that it harms the environment.

H₁: There is a meaningful difference between the consumers who always consider buying eco-friendly cars and the consumers who do not buy the car if they find out that it harms the environment.

According to Pearson Chi-Square (X²) test, Sig. = 0.000 is less than 0.05. In this case, there is a meaningful difference between the consumers who always consider buying eco-friendly cars and the consumers who do not buy the car if they find out that it harms the environment.

H₀ hypotheses rejected.

4. Conclusion and Suggestion

Volkswagen’s scandal not only reduce Volkswagen’s brand image and sales volume but also negatively affect the automobile sector and diesel fuel’s future. This incident, which cause consumers to avoid from buying diesel cars, has become an opportunity for brands that using hybrid technology as Toyota and Honda.

In this study, most of the participants (64.7%) think that they have been badly influenced by an automobile manufacturer, which had a good brand image, was on the front pages with a scandal like this. The proportions of the participants who lost their trust in Volkswagen (68%), and who lost their trust in international automobile manufacturer (66.3%) are very close. 75.4% of the respondents think that Volkswagen’s reputation has been shattered comparing to its competitors’ after the manipulation. According to the results of analysis, percentage of the consumers who would prefer to purchase a Volkswagen car after the manipulation is 51.3%. The results related to the consumer preferences are half-and-half because of the fact that Doğuş Otomotiv (only distributor of Volkswagen in Turkey) made a statement that there was no manipulation on Volkswagen’s cars used in Turkey. As a result, influence of the manipulation on Turkish consumers’ purchasing decisions could not be observed in this study. On the one hand, Turkish consumers think that the brand has a high quality. On the other hand, they hesitate over whether the brand is eco-friendly or not.

When it is taken in consideration that independent American researchers revealed the fraud; it can be suggested that emission test should be conducted by independent researchers/organizations in Turkey, as well.

Such manipulations and frauds against the protection of environment damage the consumers’ trust in even well-known brands and sectors.

The lesson learned from this scandal is that the brands should be honest to the consumers.
References


