# RESEARCH & REVIEWS IN SOCIAL, HUMAN AND ADMINISTRATIVE SCIENCES - I

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EDITOR
ASSOC. PROF. DR. AYŞE ÇATALCALI CEYLAN

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# Chapter 1

## SYNESTHESIA PERCEPTIONS

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## INTRODUCTION

Disease of synesthesia can be considered as a combination of senses by making double combinations of what we receive with our five sense organs. Synesthesia is not a learned condition, it is involuntary. The connections established are not made consciously or arbitrarily. Binary combinations perceived for each synesthetic differ from person to person. For example, if the number 3, for a synesthetic person, evokes the color red, the number 3, for another synesthetic, might evoke the feeling of happiness in that person. In other words, meaning, concept, is connected with different meaning and perception, such as smelling the colors or tasting the word. Every combination, they perceive, remains unchanged throughout their lives. In addition, synesthetic people are creative, their understanding skills have also been improved compared to other people. According to research made, synesthesia can be both environmental and hereditary. The signals going to the brain trigger different areas. Since synesthesia creates different perception forms, it has been observed that it contributes greatly to the understanding and thinking processes. It has been observed that these people are successful in art branches such as painting, poetry and sculpture.

It is seen in some researches that it is a disease seen more commonly in women. It has also been revealed that synesthesia is a genetic condition, with more than 40% of it being seen in other people in the family.

## COMMON TYPES OF SYNESTHESIA

There are many different types of synesthesia. It is divided into two groups as relational synesthesia and projective synesthesia. When the individual feels a connection with a stimulus, he/she sees the stimulant. The connection between each pair (stimulant-stimulus) always reveals the same relationship. The states of hearing, smelling, feeling, or tasting are formed by altering in each synesthetic. The most known are;

Chromesthesia establishes connection between the sounds and colors. For example, the musical note "C" might correspond to the color red in the person. In another synesthetic, the green color might be perceived.

Grapheme-Color Synesthesia sufferers see graphics (letters or numbers) as shaded by color. For example, the letter A appears in red. The number 9 can be perceived as blue.

Lexical-Gustative Synesthesia is the case in which a word evokes to a person taste.

## FREQUENCY

Nicola Tesla said: "If you wish to find the secrets of the universe, think

in terms of energy, frequency and vibrations". Everything in the universe has a certain frequency. Frequency is the number of vibrations per second of a constant in a given environment. Its unit is in Hertz. Like every other substance, colors, sounds and smells also have frequencies. At the same time, a living thing's organs, brain, and thoughts (emotions and feelings) have frequencies as well. Even the world has its own special frequency.

**"The Schumann resonances (SR)** electromagnetic field spectrum of some part of the earth, with the excessively low frequency (ELF), spectrum peaks of which are a series, since Schumann resonances, like spherical electromagnetic resonances evoked by lightning discharge in the space formed by the Earth's surface and the ionosphere, the planet has its own frequency system and vibrations in the form of different frequency systems formed in each layer of our earth, Dr. Otto Schumann gave his name to this discovery and called it as "Schumann resonance".

### Alignment of Emotion and Color Frequencies

Every emotion has its own frequency. The lowest one of these frequencies is the feeling of shyness, with a value of 20 Hertz. The low-frequency color, number, taste, which corresponds to the frequency of the feeling of shyness, can evoke these two situations in the person's brain. For example, a person may feel shy when he/she sees the low frequency red color. This is purely the brain's alignment of two similar frequencies. After the feeling of shyness, the other low-frequency emotions are guilt, apathy, pain, fear, respectively. Likewise, since they are low-frequency, they can be associated with the color red.

The feelings, which are seen with a little more increase in frequency, are fear, desire and anger, respectively. Since the frequency of these feelings is slightly higher than the others, it is the same frequency as the color orange. In turn, the frequencies of feelings and colors increase as follows; arrogance and courage are the color yellow. Neutrality and preparation are the color green. Acceptance, consciousness and love are the color light blue. Joy and harmony are the color dark blue. Enlightenment is the highest frequency emotion and is at the same frequency as the color purple. According to this, when one sees a dark blue color, the person may be cheerful or full of love.

### Alignment of Sound Frequency and Emotion Frequency

Image, color is actually white light. With the refraction of light, its frequency changes and we begin to see in color. In sounds, we cannot hear sounds above a certain frequency and below a certain frequency. Therefore, since a sound is the frequency of a note, the hertz of that note corresponds to a color or scent. As a result of this, a mind, with clear perception, that can catch frequencies is seen. The mind can perform alignment by itself,

which makes the person synesthetic. However, it is wrong to call a person who has the capacity to perceive frequency as a synesthetic sufferer. The lowest sound frequency that humans can hear is 20 hertz. The lowest emotion frequency is also 20 hertz. Due to the fact that the brain aligns certain signals through the frequencies, it creates similar stimuli among the sense organs.

Centuries ago, in various civilizations of ancient period, they used sound vibrations in church rituals, shamanic rites, and communal mantras. The definition of disease given to people under the name of synesthete is actually the brain's perception of similar frequencies as the same situation by combining more perceptions. A music scale, under the name of "Solfeggio Frequencies", has been developed. At that time, "ut (c), d, e, f, g, a" and later, "b" was added and foundation of the harmonious music system was established. In the 1970s, Dr. Joseph Puleo conducted research on the frequency of musical notes and their effects on human psychology. During the war, the church aimed to increase its authority over the people with the sound frequencies deliberately given from the radios. The emotion frequencies corresponding to the frequencies of the notes are as follows:

The lowest frequency 396 Hz "c" note is effective in relieving feelings of guilt and fear, allowing to cope with negative emotions.

The 417 Hz "d" note interacts with the sacral chakra and can be aligned with the feelings of "balance and healing". It enables to live and adapt to the moment without being stuck in the past.

The 528 Hz "e" note is known as the love frequency and activates the emotions. It also represents imagination and creativity. It increases positive energy and success.

The 639 Hz "f" note enables the formation of emotions such as empathy, commitment and togetherness that affect the heart chakra. It increases harmony in individual and environmental effects.

741 Hz "g" note affects the emotional state in subjects such as self-expression, creativity.

852 Hz "a" note reveals the feelings towards calming, introversion, and the development of spiritual awareness.

### Alignment of Scent Frequency

Each scent has its own frequency. In therapy models such as Aromatherapy, which has started to be used especially in holistic therapies, essential oils have a certain Hertz in frequency, including the scent.

For example, the frequency of sweet Basil is 52 MHz, if the smell of sweet basil is dominant on a street, synesthetic sufferers associate this

smell with the color frequency and remember colors orange, yellow, etc., which are in the same vibration or close vibration. In this case, the related person can now call that street an orange or yellow street.

## CONCLUSION

As a result of the research made, we can think that the changes in perception, such as chroma-esthesia, that is, establishing connection by the brain with other frequencies, which is experienced with brain frequency waves in persons considered as synesthetic sufferers, means that the brain may be more active developmentally, or adaptation of the brain to the frequency in the environment, such as adaption of the brain to the field of psychology science. No matter how we consider it, we can see, through examinations to be made in more detail, that the subject of synesthesia cannot be considered as a grade of disease.

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# Chapter 2

## EFFECTS OF INFORMATION TECHNOLOGY (IT) SOLUTIONS ON THE DELIVER AND SOURCE PROCESSES OF SUPPLY CHAIN OPERATIONS REFERENCE (SCOR) MODEL

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## 1. Introduction

Supply Chain Management is a combination of firms that bring products and services to the market. It includes the activities and processes related to goods and data from the raw material phase to end customers (Felea & Albastroiu, 2013). Information technology (IT) concept is critical for companies to apply supply chain management efficiently (Hoek, 2001). To be competitive, companies lower their prices and decrease their delivery time. Firms should find new channels to follow current trends and technology. To keep up with the change, supply change management channels can be recreated, and the traditional lines might be abandoned. IT contributes to the distribution and execution processes, product consultation, decreases paperwork, and reduces the delivery times (Handfield and Nichols 1999). Information Technology creates a new way of interaction and decreases communication problems with customers and providers. Additionally, firms need to know the technologies since it is useful for their structure and their operation.

## 2.Literature review

Nowadays, four C's ( Customers, Competition, Change, and Cost) trigger firms to support IT. Companies dynamically answer these concepts and follow the recent trends using IT to survive in the market (Waghmare & Mehta, 2014). Supply Chain Management can use the information with processes, money, and materials with the aid of IT. IT can support companies and provide profitability and quality. Moreover, it reduces transaction and coordination costs. Advancement of IT in supply chain management leads to cost reduction in production. Products become available at low prices (Varma & Khan, 2014). IT tools are mentioned in the following paragraphs:

Augmented Reality (AR) connects the real picture to the virtual one using the computer. This system aims to design a system that cannot be separated from the real setting (Marcincin, Barna, Janak, and Marcincinova, 2013). According to Segovia, Mendoza, Mendoza, and Gonzalez (2015), AR gives direction to technicians in their work and training courses. It decreases the working period and provides information and animation to reduce errors.

BARCODE is a machine-readable form of information on a scannable, visual surface. Barcodes have some properties. They require a line of sight to be read and can only be read individually. Barcodes are used to keep track of products. It is a "ubiquitous standard for identifying and tracking products" (White, 2007).

Electronic Data Interchange (EDI) is defined as transferring information through two or more companies using information technologies

(Holland, Lockett, and Blackman, 1992). The advantage of EDI is that data transmission errors and paperwork are reduced. It also gives a quick response to customer demands with enhanced supply chain management (Weber & Kantamneni, 2002).

The other software systems help companies build new and necessary processes for the operations. For example, ERP software can help companies redesign their operation processes by eliminating the time, employees and raw materials needed to manufacture their products. According to Baki, Dereli, and Baykasoglu (2004), this type of system is used in a company to administer and control the resources required to run the business. These resources include physical, financial, and human assets.

MRP is a planning technique which programs the delivery of work according to the demand. It forms a comprehensive and combined production plan to guarantee that enough goods can be produced for long-range forecasts (Wang, Gong & Wang, 2017). Miclo, Fontanili, Lauras, and Millian (2016) also state that MRP is the most prevalent planning method globally. It needs demand forecasts and designs all the manufacturing activities.

Customer Relationship Management (CRM) uses customer data, and it is obtained using IT. CRM is an advanced data mining tool backed by communication tools. Some businesses create developments with advanced databases and automation tools combined with sales and marketing duties (Sebjan, Bobek & Tominc, 2014). CRM is an old term that came out of contact management in the 1980s. It is a customer data collection using useful information. CRM benefits the view of marketing accompanied by relationship marketing using information technologies (Pai & Tu, 2011). Mohammed, Rashid, and Bin Tahir (2013) explain their study with customer orientation, knowledge management, and technology-based CRM accompanied by the main parts (people, technology, strategy, and processes) of CRM.

Transportation Management System (TMS) handles ineffective transportation management practices and introduces new technologies to transportation with cost savings and optimization. Inquiring how TMS will affect business processes and how the transportation management processes are handled is insufficient and has been mentioned in only a few research papers (Le, Hamani, Kermad, Dafaoui & Mhamedi, 2015).

Warehouse Management System (WMS) is a database that aims to improve effectiveness by keeping the inventory to record warehouse activities (Alyahya, Wang & Bennett, 2016).

SCOR model is a benchmarking system which consists of five areas.

These five parts include Plan (planning activities for supply and demand), Source (purchasing activities), Make (production activities), Deliver (distribution activities), and Return (closed-loop supply chain activities). The APICS Supply Chain Council ensures this system. Companies use the SCOR model to identify, measure, reorganize, and eventually improve supply chain performance. SCOR model explains over 200 process elements, 550 measurable metrics, and 500 best practices. Then, SCOR links these metrics with performance attributes (Heizer, Render & Munson, 2017).

The significance of this research is that although some studies have examined IT solutions in the literature (Patterson, Grimm, & Corsi, 2003), no studies have examined IT solutions and the SCOR model together. The selected SCOR model processes and IT technologies are chosen according to the studies available in the literature (Georgise, Thoben & Seifert, 2016; Hidayat, & Astrellita, 2014).

Product sourcing is one of the important processes of the SCOR model. This process includes planning when to receive, verify, and transfer a product in the supply chain. Additionally, the DELIVER process involves customer service and overall management of product lifecycles, finished inventories, assets, and importing/exporting requirements (Poluha, 2007). Measuring the effect of information technologies on these two processes might be a valuable contribution to the literature.

This paper proposes the following hypotheses:

H 1 "EDI," one of the information technologies, has a significant positive effect on the **source** process from the SCOR model.

H 2: "AR," one of the information technologies, has a significant positive effect on the **source** process from the SCOR model.

H 3: "CRM," one of the information technologies, has a significant positive effect on **the source** process from the SCOR model.

H 4: "TMS," one of the information technologies, has a significant positive effect on **the source** process from the SCOR model.

H 5: "WMS," one of the information technologies, has a significant positive effect on the **source** process from SCOR model.

H 6: "ERP", one of the information technologies, has a significant positive effect on **the source** process from the SCOR model.

H 7: "Barcode", one of the information technologies, has a significant positive effect on **the source** process from the SCOR model.

H 8: "MRP", one of the information technology solutions for the SCOR model, has a significant and positive effect on **source** process.

H 9: "EDI", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

H10: "AR", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model processes.

H11: "CRM", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

H12: "TMS", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

H13: "WMS", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

H14: "ERP", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

H15: "Barcode", one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

H16: MRP, one of the information technologies, has a significant positive effect on the **deliver process** from the SCOR model.

The figures of the hypotheses are depicted below:
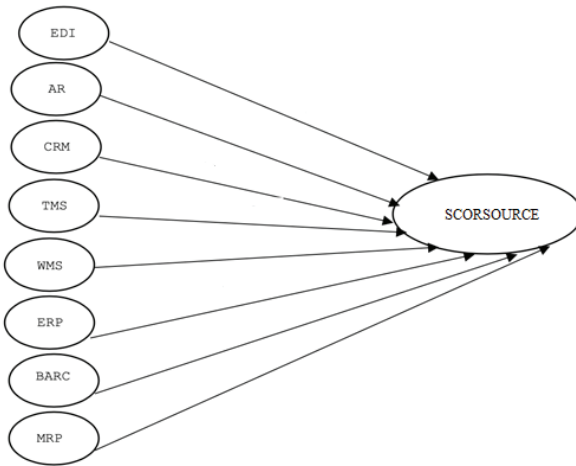


**Figure 1.** *Model of IT solutions and SCOR SOURCE process.*
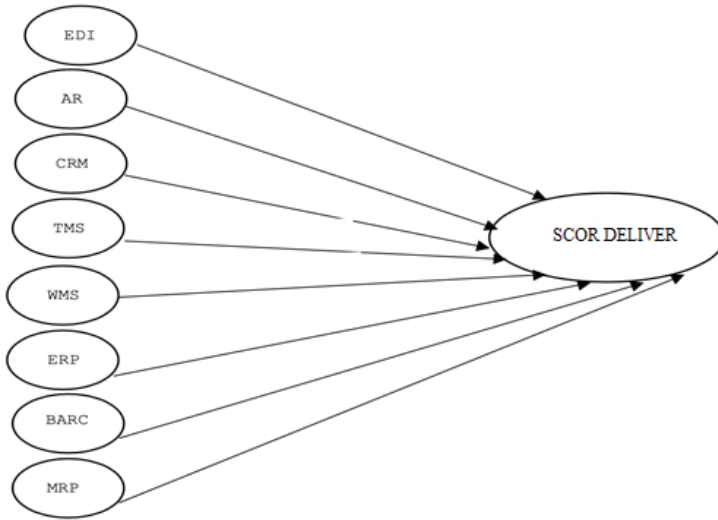
**Figure 2.** *Model of IT solutions and SCOR DELIVER process.*

## 3.Materials and methods

Quantitative research methods are used in this study. The quantitative method aims to collect the necessary information and select it from a small sample group of the population. As the quantitative method, the survey technique is applied to measure the sample population (Collis & Hussey, 2003). The data collected from the questionnaire is inserted and analyzed in the SPSS program.

The top 500 firms are selected as the population of the research. The sample size is calculated as 81 based on the following formula. The sample error is 10%. This rate is selected because companies are included in the survey process with difficulty.

In this research, the questionnaire is created with experts' approval, taking the final feedback from the advisor. The related literature of this study has been reviewed with the SCOR model 11.0 version through the "enable" process. However, the survey is created without this process, according to version 10.0. The reason is that companies tend more to use version 10.0.

In the first part, survey data is gathered through face-to-face surveys and e-mail surveys. E-mails are sent to 500 companies, and they are also called by telephone. This process is repeated later. 91 IT managers and employees from other departments filled in the survey. Although the number of 81 company surveys is sufficient, all participating company surveys are evaluated in terms of the research validity.

The research structure is as follows: First, hypotheses are created, and then, the questionnaire is created, and the results are collected. Then, the validity and reliability of the variables are analyzed. Finally, the interpretation and hypothesis testing is evaluated in the regression analysis of the model in the SPSS program, and the hypothesis test chart is shared at the end of the study.

Construction of the instrument and measure



**Literature Review**
- The literature on the IT solutions and supply chain is reviewed.

**Method**
- Model of the study and hypotheses are revealed.
- The survey is applied.

**Analysis**
- The analysis is done with multiple regression analysis.
- The results of survey are shared.

**Results**
- Results and the further studies are shared.
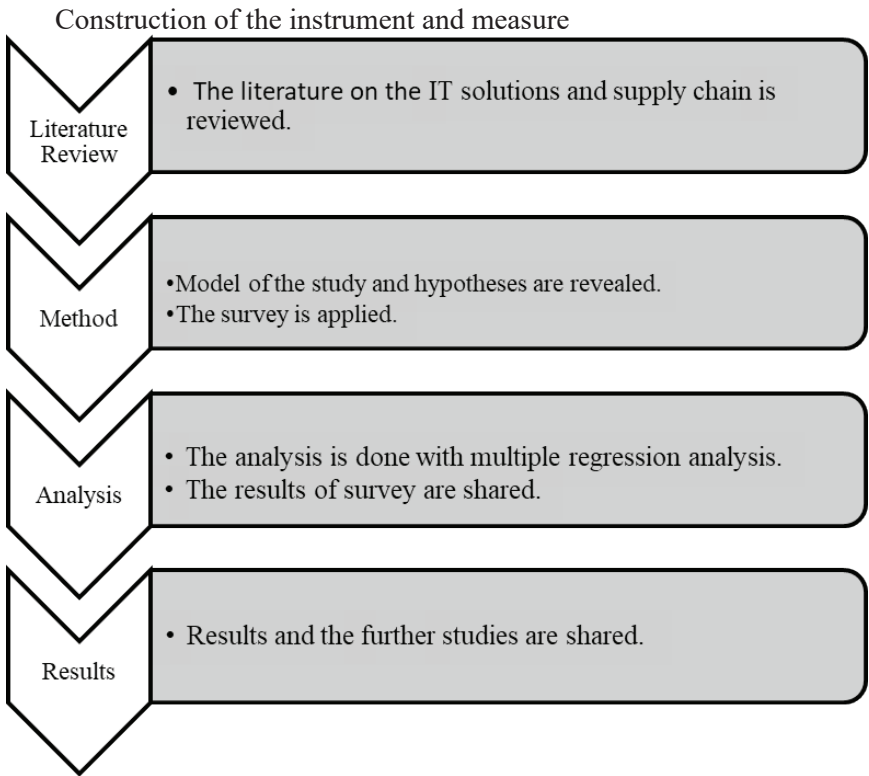
The model represents a system and simply the summary of the real situation and includes the variables regarded important (Karasar, 2018). In this regard, certain software systems are selected from the literature at the beginning of the study by including the ERP, Barcode, MRP, and EDI AR, CRM, TMS, and WMS models, which have been widely used and innovative in recent years (Nettsträter, Geißen, Witthaut, Ebel, & Schoneboom, 2015) and two processes (SOURCE and DELIVER) of the SCOR Model are selected.

Reliability and validity tests

In this part of the research, findings regarding the validity and reliability of variables used in information technology solutions are included. To ensure the validity of each variable, exploratory factor analysis was performed using the SPSS 21 package program. The value of

0.40 was regarded as the basis for the load value of the items related to the variable or the dimensions, and the Varimax rotation method was used as the method of returning the factors. Before performing the factor analysis, the Kaiser-Maier-Olkins coefficient was examined, and whether this value was at least 0.6 was also studied (Hair et al., 1998). Again, to evaluate whether the data are suitable for factor analysis, the significance of the Barlett sphericity test (p <0.05) was examined, and the factor analysis values of the data were examined as a result of the Barlett sphericity test on the variables. To determine the reliability of the scales, Cronbach's Alpha coefficients were examined, and the value of 70 above was set to determine whether the scales were reliable or not (Taber, 2018).

**Table 1.** *Factor Analysis for IT variables.*

| Variable | Number of items | Deleted items | KMO | Eigenvalue | Barlett Test Significance | TOTAL Explained Variance (%) | Cronbach Alpha |
|---|---|---|---|---|---|---|---|
| EDI | 5 | 0 | 0.729 | 3.154 | 0,00 | 63.080 | 0.847 |
| AR | 5 | 0 | 0.84 | 3.78 | 0,00 | 72.024 | 0.902 |
| CRM | 5 | 0 | 0.760 | 2.651 | 0,00 | 53.015 | 0.773 |
| TMS | 5 | 0 | 0.765 | 2.736 | 0,00 | 54.714 | 0.791 |
| WMS | 5 | 0 | 0,789 | 2.946 | 0.00 | 58.918 | 0.819 |
| ERP | 5 | 0 | 0,796 | 3.332 | 0.00 | 66.637 | 0.859 |
| BARCODE | 5 | 0 | 0,818 | 2.946 | 0.00 | 58.921 | 0.821 |
| MRP | 5 | 0 | 0,698 | 2.62 /1.367 | 0.00 | 79.723 | 0.730 |
| SCORSOURCE | 13 | 4 | 0,749 | 5.167/ 1.726/ 1,183 | .000 | 62.119 | .869 |
| SCOR DELIVER | 11 | 6 | 0,755 | 3.769/1,923 /1.016 | .000 | 60.977 | .799 |

After the exploratory factor analysis is applied to all of the variables used in the study (IT solutions and SCOR SOURCE and DELIVER), it is determined that the KMO value of the variables varied between 0.729 and 0.755, and Bartlett's sphericity test results of all variables are significant (p <0.05). It is observed that the rate of explanation of the total variance of the variables varied between 60.977% and 63.080 %. In this context, 4 statements from the SCOR SOURCE variable and 6 statements from the SCOR DELIVER variable are excluded from the relevant scales due to the low factor load value and the overlapping item feature. Although the other important point in terms of scales is the reliability of the scales, it is seen that the Cronbach Alpha coefficients of all scales are above 0.7, and all scales are reliable.

## 4. Findings

This research was done on the senior managers of the companies. It was determined that the company's top managers (65.9%) have a master's

degree, and 29.7 of them have a doctoral degree. However, it is seen that 50.5% of the top-level managers of the company are working as managers, followed by 24.2% of other employees and 20.9% of the experts. Other findings indicated that 51.6% of the study participants were working in the IT department, and 67% of these companies had domestic capital. It has been determined that 45.1% of the companies participating in the research operate in other sectors, while 38.5% of them operate in the production sector.

However, it has been determined that 92.3% of the firms have 250 or more employees, while 63.7% have an income of 50-500 million. Other important findings are that 24.2% of the companies have1-5 years of experience in SCOR model r, while 20.9% have 6-11 years of experience applying the SCOR model.

This section has determined whether the information technology solutions in enterprises affect the SOURCE in the SCOR model processes. The following test results have been revealed to decide whether the information technology solutions affect the SOURCE process of the SCOR model.

**Table 2.** *Hypotheses test results.*

| Model | | Unstandardized Beta Values | | Standardized Beta | t | Sig. | Hypotheses Numbers | Hypotheses Results |
|---|---|---|---|---|---|---|---|---|
| | | Beta | Std. Error | Beta | | | | |
| | | -.457 | .318 | | -1.437 | .156 | | |
| | EDI | .164 | .058 | .187 | 2.844 | **.006** | **H₁** | **ACCEPTED** |
| | AR | .191 | .039 | .296 | 4.862 | **.000** | **H₂** | **ACCEPTED** |
| Multiple | CRM | .189 | . 057 | .215 | 3.337 | **.001** | **H₃** | **ACCEPTED** |
| Regression | TMS | .186 | .060 | . 226 | 3.107 | **.003** | **H₄** | **ACCEPTED** |
| Analyses | WMS | .187 | .063 | .231 | 2.964 | **.004** | **H₅** | **ACCEPTED** |
| | ERP | -.030 | .069 | -030 | -.439 | .662 | **H₆** | REJECTED |
| | BARCODE | .159 | .063 | .140 | 2.514 | **.015** | **H₇** | **ACCEPTED** |
| | MRP | .044 | .059 | .047 | .741 | .462 | **H₈** | REJECTED |

The first hypothesis of the study (H1) is that "EDI", one of the information technology solutions, positively and significantly affects SOURCE in the SCOR model processes. Examination of the related table determined that $p < 0.05$ and $\beta =, 187$, and the mentioned hypothesis was accepted. In other words, the EDI SCOR model, one of the information technology solutions, is an information technology solution that positively affects the SOURCE process.

The second hypothesis of the study (H2) is that "AR", one of the information technology solutions, has a significant positive effect on SOURCE process from the SCOR model. "Examination of the related Table showed that $p < 0.05$ and $\beta =, 296$, and the mentioned hypothesis

was accepted. In other words, it is an information technology solution that positively affects the SOURCE process of the AR SCOR model.

The third hypothesis of the study (H3) is that "CRM", one of the information technology solutions, positively and significantly affects SOURCE process from the SCOR model". When the related table is examined, it was determined that $p < 0.05$ and $\beta =, 215$, and the mentioned hypothesis was accepted. In other words, the information technology solution positively affects the SOURCE process of the CRM SCOR model in information technology solutions.

The fourth hypothesis of the research (H4) is that "TMS", one of the information technology solutions, has a significant positive effect on SOURCE process from the SCOR model. When the related table is examined, it was shown that $p < 0.05$ and $\beta =, 226$, and the mentioned hypothesis was accepted. In other words, the TMS SCOR model, one of the information technology solutions, is an information technology solution that positively affects the SOURCE process.

The fifth hypothesis of the study (H5) is that "WMS", one of the information technology solutions, has a significant positive effect on SOURCE process from the SCOR model". When the related table is examined, it was determined that $p < 0.05$ and $\beta =, 231$, and the mentioned hypothesis was accepted. In other words, the WMS SCOR model, one of the information technology solutions, positively affects the SOURCE process.

The sixth hypothesis of the research (H6) is that "ERP", one of the information technology solutions, has a significant positive effect on SOURCE process in the SCOR model. The related Table shows $p > 0.05$ and $\beta = -, 030$, and the mentioned hypothesis was rejected.

The seventh hypothesis of the study (H7) is that "BARCODE", one of the information technology solutions, positively affects SOURCE process from the SCOR model. The related Table shows $p < 0.05$ and $\beta =, 140$, and the mentioned hypothesis was accepted. In other words, the BARCODE SCOR model, one of the information technology solutions, positively affects the SOURCE process.

The eighth hypothesis of the study (H8) is that "MRP", one of the information technology solutions, has a significant positive effect on SOURCE process in the SCOR model. The related Table shows that $p > 0.05$ and $\beta =, 047$ and the hypothesis was rejected. In other words, MRP does not affect the SOURCE of the SCOR model.

As a result, six of the eight hypotheses were developed with the model to determine whether the information technology solutions affect the

SOURCE process of the SCOR model, and the Beta values and hypothesis results of these hypotheses are given below.

The formula of the regression analysis can be stated as follows:

$$SCORT = -0,457 + 0,164 * EDI + 0,191 * AR + 0,189 * CRM$$

$$+ 0,186 * TMS + 0,187 * WMS - 0,030 * ERP$$

$$+ 0,159 * BARCODE + 0,044 * MRP \tag{1}$$

In this section, it has been determined whether the information technology solutions in enterprises have any effect on DELIVER process in the SCOR model. The following test results have been revealed to decide whether the information technology solutions affect the DELIVER process of the SCOR model.

**Table 3.** *Hypotheses test results.*

| Model | | Unstandardized Beta Values | | Standardized Beta | t | Sig. | Hypotheses Number | Hypotheses Results |
|---|---|---|---|---|---|---|---|---|
| | | Beta | Std. Error | Beta | | | | |
| | | .166 | .409 | | .407 | .686 | | |
| | EDI | -.126 | .074 | -,145 | -1.699 | .095 | $H_9$ | REJECTED |
| | AR | .188 | .051 | **,293** | 3.722 | .000 | $\mathbf{H_{10}}$ | ACCEPTED |
| | CRM | -.050 | .073 | -,058 | -.693 | .491 | $H_{11}$ | REJECTED |
| Multiple Regression Analyses | TMS | .246 | .077 | **.300** | 3.187 | .002 | $\mathbf{H_{12}}$ | **ACCEPTED** |
| | WMS | .126 | .081 | .156 | 1.551 | .126 | $H_{13}$ | REJECTED |
| | ERP | -.005 | .088 | -.005 | -.061 | .952 | $H_{14}$ | REJECTED |
| | BARCODE | .121 | .081 | .107 | 1.483 | .143 | $H_{15}$ | REJECTED |
| | MRP | .440 | .076 | **.481** | 5.818 | **.000** | $\mathbf{H_{16}}$ | **ACCEPTED** |

The ninth hypothesis (H9) of the study is that "EDI", one of the information technology solutions, has a significant positive effect on the DELIVER process of SCOR model". The table shows that $p > 0.05$ and $\beta =$ -, 145, and the hypothesis was rejected. In other words, EDI does not affect the distribution of the SCOR model.

The tenth hypothesis (H10) of the study is that "AR", one of the information technology solutions, has a significant positive effect on the DELIVER process of SCOR model". The related table shows that $p < 0.05$ and $\beta =$, 293, and the mentioned hypothesis was accepted. In other words, AR SCOR model, one of the information technology solutions, positively affects the DELIVER process.

The eleventh hypothesis (H11) is that "CRM", one of the information technology solutions, has a significant positive effect on the DELIVER process of SCOR model ". The related table shows that $p > 0.05$ and $\beta =$

- .058 and the mentioned hypothesis was rejected. In other words, CRM does not affect the DELIVER process of the SCOR model.

The twelfth hypothesis (H12) is that "TMS", one of the information technology solutions, has a significant positive effect on the DELIVER process from the SCOR model". The related table shows that as p <0.05 and β =, 300, the mentioned hypothesis was accepted. In other words, the TMS SCOR model, one of the information technology solutions, positively affects the DELIVER process.

The thirteenth hypothesis (H13) is that "WMS", one of the information technology solutions, has a significant positive effect on the deliver process of the SCOR model processes. The related table shows that p> 0.05 and β =, 156, and the hypothesis was rejected. In other words, WMS does not affect the DELIVER process of the SCOR model.

The fourteenth hypothesis (H14) is that "ERP", one of the information technology solutions, has a significant positive effect on the DELIVER process of SCOR model. The related table shows p> 0.05 and β = -, 005, and the hypothesis was rejected. In other words, ERP does not affect the DELIVER process of the SCOR model.

The fifteenth hypothesis (H15) is that "BARCODE", one of the information technology solutions, has a significant positive effect on the DELIVER process of the SCOR model process. The table shows p> 0.05 and β =, 107, and the hypothesis was rejected.

The sixteenth hypothesis (H16) is that "MRP", one of the information technology solutions, positively affects the DELIVER process of the SCOR model". The related table shows that p <0.05 and β =, 481, and the mentioned hypothesis was accepted. In other words, the MRP SCOR model, one of the information technology solutions, positively affects the distribution of the process.

As a result, three of the eight hypotheses were developed in line with the model to determine whether the information technology solutions affect the DELIVER process of the SCOR model, and the Beta values and hypothesis results of these hypotheses are given below. The formula of the regression analysis can be stated as follows:

$$SCORD = 0,166 + -0,126 * EDI + 0,188 * AR - 0,050 * CRM$$

$$+ 0,246 * TMS + 0,126 * WMS - 0,05 * ERP$$

$$+ 0,121 * BARCODE + 0,440 * MRP$$

$$(2)$$

## 5. Results

In this section, it has been determined whether the information technology solutions (EDI, AR, CRM, TMS, WMS, ERP, BARCODE, and MRP) in enterprises affect the SCOR model processes (SOURCE and DELIVER). The following hypotheses have been developed to reveal whether the information technology solutions affect the SCOR model processes. Sixteen hypotheses are selected. Five out of sixteen hypotheses are rejected. In practice, information technologies have a positive effect on SCOR Model processes. However, in this study, some hypotheses of the selected IT solutions are rejected according to the data collected from the surveys. The possible reasons for rejection of the hypotheses are explained in the following table.

**Table 4.** *Hypothesis test table.*

| Hypotheses | Accepted/ Rejected | Reasons for Rejection |
|---|---|---|
| H 1 "EDI", one of the information technologies, has a significant positive effect on **the source** process from the SCOR model. | Accepted | |
| H 2: "AR", one of the information technologies, has a significant positive effect on **the source** process from the SCOR model. | Accepted | |
| H 3 : "CRM", one of the information technologies, has a significant positive effect on the **source** process from SCOR model. | Accepted | |
| H 4: One of the information technologies "TMS" has a significant positive effect on **the source process from** the SCOR model . | Accepted | |
| H 5: "WMS", one of the information technologies, has a significant positive effect on **the source** process in the SCOR model. | Accepted | |
| H 6: "ERP", one of the information technologies, has a significant positive effect on **the source** process in the SCOR model. | Rejected | ERP software is used mainly in manufacturing companies. The companies participating in the survey may be related to sectors (agriculture, mining, and construction), so that it is thought that ERP does not affect the SOURCE process of the SCOR Model. |

| | | |
|---|---|---|
| H 7: One of the information technologies, "Barcode" has a significant positive effect on the **source process** in the SCOR model. | Accepted | |
| H 8: One of the information technology solutions, the "MRP" SCOR model, has a significant positive effect on **source** processes. | Rejected | The companies participating in the survey may have thought that MRP does not affect the SOURCE process since they do not use the MRP in the SOURCE process. |
| H 9: "EDI", one of the information technologies, has a significant positive effect on the **deliver process** of SCOR model. | Rejected | Although EDI has a positive and significant effect on the SCOR DELIVER process, attended companies may have thought that the SCOR model processes of EDI did not have a significant positive effect on the DELIVER, since firms might be using EDI in purchasing, sales, and price updates. |
| H10: "AR", one of the information technologies, has a significant positive effect on the **deliver process** of SCOR model. | Accepted | |
| H11: "CRM", one of the information technologies, has a significant positive effect on the **deliver process** of SCOR model. | Rejected | |
| H12: "TMS", one of the information technologies, has a significant positive effect on the **deliver process** of SCOR model. | Accepted | |
| H13: "WMS", one of the information technologies, has a significant positive effect on **deliver process** of SCOR model. | Rejected | |
| H14: "ERP", one of the information technologies, has a significant positive effect on the **deliver process** of SCOR model. | Rejected | |
| H15: "Barcode", one of the information technologies, has a significant positive effect on **deliver process** of SCOR model. | Rejected | Barcode can be used in the transportation of a product in companies to track the product. Attended companies or departments might not be working related to DELIVER of product. That is why they might think that Barcode does not affect the deliver process of the SCOR model. |

| | | |
|---|---|---|
| H16: "MRP", one of the information technologies, has a significant positive effect **on deliver process** of SCOR model. | Accepted | |

## 6. Limitations and recommendations

Like any other similar studies in social sciences, there are some limitations in this research. The first limitation of this research is that the companies in the first tier ISO500 list (Top 500 Industrial Enterprises) were included in this study. Second tier 500 companies are not included in the research. Another limitation of this research is that only 91 companies participated in the research. Although the sample is representative of 10% of the population, the research covered only certain enterprises. Different research topics can be suggested to researchers who want to research in this field. The questionnaire form can be used in larger-scale research conducted from now on, and it is suggested that more generalizable research results be presented. Again, research can be done on the efficiency of information technology solutions and comparison can be made between sectors by conducting studies based on the sector (such as manufacturing, construction, and information communication).

Additionally, this research which especially dealt with domestic companies and used these information technologies in domestic and foreign companies based on a certain segment is recommended. Besides, the research has been done according to version 10 in the SCOR model. The reason is that companies commonly use version 10 at the beginning of the research. SCOR model has an "enable" process in version 11. The next studies recommend that the "enable" process be included in the model.

As information technologies have an important place today, it is recommended that studies examine the use of information technologies by companies and provide in-company training to spread the use of information technologies in companies and to overcome the difficulties of use.

## 7.Conclusion

In this study which aimed to measure the effect of information communication solutions on the SCOR model in companies, a survey was conducted on 91 companies, and the results were analyzed through the SPSS 21 program. The research results on the senior managers of the companies determined that the top managers of the company (65.9%) had a master's degree, and 29.7 of them had a doctoral degree. However, 50.5% of the top-level managers of the company were working as managers, followed by 24.2% of other employees and 20.9% of the experts. Other

findings revealed that 51.6% of the study participants were working in the IT department, and 67% of these companies had domestic capital. 45.1% of the companies participating in the research operated in other sectors, while 38.5% of them operated in the production sector.

However, 92.3% of the firms had 250 or more employees, while 63.7% had an income of 50-500 million. Other important findings revealed that 24.2% of the companies had 1-5 years of experience in the SCOR model, while 20.9% had 6-11 years of experience applying the SCOR model.

This study has investigated the information technologies most widely used by the companies and the information technology solutions considered by the managers in the enterprises as the most effective, and it has been observed that EDI, AR, CRM, TMS, WMS, ERP, BARCODE, and MRP software systems are used significantly and effectively.

The multiple regression model was used in this research, considering that 8 software systems were significantly effective and extremely used by company managers. In the analysis done from now on, the solution of these information technologies has been revealed in the regression model.

Correlation analysis was carried out for the companies to determine the relationship between information technologies and SCOR model processes, showing a relationship of varying strength between plan, source, make, deliver and return processes and information solutions, and the use of information technology solutions in companies. On the other hand, multiple regression analysis has been established in the companies, in line with the developed model, both by testing the developed hypotheses and determining whether the model affects SCOR Model processes.

Sixteen hypotheses were selected. Five out of sixteen hypotheses were rejected. In practice, information technologies positively affected the SCOR Model processes. However, in this study, some hypotheses of the selected IT solutions were rejected according to the data collected from the surveys. The possible reasons for the rejection of hypotheses were explained throughout the study.

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# Chapter 3

## AN ASSESSMENT FOR SYRIAN ENTREPRENEURS IN TURKEY: THE CASE OF MERSİN, GAZİANTEP, HATAY AND KİLİS[1]

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## INTRODUCTION

The concepts of "immigration" and "immigrant", which are as old as human history, are one of the most important social phenomena that determine the destiny of mankind. In the course of time people had immigrated individually, in small groups or massively to somewhere in their countries or out of their countries because of mandatorily because of the reasons famine, drought, epidemic diseases, wars etc. or willingly because of the reasons economic, education, dream of a better life etc. As a result of international immigration, people who abandoned their homeland and immigrate to another country affect socio-cultural, demographic, politic and economic structure of the host country. In this context it can be said that immigrants participate in host country's economy not only as employees but also as employers. The concepts such as "ethnic entrepreneur", "immigrant entrepreneur", "minority entrepreneur" and "diaspora entrepreneur" have entered into the literature after academic researches and studies conducted about foreign entrepreneurs who start their own business due to push and pull motivation factors in the host country.

Turkey, linking up Asia to Europe due to its geographical location, has witnessed many migrations throughout its history. One of the newest and the biggest migration that World and Turkey witness has been the mandatory massive migration of Syrians because of the "Arab Spring", that began in Tunisia in December 2010 and affected many Middle Eastern and African countries. Regime's attempts to suppress the protests by using violence had resulted in internal conflicts in Syria and force many Syrians to migrate safer places in country or other neighbor countries.

Today, 3.688.093 registered Syrians keep on their lives within Temporary Protection Status in Turkey. Majority of the Syrians are living out of the camps and most of them are working illegally while some of them start their own businesses with the capital they brought with themselves or barrowing from family members or/and friends or saving money by working illegally. Table 1 demonstrates the updated official numbers of the incorporated companies and the limited companies which are set up through partnership by Syrian entrepreneurs in the last decade.

**Table 1**

*Number of The Incorporated and Limited Companies Set Up by Syrian Entrepreneurs.*

| Mouth/Year | Incorporated Companies | | Limited Companies. | |
| --- | --- | --- | --- | --- |
| | Number of Companies | Total Capital of the Company (TL) | Number of Companies | Total Capital of the Company (TL) |
| **Jan/June 2021** | 1 | 100.000 | 221 | 100.480.000 |
| **2020** | 7 | 3.250.000 | 411 | 155.825.000 |
| **2019** | 4 | 600.000 | 743 | 217.135.000 |
| 2018 | 10 | 8.300.000 | 1.585 | 423.029.000 |
| **2017** | 36 | 13.098.400 | 1468 | 300.504.000 |
| **2016** | 53 | 16.530.000 | 1711 | 256.411.000 |
| **2015** | 27 | 12.002.000 | 1.572 | 242.003.500 |
| **2014** | 35 | 21.347.500 | 1222 | 203.745.175 |
| **2013** | 20 | 6.525.000 | 469 | 80.559.000 |
| **2012** | 8 | 2.300 | 158 | 31.668.000 |
| **2011** | 2 | 100.000 | 79 | 18.199.100 |

**Source**:http://www.tobb.org.tr/BilgiErisimMudurlugu/Sayfalar/KurulanKapananSirketistatistikleri.php

## 1. SYRIANS IN TURKEY

Arab Spring -which it is an anonymous concept used to define people's demonstrations in a positive sense as a democratization movement (Doğan and Durgun, 2012, p.62) - started in Tunisia on 18 December 2010 due to many reasons such as unemployment, inflation, poverty, political corruption, deprivation of freedom of expression, bad living conditions, oppressive and authoritarian management structure in the Arab world and then it outspread to Middle East and North African countries such as Egypt, Libya, Yemen, Bahrain, Algeria, Iran, Iraq (Dede, 2011, p. 23-24).

Arab Spring showed its effects in Syria in 15 March 2011 and internal conflicts leading to civil war started in April 2011. With the spread of the civil war in most of the Syria, the country has become uninhabitable because Syrians weren't able to meet their basic needs, and felt themselves at risk due to lack of life safety and this situation forced most of the Syrians abandoned homeland. As a result of these developments, internal and external migration movements in Syria have caused one of the grea-

test human crises in history. The first Syrian refugees passed through Turkey border to seek asylum on 29 April 2011 (Buzkıran ve Kutbay, 2013, p.149). Syria's population was around 20 million before internal turmoil but 6.6 million people displaced and 5.6 million people immigrated to other countries (http://www.unhcr.org/syria-emergency.html).

**Table 2**

*Syrian Refugees in and out of Camps in Turkey (07.07.2021).*

| Cities Where Camps Exist | Province | Number of Syrian Refugees |
|---|---|---|
| Kilis | Elbeyli | 8.393 |
| Kahramanmaraş | Merkez | 10.131 |
| Hatay | Altınözü | 2.546 |
| | Yayladağı | 3.435 |
| | Apaydın | 2.822 |
| Adana | Sarıçam | 18.938 |
| Osmaniye | Cevdetiye | 14.925 |
| **Registered Syrian Refugees in Camps (Total)** | ****** | **55.074** |
| **Registered Syrian Refugees out of Camps (Total)** | ****** | **3.633.019** |
| **Registered Syrian Refugees (Total)** | ****** | **3.688.093** |

**Source:** https://www.goc.gov.tr/gecici-koruma5638

According to the report of the General Directorate of Immigration Administration of Ministry of Interior on July 18, 2021, 55.074 Syrian refugees stay in 7 camps in 5 different cities where services such as education, market, heating, security, worship, infrastructure, communication, fire brigade, interpreter, psycho-social support and banking are provided by Disaster and Emergency Management Authority (DEMA). Number of the Syrian refugees out of the camp has reached 3.633.019 and total number Syrian refugees is 3.688.093.

From February 29, 2011 till February 28, 2020 Turkey, spend more than $40 billion to meet all needs of Syrian refugees (Erdoğan, 2020). The most concentrated areas of the Syrians residing outside the camps and camps are Istanbul, Gaziantep, Hatay, Şanlıurfa, Adana, Mersin, Bursa, İzmir, Konya and Kilis. Except İstanbul, İzmir, Bursa and Konya, the Syrian asylum-seeking population is mostly concentrated in the provinces near the Syrian border (Oytun and Gündoğar, 2015, p.16).

**Tablo 3**

*Provinces Where The Syrian Population Is Dense (07.07.2021).*

| City | Syrian Refugee Population |
|---|---|
| İstanbul | 527.982 |
| Gaziantep | 452.985 |
| Hatay | 435.885 |
| Şanlıurfa | 434.039 |
| Adana | 254.026 |
| Mersin | 231.027 |
| Bursa | 180.443 |
| İzmir | 148.744 |
| Konya | 120.355 |
| Kilis | 105.132 |

**Source:** https://www.goc.gov.tr/gecici-koruma5638

Table 4 shows the distribution of the registered Syrian refugees by gender and age in Turkey according to the report released by Immigration Administration on July 7, 2021. So it can be said that most of the Syrian refugees in Turkey are male and the most crowded age group is 5-9.

**Table 4**

*Distribution of Registered Syrians By Age And Gender.*

| Age | Male | Female | Total |
|---|---|---|---|
| 0-4 | 260.861 | 243.517 | 504.387 |
| 5-9 | 290.700 | 273.517 | 563.726 |
| 10-14 | 218.489 | 205.251 | 423.740 |
| 15-18 | 137.982 | 118.173 | 256.155 |
| 19-24 | 283.383 | 213.497 | 496.880 |
| 25-29 | 220.946 | 160.350 | 381.296 |
| 30-34 | 166.613 | 120.922 | 287.535 |
| 35-39 | 125.017 | 97.904 | 222.921 |
| 40-44 | 85.429 | 74.481 | 159.910 |
| 45-49 | 57.906 | 56.610 | 114.516 |
| 50-54 | 45.936 | 44.806 | 90.742 |
| 55-59 | 34.952 | 35.004 | 69.956 |
| 60-64 | 23.041 | 23.792 | 46.883 |
| 65-69 | 15.008 | 15.844 | 30.852 |
| 70-74 | 8.869 | 9.769 | 18.638 |
| 75-79 | 4.361 | 5.406 | 9.767 |
| 80-84 | 2.389 | 3.189 | 5.578 |
| 85-89 | 1.137 | 1.679 | 2.186 |
| 90+ | 777 | 1.077 | 1.854 |
| **Total** | **1.983.976** | **1.704.297** | **3.506.532** |

**Source**: https://www.goc.gov.tr/gecici-koruma5638

### 3. LITERATURE REVIEW

Many researches have been conducted about foreign entrepreneurs who had to abandoned their homeland and migrate to another country due to various reasons. Some of these researches and studies are mentioned below;

In his study Waldinger (1984), searched why the immigrant entrepreneurs -who immigrated to the United States from the Dominican Republic, Ecuador and Colombia through a major migration wave after 1965- were more successful than local entrepreneurs in apparel industry in New York. To find out the success factors of the immigrant entrepreneurs he conducted a survey with the immigrant entrepreneurs who run business in apparel industry between 1981-1982. He found that immigrant entrepreneurs were more successful than local entrepreneurs because the strong ethnic ties enabled immigrant entrepreneurs to reach cheap labor force, information and capital easier than local entrepreneurs.

In their study Sanders and Nee (1996) tried to define what were the factors that made establishing a business easier for the Asian (Korean, Filipino, Indian, Chinese) and Hispanic (Mexican, Puerto Rican) immigrant entrepreneurs in New York and Los Angeles where the largest number of immigrant populations in the United States. In context of human capital; the acceptance of Filipino and Indan immigrants' human capital is greater in U.S. compare to Hispanic immigrants and this made it easier for Filipino and Indian immigrants find job easier. Therefore, the human capital factor plays a constructive role in the entrepreneurship of Hispanic immigrants. Existence of strong ethnic ties showed up as another factor for both Asian and Hispanic entrepreneurs establishing their businesses easier.

Masurel, Nijkamp, Taştan and Vindigni (2002) searched the success factors of the Turkish, Pakistani, Indian and Moroccan immigrant entrepreneurs in Amsterdam. According to the classification of the researchers considering the different success factors and motivations they found out that; Turkish immigrant entrepreneurs were active in sectors which require less training and which are not marketable but which have a constant profit turnover, Indian and Pakistani immigrants entrepreneurs were active in service sector such as restaurant, hotel etc. and Moroccan immigrant entrepreneurs were active in the service sector, which requires education and marketing knowledge.

Antonites and Govindasamy (2013), sought the critical success factors of the Indian immigrant entrepreneurs who had small and medium sized enterprises in Tshwane in South Africa. For this, successful and less successful Indian entrepreneurs in Tshwane were evaluated in terms of their general management skills, personal factors (education, family support,

role models, motivation, entrepreneurship characteristics, social network) and initiative financing methods. The study revealed that personal factors influencing the individual's entrepreneurial tendency, such as education, the time of the enterprise in service, former entrepreneurship experience, contribution of family members in business and commitment to family members played a decisive role in the success of Indian entrepreneurs. On the other hand, factors such as motivation factors, social networking, the effect of family tradition in the type of business and having advantages in obtaining financial resources hadn't proven to be effective for successful or less successful Indian entrepreneurs.

Omisakin, Nakhid, Littrell and Verbitsky conducted a study in 2015 that shows the entrepreneurial motivations and challenges of African immigrants living in New Zealand's Auckland city, and how these challenges were overcome. The authors emphasized that the data gained from this study could help the New Zealand government and other public agencies develop policies, strategies and plans that would minimize or eliminate the possible challenges that African or other migrant entrepreneurs might encounter.

In her study entitled "On Immigrant Entrepreneurship: Turkish entrepreneurs in Pittsburgh", Nişancı (2015) searched the motivation factors of Turkish immigrant entrepreneurs in Pittsburg in U.S. in basis of McClelland and Vroom's Theory of Motivation and Smith's tradesman entrepreneurial, opportunistic entrepreneurial classification. According to Nişancı, the entrepreneurial behavior of Turkish immigrant entrepreneurs, the factors affecting these behaviors and the entrepreneur types have not been adequately researched. In her study she reached the result in context of McClelland and Vroom's Theory of Motivation; the factors such as the need for achievement, the desire level of profit / reward / gain and the strong belief that the effort will result in a prize in the society where they live, affecting the entrepreneurial behavior of immigrant Turkish entrepreneurs. In context of Smith's classification, the study showed that immigrant Turkish entrepreneurs in Pittsburgh, U.S. have more opportunistic entrepreneurial characteristics.

## 4. RESEARCH METHOD

The universe of the research is based on data given in a study which was published in 2015 by TEPAV. In this study, the total numbers of the enterprises established by Syrian entrepreneurs and the percentage of the Syrian enterprises in total number of the enterprises in some provinces were given. In 2010 percentage of the Syrian enterprises didn't exceeded the total enterprises of any province and in 2012 only in Kilis this percentage exceeded %10 but just Kilis alone was not adequate for scope of the study.

In 2014 the number of the Syrian enterprises in Kilis, Gaziantep, Hatay and Mersin provinces exceeded %10 of the total enterprises in these cities. Therefore, it was decided that these cities would constitute the universe of work. The share of the enterprises established by Syrian entrepreneurs is 33.9% in Kilis, 16.9% in Gaziantep, 15.7% in Mersin and 10.5% in Hatay (Özpınar, Başıhoş and Kulaksız, 2015, p. 9).

In 2014, it was determined that the total number of registered enterprises opened by the Syrians in Mersin, Gaziantep, Hatay and Kilis is 511 in total. Therefore, the research universe constitutes 511 Syrian enterprises. The main objective of this study is to reveal the Profile of Syrian entrepreneurs by determining the demographic characteristics, business sectors, size of enterprise, employee preferences, customers' composition, methods of obtaining capital, the impact of culture and social networking in entrepreneurial process of Syrian entrepreneurs in Kilis, Hatay, Gaziantep and Mersin.

The questionnaire method designed based on literature was used to collect data in this study. The questionnaire form consisted of three sections. The first section was designed to determine demographic characteristics of Syrian entrepreneurs, the second section was designed to determine Syrian enterprise characteristics and the third section was consist of statements to determine the motivation factors, impact of social network and culture to entrepreneurship process and enterprise satisfaction by using a 5-point Likert scale ranging an agree/disagree continuum (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree).

The respondents were contacted initially by e-mail and subsequently telephoned to arrange a convenient interview time. After eliminating the questionnaires that were annulled or not returned, there were left with a final sample of 259 (response rate was 50.6 %) respondents. The 34 items instrument in the third section had reliability (Cronbach's alpha) of 0.89. Usually, a value of 0.70 in Cronbach's alpha is considered adequate in order to ensure reliability of the internal consistency of a questionnaire (Nunnally, 1978).

## 5. Results

### 5.1. Demographic Characteristics of Respondents

The demographic characteristics of the 259 respondent Syrian entrepreneurs are as follows: 98,8% of respondents were male and just 1,2% of respondents were female entrepreneurs. This big difference between the gender of the participants can be explained by the fact that Syrian women are busy with the houseworks or they are working as wageworkers.

In terms of age range; 27% of respondents were between 35-42; 26,3% of respondents were between 27-34; 25,9% repondents were between 43-50; 12% of repondents were between 18-26 and 8,9% of repondents were 51 and over. According datas about age of respondents it can be said that most of the respondenst were between 27-50 (79,2%) age range.

According to datas about the kowledge of Turkish it can be said that majority of the respondents know Turkish in different levels except 20,5% of respondents.

In terms of education level; 48,3% of the respondents had high school or equivalent education, 28,6% had elementary education, 21,2% had university graduation, 1,9% had master or PhD. graduation. 88,8% of the respondents were married and 11,2% were single.

37,1% of the respondents migrated to Turkey in 2012, 35,9% of respondents migrated in 2013, 17% of the respondents migrated in 2014, 8,1% of the respondenst migrated in 2011 and 1,9% of the respondents migrated to Turkey in and before 2010.

55,6% of respondents had thought to return to Syria after the disturbance in Syria is over, 34% of respondents had no plan to return to Syria ever, 5% of respondents had thought of returningto Syria after the government change, 2,7% of respondents had thought to return to Syria after the disturbance in their city is over. So it can be said that 63,3% of the respondents had thoguth to return to Syria one day (Table 5).

*Table 5*

*Demographic Characteristics of Syrian Entrepreneurs*

| Gender | N | % |
|---|---|---|
| Male | 256 | 98,8 |
| Female | 3 | 1,2 |
| Total | 259 | 100 |
| Age Range | N | % |
| 18-26 | 31 | 12,0 |
| 27-34 | 68 | 26,3 |
| 35-42 | 70 | 27,0 |
| 43-50 | 67 | 25,9 |
| 51 ve üzeri | 23 | 8,9 |
| Total | 259 | 100 |
| Do you know Turkish? | N | % |

| | | |
|---|---|---|
| No, I dont know | 53 | 20,5 |
| Yes, beginner level | 125 | 48,3 |
| Yes, intermediate level | 61 | 23,6 |
| Yes, Advanced | 20 | 7,7 |
| Total | 259 | 100 |
| Education Level | N | % |
| Primariy | 74 | 28,6 |
| High School or Equivalent | 125 | 48,3 |
| University | 55 | 21,2 |
| Higher (Master/Phd) | 5 | 1,9 |
| Total | 259 | 100 |
| Marital Status | N | % |
| Married | 230 | 88,8 |
| Single | 29 | 11,2 |
| Total | 259 | 100 |
| When did you migrate to Turkey? | N | % |
| In 2010 and before | 5 | 1,9 |
| 2011 | 21 | 8,1 |
| 2012 | 96 | 37,1 |
| 2013 | 93 | 35,9 |
| 2014 | 44 | 17,0 |
| Total | 259 | 100 |
| Thought of returning to Syria | N | % |
| Never | 88 | 34,0 |
| I will not return when the disturbance in Syria is over | 144 | 55,6 |
| I will not return when the disturbance in my city is over | 7 | 2,7 |
| After the change of government | 13 | 5,0 |
| Others | 7 | 2,7 |
| Total | 259 | 100 |

## 5.2. Respondents' Career and Enterprise Structure

Before emigrating to Turkey 32,4% of respondents were private sector employee, 27,8% were entrepreneur, 19,7% were employer, 13,1% were student, 5,4% were public servant, 1,5% were unemployed. So it can be said that 72,2% of the responded had no entrepreneurship experiance till they started their own business in Turkey.

After emigrating to Turkey but before establishing their own businesses 39,8% of respondents worked in private sector, 31,3% were entrepreneur, 20,5% were employer, 7,7% were unepmloyed, 0,8% were student.

The enterprises established by Syrian entrepreneurs were active in three main sectors; 61,4% in trade, 16,6% in manufacturing and sales, 22% in service sector.

78% of the immigrant Syrian entrepreneurs established a new enterprise while 12,4% of them took over the existing enterprise from family and 9,7% of respondents took it over from a friend.

In terms of possesion of the enterprise; 54,4% of respondents had no business partner while 39,4% had Syrian business partners, 4,6% had just Turkish business partners and 1,5% of repondents had both Turkish and Syrian partners. In this point it can be said that factor/s such as inadequate capital, distributing the risks, language barrier, limited market klowledge about Turkey could be the reason to establish an enterprise with a business partner for Syrian entrepreneurs. (Table 6a.)

*Tablo 6a.*

*Findings of Participants' Career and Enterprise Structure*

| Job in Syria | N | % |
|---|---|---|
| Private Sector Employee | 84 | 32,4 |
| Public Servant | 14 | 5,4 |
| Student | 34 | 13,1 |
| Unemployed | 4 | 1,5 |
| Enrepreneur | 72 | 27,8 |
| Employer | 51 | 19,7 |
| Total | 259 | 100,0 |
| Former Job in Turkey | N | % |
| Private Sector Employee | 103 | 39,8 |
| Student | 2 | 0,8 |
| Unemployed | 20 | 7,7 |
| Enrepreneur | 81 | 31,3 |
| Employer | 53 | 20,5 |
| Total | 259 | 100,0 |
| The sector in which the enterprise operates | N | % |
| Trade | 159 | 61,4 |
| Manufacturing and sales | 43 | 16,6 |
| Service | 57 | 22,0 |
| Total | 259 | 100 |
| The way to establish the enterprise | N | % |
| I established the enterprise | 202 | 78,0 |
| Took over from family | 25 | 9,7 |
| Took over from friend | 32 | 12,4 |
| Total | 259 | 100 |
| Partnership status | N | % |

| | | |
|---|---|---|
| Yes, I have Syrian partner | 102 | 39,4 |
| Yes, I have Turkish partner | 12 | 4,6 |
| Yes, I have both Turkish and Syrian partners | 4 | 1,5 |
| No, I dont have partner | 141 | 54,4 |
| Total | 259 | 100 |

In terms of employee number they employed; 87,6% of respondents had employees between 1-9 and 12,4% of respondents had between 10-49 employees. When the number of employees is taken into account it can be said that 87,6% of the enterprises that Syrian entrepreneurs establieshed were micro-sized enterprises.

In terms of employee's nationality, 72,3% of immigrant Syrian entrepreneurs had Syrian employee, 23,9% of respondents had both Turkish and Syrian employees and 1,5% of respondests had just Turkish employees. In this point, it can be said as strong ethnic ties among Syrians, trust, cheap and available labor force could be the reasons why immigrant Syrian entrepreneurs prefered mostly Syrains to employ.

Regarding to the nationality of the customers demanding the goods and/or services produced, 73.7% of respondents' customers were both Turkish and Syrians, 23,6% of respondents' customers were Syrians and 2,7% of respondents' (these repondents could be busy with international trade) customers were others except Turkish and Syrians. So it can be said that immigrant Syrian entrpereneurs' good and/or services were demanded not only Syrians but also Turkish customers.

Regarding where entrepreneurs got the capital they needed to start their business, 73,3% of respondents brought the it while immigrating to Turkey, 14,3% of respondesnts saved the capital by working in a job in Turkey, 4,2% of respondents barrowed it from other family members, 3,1% barrowed from relatives, 1,5% barrowed it from friends, 2,3% got the capital in other was not listed in questionnaire and 0,8% used bank credit (Table 6b.).

*Tablo 6b.*

*Findings of Participants' Career and Enterprise Structure*

| Employee number | N | % |
|---|---|---|
| Between 1-9 employees | 227 | 87,6 |
| Between 10-49 employees | 32 | 12,4 |
| Total | 259 | 100 |
| Nationality of Employees | N | % |

| | | |
|---|---|---|
| Turkish | 6 | 2,3 |
| Syrian | 187 | 72,3 |
| Both Turkish and Syrian | 62 | 23,9 |
| Other | 4 | 1,5 |
| Total | 259 | 100 |
| Nationality of Customers | N | % |
| Syrian | 61 | 23,6 |
| Both Turkish and Syrian | 191 | 73,7 |
| Other | 7 | 2,7 |
| Total | 259 | 100 |
| Method of obtaining capital | N | % |
| By working in another job in Turkey | 37 | 14,3 |
| I brought with me while I was migrating | 191 | 73,7 |
| I used bank credit | 2 | 0,8 |
| I borrowed from family members | 11 | 4,2 |
| I borrowed from relatvies | 8 | 3,1 |
| I borrowed from friends | 4 | 1,5 |
| Other | 6 | 2,3 |
| Total | 259 | 100 |

### 5.3. Respondents' Aproach to Statements

When interpreting the answers of the respondents abput motivation, Social network, culture and enterprise satisfaction the mean scores were accepted as 1.00-1.79 =strongly disagree, 1.80-2.59 = disagree, 2.60-3.39 = neither agree nor disagree, 3.40-4.19=agree, 4.20-5.00 = strongly agree (Arslan and Kayalar, 2017, p. 20).

**Motivation:** According to Table 7, there are two effective motivation factors for the immigrant Syrian entrepreneurs to establish their own business. First motivaton factor is "the necessity of continuing the life", second motvaiton factor is thought of "being boss of his own bussiness". In this point it can be said that motivation factors in questionnaire such as "failing to work next to someone else", "being rich by making a lot of money", "feeling ethnic discrimination" and "failing to find a job" were not effective factors for immigrant Syrian entrepreneurs to establish their own businesses.

**Social network**: To understand the respondents thoughts about social network among Syrians and social network's contribution to establish business expressions such as "My family supported me when establihed my onw business", "I chose this city to establish my business because of its closeness to Syria and dense Syrian population" and "Strong social ties among Syrians make it easier to establish a business" were added in ques-

tonnaire. According to the mean scores it can be said that social network is strong among Syrians and and this network affecting the process of establishing a business for immigrant Syrian entrepreneurs.

**Culture:** To understand how culture factor influenced the entrepreneurial process of immigrant Syrian entrepreneurs with the expressions; "I do business in accordance with cultural values" and "Cultural similarities between Syria and Turkey eased my business start up" were placed in questionnaire. Considering the mean scores of these two expressions in Table 7, it can be said that cultural similarities between Turkey and Syria eased for the immgrant Syrian entrepreneurs established their own bussinesses in accordance with their cultural values.

**Enterprise satisfaction**: As less than half of the respondents had no entrepreneurship experince before they migrated to Turkey it can be said that most of the Syrians became entrpereneurs in Turkey. To understand what respondents' thoughts about their enterprise expressions such as "If I had a better education, I would not set up my own business, I would work for big companies", "Instead of working at a high cost in a Turkish company, I prefer set up and maintain my own business" and "If I got a good job offer, I'd accept the offer and close my current business" were placed in questionnaire. According to mean score it can be said that instead of working as waged worker in another job, immigrant Syrian entrepreneurs prefer work independently in their own work in other words respondents were satisfied with their enterprise they owned.

**Tablo 7**.

*Descriptive Statistics of Repondents' Answers About Statements*

| Motivation | N | Mean | Sd. |
|---|---|---|---|
| I started my own business because I could not work with someone else | 259 | 2,3359 | 1,36651 |
| I started my own business because I had to keep on my life | 259 | 3,9112 | 1,02101 |
| I started my own business with the thought of being a boss | 259 | 3,6950 | 1,05085 |
| Thought of being rich made me start my own business | 259 | 2,5251 | 1,28887 |
| The ethnic discrimination I felt, forced me to start this business | 259 | 2,1699 | 1,23659 |
| I had to start my own business because I couldnt find a job | 259 | 2,3166 | 1,33533 |
| **Social network** | N | Mean | Sd. |
| My family supported me when establihed my onw business | 259 | 3,4749 | 1,00885 |

| | | | |
|---|---|---|---|
| I chose this city to establish my business due to its being close to Syria and Syrian population density | 259 | 3,7259 | 1,06665 |
| Strong social ties among Syrians make it easier to start a business | 259 | 3,4749 | 1,18875 |
| **Culture** | N | Mean | Sd. |
| I do business in accordance with cultural values | 259 | 3,7799 | 1,10400 |
| Cultural similarities between Syria and Turkey eased my business start up | 259 | 3,8031 | 1,12917 |
| **Job satisfaction** | N | Mean | Sd. |
| If I had a better education, I would not set up my own business, I would work for big companies | 259 | 2,3784 | 1,36529 |
| Instead of working at a high cost in a Turkish company, I prefer set up and maintain my own business | 259 | 2,8417 | 1,32435 |
| If I got a good job offer, I'd accept the offer and shut down my current business | 259 | 2,4015 | 1,45506 |

## 6. CONCLUSION

In this study; demographic characteristics of respondents, size of the enterprise in terms of number of they employees, customer composition, employee nationalities, capital structure, influence of social networks and culture entrepreneurial process and satisfaction of current enterprise of immigrant Syrian entrpereneurs who had to emigrate to Turkey and established their business in Mersin, Hatay, Gaziantep and Kilis provinces, were discussed. According to the obtained data;

The majority of Syrian entrepreneurs, who are mostly male, are between 35-42 age range. Almost half of the respondents have high school and equivalent level education and 79,5% of immigrant Syrian entrepreneurs know Turkish in different levels. As premature marriages are common in Syria, it is not suprising that 88% of respondents are married. Immigrant Syrain entrepreneurs –more than half of them came to Turkey in 2012 and 2013- have thought to return to Syria when the turmoil ends.

Immigrant Syrian entrepreneurs mostly worked in private sector in Syria and in Turkey before they established their own business and most of the immigrant Syrian entrepreneurs busy with trade in Turkey. More than half of the immigrant Syrian entrepreneurs set up their business from scratch instead of taking over an existed business. Majority of these micro-sized enterprises -consisting of 1-9 employees- employees' being mostly Syrians indicate the strong sıcial network and ethnic ties among Syrian immigrants. Immıgrant Syrian entrepreneurs' customers being both Turkish and Syrians shows that Syrian entrepreneurs are also active out of ethnic market. From the perspective of the capital structure, most of the Syrian entrepreneurs brought the capital from Syria while immigrating to Turkey.

Two leading factors motivated Syrian immigrants to set up their own business. First one is "the necessity of continuing the life" because Syrians had to leave their wealth in Syria and immigrated to Turkey because of the internal conflicts in Syria. This sudden change in their lives lead to changes in their needs and preferences and forced them to restart a new life in Turkey. Second one is the thought of "being boss of own business". As little of the immigrant Syrians have work permit, most of them have to work illegaly for little money in jobs they can find and this leads to loss of rights of Syrians workers. Moreover, anxiety about discrimination and ill-treatment lead immigrant Syrians to set up their own businesses with the thought of "being boss of own business" in other words being independed instead of being wage worker.

During entrepreneurial proscess respondents' getting support from their familis in terms of finance, labor force and information; establishing their business in provinces closer to Syrian and where Syrian population is dense; employing mostly Syrian workers in their enterprises indicates that strong social network among Syrians has a constructive and facilitative role in their entrepreneurial processes.

The fact that Turkish and Syrians have similar cultural values can be explained with both countries' being close to eachother in same geography and kinsship of both countries' people based on history. Similarity of both cultures reveals the contribution of the cultural factor in favor of Syrian entrepreneurs to establish their own businesses. Similar cultural values enable Syrian entrepreneurs' produce goods or services not only for Syrians but also Turkish customers.

Not thinking positive about working for a big company with high salaray or closing the enterprise to accept a good job offer indicates that immigrant Syrian entrepreneurs are happy with having their own bussiness and being independed.

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# Chapter 4

## THE INFLUENCES OF MINIMALISM ON TEXTILE SURFACE DESIGN: A SOLO EXHIBITION EXPERIENCE

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## INTRODUCTION

Nowadays, with an increase in interdisciplinary cooperation, the share of information and culture, and the advance in materials and material technologies, new fields of design are being formed; thus, new design methods and hybrid materials being developed day by day (Gezer, 2018:22). Textile, on the other hand, expands its field with new fields of application and with other different disciplines. With the unlimited possibilities provided by materials functionally and aesthetically, textile has been effective in the realization of contemporary structures and artistic concepts. Today, innovative and a creative textile increasingly has a place in designs with pioneering forms, materials and design ideas. For this reason, textile also creates an interactive production process with the use of new narrative methodologies and a new design language. It is also possible to see that artists and designers studying on interdisciplinary arts reflect the traditional and contemporary techniques consisting of the new, old and ready-to-use threads and fabrics that make a connection between the tradition and the future, as well as using the non-traditional materials. The material contributes to the expression of the work and strengthens it. It is also seen that the works by some artists are created entirely in the language of the material used. The mostly-used materials are the ones that are thick, matte, glossy, rigid, loose, transparent, fuzzy and patterned, which present an unlimited option for the artists. These fabrics can be transformed into works of art that artists can shape in traditional or original ways. The messages, emotions and ideas are conveyed using the different characteristics of the fabrics.

While the studies on industrial and craft textiles in our country are at its highest level, there is a serious deficiency in the number of the written studies on the textile as an art (Çotaoğlu, 2011:2). In line with this finding, this article aims to contribute to the continuity and recognition of the individual exhibitions. Depending on this, the reflections of Minimalism have been discussed through the author's two solo exhibitions. The process of highlighting the plastic in the minimal designs with a minimum of materials, sewing techniques and appliques has been tried to be reflected through the six examples selected from two different exhibitions. The outputs of the representation by the material, technic and production through the personal exhibition have been discussed in the findings.

## THE RELATIONSHIP BETWEEN TEXTILE, DESIGN AND MINIMALISM

Textile has various possibilities in it both structurally and expressively. It has many potentials with its own techniques, materials and forms (Sönmezateş, 2012). Textiles have become a phenomenon with unique values

from culture to culture, and geography to geography, which has increased its value with the development of many other various materials and techniques in the process (Meriç and Kozbekçi, 2019:418). Textile products, which started to be produced at homes to meet the needs, have started to be produced professionally over time; From the gathering of raw materials to the sale, they have been shaped in the hands of many different craftsmen from weavers to tailors (Ray, 2012:245-256). Textile production, considered as a part-time work or daily activities at home, were seen in the past as a job that was only suitable for women (Kapar, 2018:41). In a rapidly developing and changing world with mechanization, the human perception of the reality has changed, and the traditional textile, with its structure and application processes, made an unexpected increase among the other creative disciplines (Antmen, 2008:18). Transformations in the social structure were carried to the level of art in the 60s and 70s, especially after the long time struggles of female artists (Kapar, 2018:41). Textile art is a reflection of the periods and geographies in which it existed by transforming and evolving at this point. Current studies, in which objects are interpreted with textile materials and techniques in everyday life, constitute an interesting group of examples in this context. To better understand the transformation of textiles into art, as a result of the new trends in art, some important acts in the 20th century should be examined because this period corresponds to the time when the definition, meaning and purpose of art changed.

It is possible to say that the first change to this new vision took place during the Art and Crafts Movement, which affected the entire world of art. Therefore, it is useful to briefly mention about this movement. Art and Crafts Movement was created by rejecting the effects of the uniformity by mass production, which is away from the aesthetic values and art. Thanks to this movement, the idea that it is necessary for the artists and craftsmen to make a production together was adopted (Özkendirci, 2014 :74). This movement can be described as a movement that contributes to the adoption of the design phenomenon of the industry over time, although it is a movement against industrial production, in which people with artistic perspectives use craftwork. From this point of view, it can be considered as a creative process for creating a design solution with the help of the elements such as the knowledge of method, creativity, strong memory, pattern recognition, unelected research in solution space, thorough thinking, brainstorming, sampling ability and etc. (Evbuomwan, Sivaloganathan and Jebb, 1996:302). Mass productions have gained their own characteristics after the mechanization period when compared to those that are craftwork. It is thought that the fact that the mass productions are all the same causes a disidentification. Mass production, which is far from being aesthetic, requires for design in production (Sürür, 1996:230). With this requirement,

designers have new missions. From now on, a designer is a creative person, who has gained different characteristics as a result of the technical-technological, social and cultural developments of the age, who reflects the reality of his/her own time, and who makes the object s/he produces admirable in the eyes of others (Atalayer, 2001:21,22). With the industrial revolution, there have been the artists from the Bauhaus School, who have developed the concept of the designer needed. These artists have made it possible for textile to be an art tool, developing the tapestry using the textile techniques, methods and materials, (Özkendirci, 2014:12).

The variety in textile materials has created an infinite possibility for textile crafts. Traditional textile art, on the other hand, has stopped imitating art coming down the wall, and taken its place in the contemporary art of the authentic artists (Dereci, 2014:54). Craft methods and materials have started to be used as a tool in the creation of works of art. This has brought back the uncertainty between crafts and works of art for the art critics. With the emergence of new approaches in plastic arts in the 20th century and the influence of contemporary art movements, artists have switched to use the materials far from the traditional art such as ready-made products, organic and technological objects, and textile fibers (Usluca, 2019:264). Although weaving is at the heart of textile arts, the limitations in the weaving techniques have caused the power of expression to get weakened. This has led to a combination of many technologies and materials (Uğur, 2006:20). Because textile art is a broad term that can cover many types of approaches, it can easily interact with other disciplines.

"Interdisciplinary interaction can be defined as the interaction between two or more disciplines or fields of study affecting each other. This interaction naturally results in a change in one discipline by the change in the other. (Edeer, 2005). The evolution of textile art have parallels with that of the other fields of art. When the studies carried out in this field have been examined, it is observed that there is not a single form of expression. Surface design and weaving form the two main fields in the textile art (Özay, 2001:47). The surface perception formed by the display of the pattern-weighted first period works on the wall is the factor that leads to the characterization of textiles as 2D. Textile art, which has its place beyond the surface, is one of the most important indicators of modernization. Inspired by the ideas and practices of modern art movements, textiles have begun to feel their artistic influence in surface designs. Minimalism, one of the modern art movements, is the common point of the textile designs that form the subject of this article.

Minimalism, which still has its effect in textile design (Little, 2010 :138), appeared in America in the 1960s (Lüy, 2012:25) in response to abstract expressionism (Hodge, 2014:176). Minimalism is the purification

of the objects and the presentation of simplicity. Moreover, the lack of density in shape, color or figure is one of the most prominent features of minimalist works of art (İlbars, 2019:4). In short, Minimalism includes a minimalist approach (Tuncer, 2018:28). As for the design, minimalism shows a more geometric and symbolic style, which is more intuitive and informative. Color is always visually in the first place, which makes people have an intuitive impression, with an emotional voice and a unique visualization. Minimalist works of art can be created with "no color" — or just with simplified color relationships like it is between black and white " (Shuguang, 2014:84.85). Art is much more complex than the other interests of human, and it is the combination of various fields. Art is one of the ways of expressing oneself (Mülayim, 1994:9-17,18). In recent years, many disciplines have been associated with each other in terms of culture, aesthetics, idea, production and meaning, and they have a sharing between them. Textile has made great contributions to the development of forms with its art, style and design practices.

Rules and theories save art from handicraft works (Döl and Avşar, 2013:3). Patterns used in textile design benefit from printing techniques, fabric folding applications and weavings both visually and functionally (Gezer, 2008:25). Using lines is one of the main design elements that stands out in creating a minimalist effect on the textile surface. Under the next title, the minimalist reflections of the lines on textile surfaces will be discussed through the examples.

## THE EFFECTS OF MINIMALISM ON TEXTILE SURFACE DESIGN

### Minimalist approach to *Mai* and *Uncolored Stories*

Textile is a flexible element that can be transformed into a desired shape using sewing techniques (Kapar, 2018:40). Using needles and threads is a popular way in the design of textile surfaces. Surface of textiles is *the visible part of the design that we can feel by touching* (Gezer, 2007). In other words, surface design can be defined as *textile designs applied on a woven fabric using the techniques such as printing, painting, batik, applique and embroidery* (Çotaoglu, 2011 :11). The development of new terms related to design reveals more design-oriented (Schamraf, 1998:10) forms of expression. The use of traditional needlework and modern sewing techniques is the most important way of application of textile art in all contemporary art and design forms. At this point, it is possible to say that the phenomenon of art has a structure that constantly changes and transforms the concept of form and content on the axis of social paradigms of different cultures. Considering that art is a universal language of communication, the Minimalism movement, which reflects the common language of art,

still remains popular and contributes to the artists and designers during the idea phase. Simplicity in the relationship between Minimalism and textiles is achieved by way of using the materials, techniques and design elements. The examples discussed in this article have been produced in line with this understanding of design.



**Figure 1:** *Uncolored Stories. No:1. 2020. 35x50cm. Applique, Stitch, Quilting-Cotton fabric, thread, fiber. Photograph: Catalogue page 3.*

Achieving simplicity is one of the primary aims in minimalist designs. As stated in The Laws of Simplicity, in which Maeda explains the principles of achieving simplicity in design, the easiest way to achieve the simplicity is a well-thought reduction (2012:112), which can be seen in the exhibition Uncolored Stories No. 1 (Fig. 1). With the white fabric cut into a rectangular shape, fiber used under the fabric and machine stitching on the top, a diagonal line form has been created on the surface. An applique fabric in a square shape has been used in the lower part of the fabric surface by centering. Line, which is the most important basic design element, has been used in this example together with the form element. A line specifies the edges of an area and divides it into the parts. It creates a form and a way to show that form in its most concise and abstract way. In addition, it is an intermediary element of creating a motif, form, shape and a composition (Read, 2003:50). In this example, the shape formed by the line is a square; the line separates the gray tone and white surface from each other and it draws the attention to this point adding a ton value to the surface.
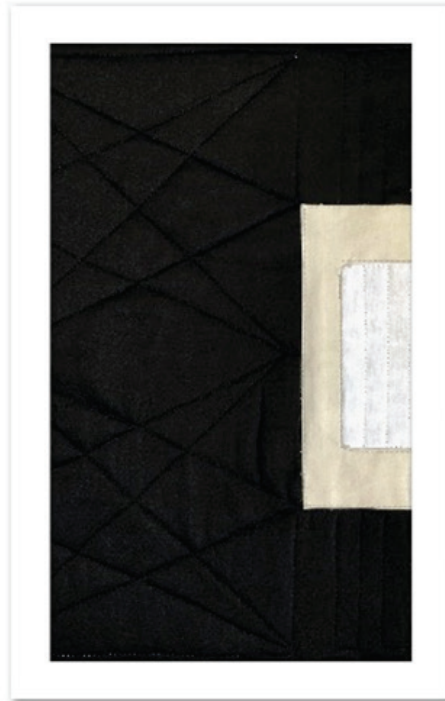


**Figure 2:** *Uncolored Stories. No:5. 2020. 35x50cm. Applique, Stitch, Quilting- Cotton fabric, thread, fiber. Photograph: Catalogue page 7.*

The divisions created with the combination of these separated parts

serve as an *interface* between the eye and the object. An image reveals its being an object adding its own plastic to itself apart from being just a surface. This situation also applies to these works, which consist of the parts of fabrics. As seen in the other example, the waves caused by the material nature of the fabric can further strengthen the sensation created by this plastic value (Fig.2). This work, which is in the same exhibition, consists of colorless intersecting lines of the same size and two rectangular intertwined shapes. On the right side of the black rectangular surface, there is a white-co he outside. As in the f art added.



**Figure 3:** *Uncolored Stories. No:12. 2020. 35x50cm. Applique, Stitch, Quilting-Cotton fabric, thread, fiber. Photograph: Catalogue page 14.*

The latest study of the exhibition *Uncolored Stories* (Fig. 3) consists of the interconnected but non-integrative pieces that are available for reorganization and development. The rectangular fabric in black, white and gray colors is divided into square pieces through the seams on the right and left edges. At the top, a thin white line cuts the piece of black fabric. Ver-

tical, horizontal and diagonal lines have been created on the fabric surface with sewing technique. The use of quilting technique and fiber has added a three-dimensional effect to the works. The repeated linear patterns have been combined by using the right methods and combinations that support the unity, thus creating a minimal work. The characteristics of Minimalism to emphasize an idea by reducing it to a small number of colors, values, forms, lines and textures can clearly be observed in this exhibition. The exhibition *Uncolored Stories*, which consists of a combination of fabric pieces, points to a social memory both in terms of the production process and the feeling it gives. Depending on this, it is possible to say that the production of images of contemporary art winks at a content in a social context thanks to the use of materials.

The most important materials here are the fabrics, fibers and threads. Fiber is a raw material that can be used in textiles with its being long, flexible, strong, hydrophilic and easy to attach (Özkendirci, 2014:18).



**Figure 4:** *MAİ. No:1. 2020. 35x50cm. Applique, Stitch, Patchwork, Quilting-Cotton fabric, thread, fiber. Photograph: Catalogue page 3.*

It is observed that the fiber used in this exhibition has made it easy to draw shapes and patterns on the fabric surface as desired. The combinational use of cotton and satin fabrics has made it possible to create a contrast and contrasting forms. Another exhibition created with the same techniques, materials and artistic expressions is the exhibition *MAİ*. When compared to the exhibition Uncolored Stories, the monochrome surfaces in

this exhibition have been changed by way of using some different colors. In the first example of the exhibition MAİ, blue color has been with the intertwined white and gray lines on the surface of the black fabric in a rectangular shape (Fig.4). Black surfaces form the line element in the basic design with the use of cross stitches. Blue color used in here reflects the symbolic meaning of the local culture. Blue represents the sky in Turkish culture. As it is also seen in this example, the local culture is referred to with a Western understanding of art.
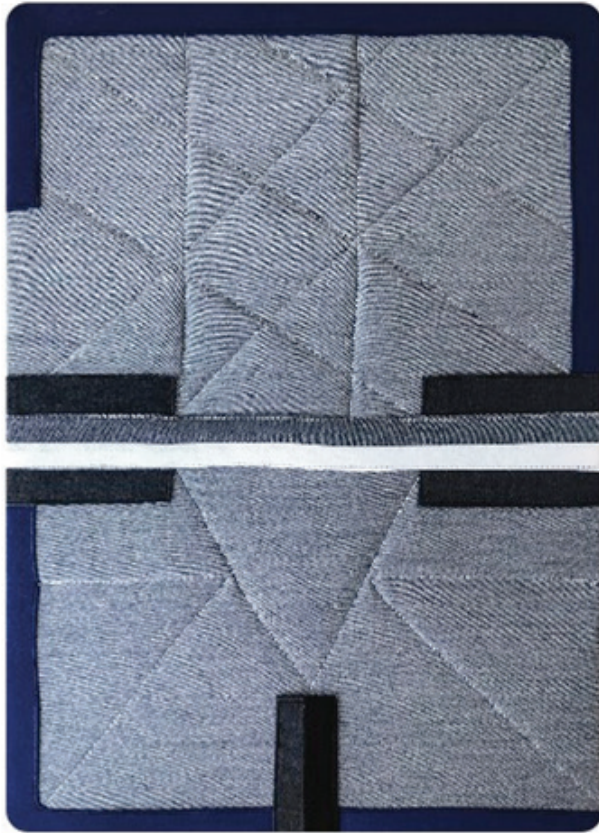


**Figure 5:** *MAİ. No:3. 2020. 35x50cm. Applique, Stitch, Patchwork, Quilting-Cotton fabric, thread, fiber. Photograph: Catalogue page 5.*

These works, which have the same rectangular forms and are in the same sizes, can be recut, re-bended, reshaped, resewn, added new colors, divided into strips or reconverted to their previous state. Fabric surfaces, which make it possible for different design elements to be used, can be a platform to be used as a way of expression and transfer via these production elements. In another example, the gray rectangular surface is divided in half by a line of white and gray. The upper and lower edges are sur-

rounded by a dark blue stripe (Fig.5). In this example, where typical minimalist effects can be seen, both the pieces and the fabrics have been sewn as a whole with a sewing machine. Light and dark hues seem to define the concept of 'contrast'. All arrangements have been made with the use of similar repetitions. Each work feeds another one.

In the last example of the exhibition MAİ, where the sewing methods including a fabric-line relationship are used for surface patterns, blue color covers the entire surface. (Fig 6). White, gray and black stripes divide the entire surface of the fabric. With the advantage of fiber three-dimensionality and quilting technique, the straight lines formed by the seams intersect with each other. Here, the use of different materials instead of a distinctive colorful material and its careful reflection on the works can be seen as a risk to be taken. However, the artist considers this situation as part of the production process.  Although the materials used are industrial, handicraft work can be seen to be used against the designs prepared in an industrial environment as in the minimalist tradition.



**Figure 6:** *MAİ. No:5. 2020. 35x50cm. Applique, Stitch, Patchwork, Quilting-Cotton fabric, thread, fiber. Photograph: Catalogue page 7.*

In parallel with the importance of geometric forms in visual arts, it attaches importance to the phenomenon of matter and color in changing the form into a simple form (Kalay, 2013:4). This exhibition is also close to the minimalist form with its lean and simple surfaces created in a single color. These works, created with materials such as threads, polyesters, fibers, satin fabrics and acrylic threads, aim to use and explore all the features of the space.  In addition, the artist's close relationship with materials and crafts has had an impact on all the works. Both solo exhibitions represent a neutral pleasure that does not care about symbols and tends towards an artless situation. The materials used apart from the traditional ones are those that can be dissolved over time, which emphasizes temporariness and variability. All pieces are in a line form and located on the surface with certain intervals.

## CONCLUSION

In this article, which deals with the reflection of Minimalism movement on textile design through solo exhibitions, the aim is to reveal the strong expression possibilities of textile materials as the new material possibilities become increasingly important in plastic arts. The exhibitions *Uncolored Stories* and *Mai* are based on Minimalism, and they relate to the art and craft in the context of materials, forms and techniques. It is possible to see that the techniques and materials used in textiles take the artist to the aesthetic values through the experimental searches, which makes the textile field open to new ideas. In the examples, it is seen that the narration of Minimalism has been reflected using a single design element such as lines and using few basic materials such as fabrics and threads. Here, the author uses the textiles and materials with his own artistic competence, perspective and interpretation. In this sense, he has turned the crafts into a conceptual work as a means of expression, not for functional or decoration purposes. Since these works do not have a role in meeting daily needs, they can be considered artistic works. Artists or designers can use one or more of their textile crafts and industrial productions together when creating their works or designs. Looking at the examples within the scope of the article, it is possible to see that textile materials and production techniques allow different forms of art production and are integrated into minimalist understanding. The works in the exhibition MAİ have been given a symbolic meaning through the color element, going beyond the dimensions and aesthetic images created on the surface using the textile craft. In addition to the concepts used, the conceptualism that artists or designers want to express has been revealed with the choice of materials and textile crafts reflecting a combination of Turkish culture and Western art.

The diversity in the ways that artists make their productions leads a way to search for different expressions through interdisciplinary interac-

tion and collaboration of artists and craftsmen. Textile art and design can be described as one of these different searches. As a result, the methods used are foreseen to continue this feature of communication language showing a tendency to conceptual art and offering innovative forms of expression through interdisciplinary methods as well as the traditional textile techniques.

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# Chapter 5

**THE EFFECT OF SERVANT LEADERSHIP ON PSYCHOLOGICAL OWNERSHIP, JOB SATISFACTION, AND EMPLOYEE PERFORMANCE**

*Yavuz ÖZDEMİR*

## INTRODUCTION

It is necessary to direct the attitudes and behaviors of the employees in order to gain sustainable competitive advantage and efficiently take advantage of employees who are the most important capital of the businesses (Aslan, 2020c). In business life, there are many organizational variables that guide the attitudes and behaviors of employees. The changing and developing technology can cause transformations in business life as well as in all fields of life. Given the background, a large number of organizational variables need to be harmoniously coordinated in order to achieve a sustainable competitive advantage by achieving the productivity expected from the workforce, which is one of the critical factors of organizational success (Aslan, 2019b).

The performance of employee, which is prominent in order to achieve competitive advantage with the conveniences brought by the developing technology, has a rising importance in terms of organizational productivity. In order to increase the performance of employees, job satisfaction levels must be increased first. In this framework, one of the precursors needed to increase the level of job satisfaction is leadership behaviors (Clay-Warner et al., 2005; Aslan, 2020a;).

With basic human values and morality, which have recently gained importance, the requirement for leaders who can appeal to hearts without the need of pressurizing or authority has increased. For that matter, the servant leadership approach is seen as an important preceding circumstance that concentrates on human values. The studies conducted in the academic field show that classical leadership approaches are inadequate on the subject of turning towards people who are getting worn and whose inner peace is disturbed, taking into account the feelings and thoughts of the employee more, enabling them to reunite with themselves again by increasing their morale and motivation. Accordingly, the need for a servant leadership approach that takes into account people's feelings and mental state, and uses the power it has to meet all kinds of needs of people is gradually increasing (Bakan and Dogan, 2012).

The concepts such as servant leadership, psychological ownership, job satisfaction, employee performance have been firstly outlined by reviewing the literature in this study, and it is clarified whether servant leadership, which is one of the concepts explained in the study, has a direct or indirect effect on other concepts. Finally, a model proposal was presented based on a literature review, and results and recommendations were presented.

## 1.2 THE SERVANT LEADERSHIP CONCEPT

Generally, the words servant and leader are considered as opposite

words, but these two opposing words come together to conceive the concept of servant leadership (Dierendonck and Patterson, 2010).Servant leaders are people who consciously choose to lead and naturally have a sense of service (Cevik and Kozak, 2010).

Servitude is the most basic understanding that stands out in the concept of servant leadership. The concept of servanthood means that the person devotes his/himself to others without expecting something in return, supplies the needs of these people, and living for them. In the concept of servanthood, there is no "individualism." Rather than the concept of "me"; the concepts of "we", "you" and "You" are prevalent (Bakan and Dogan, 2012). A true servant leader is a leader who serves without expectation of any return (Konan et al., 2015).

Servant leaders focus on not only the goodness of the organization, but also serving their followers sincerely. Servant leaders are ones who are more liked by their followers because of dedicating themselves to their followers, and therefore the followers try to do their best (Yalcintas and Eren 2017). It is possible to express that there are the service quality, the extra effort of which followers show, the increase in motivation, the increasing organizational commitment, and the performance that is raised due to all this in the businesses where the servant leadership is dominant (Yildiz, 2016). Servant leaders actually are prominent with their consistent behavior and never making promises that they can't fulfill; they inspire confidence in people, and they don't distort or manipulate information (Baykal, 2018). So far, many studies have been performed about servant leadership and cognitive models have been presented.

The first person to introduce the concept of servant leadership was Robert K. Greenleaf (Greenleaf, 1977). It is a leadership model that occupied the front position with the expression "A leader is a servant" in his article named "The Servant as Leader" and hosts leadership approaches (Findikci, 2009).According to Robert K. Greenleaf, servant leaders serve the feelings of others rather than a sense of "self" and endeavor to provide high motivation .

In addition to serving, Greenleaf (1977) discussed other characteristics that a servant leader must have as follows; these are accountability, listening and understanding, imagination, standing back, acceptance and empathy, intuition, foresight, awareness and perception, persuasion, conceptualization, healing, and building community (Cevik and Kozak, 2010).

In their study, Liden and his colleagues discussed the concept of servant leadership in nine different dimensions. These dimensions are emotional healing, creating value for the community, conceptual skills,

empowering, helping subordinates grow and succeed, putting subordinates first, behaving ethically, establishing good relations, and serving (Liden et al., 2014). In addition to issues such as dealing with the problems of followers and the personal development of employees, Liden associated the moral dimension with servant leadership.

Another study on this subject belongs to Patterson. Patterson presented that servant leadership is a logical extension of transformational leadership theory. He defined servant leadership as a leader who focuses on employees in an organization, puts them first, and emphasized the fundamental components causing this definition (Bakan and Dogan 2012). Servant leaders, by saying human first, consider the interests of their followers more than their own interests and act based on this. Servant leaders also gain their trust through providing a vision to their followers and thus influence their followers in (Stone, Russell, and Patterson, 2004). These are basic traits that fundamentally distinguish servant leaders from other leaders (Yalcintas and Eren 2017).Patterson mentioned the personal characteristics, attitudes, and behaviors of servant leaders in his model, which he describes servant leadership. According to him, a servant leader is someone who has agape love, is humble, altruistic, visionary, reassuring, developing and serving others (Bakan and Dogan 2012).
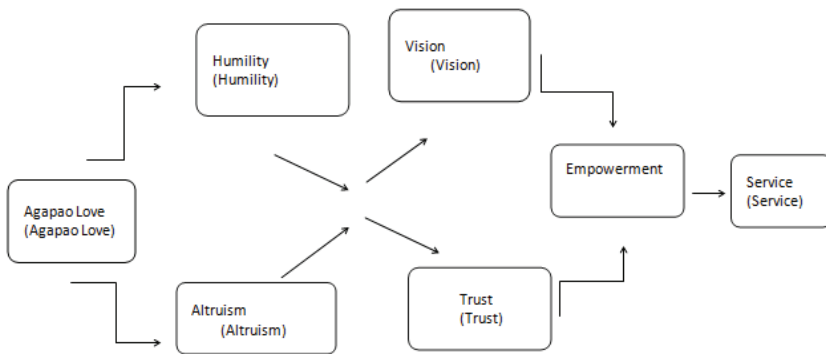


The servant leadership dimensions in Patterson's model, illustrated in the figure given above, can be explained as follows (Waddel, 2006):

**Having Agape Love:** A servant leader is aware that each follower is an individual who has needs, willing, and desires. A servant leader treats their employees with love, and focuses on their basic needs, takes into account their abilities, and, while doing these, focuses on the benefit of the organization.

**Displaying Humility:** A servant leader is humble and does not consider themselves superior to their employees. This characteristics makes the servant leader and the employees to be closer.

**Being Altruistic:** A servant leader is a person who devotes him/herself to the organization and the employees. Therefore, the servant leader cannot be expected to be in the selfish nature.

**Having Vision:** A servant leader is a foresight person. The servant leader also inspires their followers and the organization in this direction.

**Trust:** One of the main characteristics of a servant leader is to be righteous and to provide confidence through encouraging employees.

**Empowering Employees:** A servant leader gives responsibilities to the followers, enables them to move forward and obtains some authority, and so gets the control mechanism into be less controlled and more functional.

**Serving:** The most basic feature of a servant leader is that he/she serves with thinking of his/her employees and organization rather than him/herself.

Servant leaders focus on not only the goodness of the organization, but also serving their followers sincerely. Servant leaders are ones who are more liked by their followers because of dedicating themselves to their followers, and therefore the followers try to do their best (Yalcintas and Eren 2017). At the same time, all members of the organization have equal rights in vision, respect, and knowledge in Servant leadership. In other words, the servant leader is the one who treats their followers equally and ensures equality within the organization (Cevik and Kozak 2010). Servant leaders are prominent with their consistent behavior and never making promises that they can't fulfill; they inspire confidence in their followers, and they don't distort or manipulate information. Except of Greenleaf, servant leadership has been investigated in details by many scientists such as Spears (1995), Laub (1999), Russellve Stone (2002), Patterson (2003), Dennis and Bocernea (2005), Barbuto and Wheeler(2006), and Van Dierendonck (2011). The sub-dimensions of servant leadership that are considered as valid by different researchers as valid are summarized in Table 1 (Baykal et al., 2018):

| Table 1: Sub-dimensions of servant leadership | | | | | | |
|---|---|---|---|---|---|---|
| Laub (1999) | Russel & Stone (2002) | Patterson (2003) | Dennis& Bocarnea (2005) | **Barbuto& Wheeler (2006)** | **Sendjaya, Sarros & Santora (2008)** | **Van Dierendonck (2011)** |
| Adding value to followers | Vision | Social and ethical love | Empowerment | Altruism | Volunteer commitment | Empowerment |
| Followers developing | Honesty | Humility | Trust | Emotional Improvement | Transformational effect | Humility |
| Community create | Integrity | Altruism | Humility | By persuading Mapping | Authentic personality | Preferring followers |
| Honesty | Trust | Vision | Love | Wisdom | Responsible ethics | Being Authenticity |
| Leadership Providing | Service | Trust | Vision | Organizational Servitude | Voluntary service | Forgiveness |
| Sharing leadership | Modelling | Empowerment | | | Transcendent Morale | Courage |
| | Becoming Pioneer | Service | | | | Servitude |
| | Appreciating others | | | | | |
| | Empowerment | | | | | |

Lord and Brown (2004), argue that their followers will contribute significantly to the formation of their sense of self within the organization because of being kind of the representatives of the organization of which leaders are a part and have the power to reflect the valuations and norms of the organization. In brief, in some ways, leaders have the power to reveal the important aspects of an individual's egoity and guide them for common purposes(Baykal et al., 2018).

Besides all these positive features of servant leadership, it also contains some disadvantages. Servant leadership generally fails in goal-oriented systems and causes some negative circumstances in hierarchical order in organizations which a hierarchical order exists. The humility of the leader may be perceived as a weakness or some individuals in the organization may be hesitant to respond to the servant approach or they may tend to refuse this situation (Calisal and Yucel, 2019).

## 1.3 PSYCHOLOGICAL OWNERSHIP

For the first time, psychological ownership was defined by Pierce et al., (1991) in the models that they developed in relation with employees' ownership of property. In this model, psychological ownership has been shown to be a growing condition developing from formal ownership.

After this study, Pierce et al., (2001) revealed a theory which explains psychological ownership and indicated that it is a different situation from legal ownership of the organization (Otken, 2015).

They handled Pierce et al. (1991)'s ownership at two different levels as ownership at the legal level and ownership at the psychological level. While legal ownership represents the cognitive aspect of ownership, psychological ownership represents the emotional aspect. Although these two levels are different concepts, it is possible to say that the cognitive ownership phenomenon triggers the psychology of ownership (Ucar, 2017).

Pierce et al., (2003) defined psychological ownership as a concept in which the individuals feel as though the target object is "theirs". Psychological ownership towards objects helps people to create and maintain the concept of their ego, and thus make items to be acceptable as personal belongings accepted (Fritze, et al., 2020).Pierce et al. (2001) refer this mental state, that is, the feeling of ownership, as the feelings that exist to achieve a certain goal without any legal requirement.

The concept of psychological ownership, which is a psychological ownership situation that an individual feels towards their job or organization, is a phenomenon in which individuals develop a feeling of possession over target. In short, psychological ownership is the perception of the existence that individuals desire as a result of their ownership, and in this sense, psychological ownership reflects the thoughts and beliefs of individuals (Aslan, 2020).

## 1.4 JOB SATISFACTION

The concept of job satisfaction, which first appeared in the studies conducted at the beginning of the 20th century, has started to be important every day. In addition to that, the values that employees adhere in their job were revealed by the researches of Hawthorne conducted in the 1930s. The importance of job satisfaction is based on various reasons (productivity with job satisfaction, estrangement, quitting, conflicts, occupational accidents, etc.) because it affects not only employees but also businesses (Kılıç, 2012).

The concept of satisfaction is defined as ensuring of the heart satisfaction and obtaining of something desired (Halsey, 1979).Many definitions have been made about the concept of job satisfaction, which has an important place in Human Resource Management and the discipline of organizational behavior (Sahin, 2009).

Job satisfaction is defined as the perception of satisfaction that emerges as a natural reflection of the harmony between working life or conditions

in the workplace and the positive affective response to one's job (Iscan and Sayin, 2010). In other words, job satisfaction is the positive attitudes that employees have about their work as long as they do their job (Cormick and Ilgen, 1987).

According to Lawler (1973), job satisfaction determined the relation between the employee's expectations from the job and what the job actually offers. That means, job satisfaction emerges from the difference between the thought of what a person deserves and what they obtain. If an employee does not receive the things that they believe in they deserve, job dissatisfaction occurs (Imamoglu et al., 2004).

As a basis, the factors affecting job satisfaction or dissatisfaction can be stated in three categories (Tekin, 2019):

**Organizational Factors:**It covers factors such as promotion opportunity, the nature of the job, policies, working conditions, and the image of organization.

**Individual Factors:** These are factors that involve the needs and desires of individuals.

**Group Factors:** These are the factors that constitute the manners of colleagues and supervisors, which form both the point of exit and the solution point of both factors.

Farmer and Richman (1975) indicate that the personal needs, skills, hopes, achievement, self-awareness, self-respect, and the level of the person's general thinking become effective in the personal situation.

In fact, job satisfaction is more of an emotional concept rather than a mental concept. Because it is a personal issue, the most important thing that a manager will do is to serve to their employees to gain an optimum level of satisfaction. In the studies conducted about job satisfaction, the concept is generally considered in terms of organizational behavior development and as a factor that provides an growing productivity (Iscan and Timuroglu, 2007).

Briefly, while the factors such as the personal characteristics, mental state, and level of thought of the employee may affect the concept of job satisfaction, concepts such as workplace working conditions, wages, promotion, prestige, and organizational structure may also influence it. As a result, in order to achieve a sustainable competitive advantage for businesses, the job satisfaction levels of the employees must be with high rates (Aslan, 2020).

## 1.5 EMPLOYEE PERFORMANCE

Saruhan and Yildiz (2012) defined the performance as the productive and at the same time effective execution of a job or task. While Kasnakli (2002) defines performance as the degree of realization of the purpose, Akal (1992) describes it as the level of execution of a task in line with the determined possibilities or the behavior of the employee (Erdal, 2020).

In other words, the concept of the performance, which is a concept directly related to achieving purposes, indicates the rate of execution of the task and reaching the defined goals that meets the predetermined measurements in accordance with the job definition (Yildirim, 2021). Employee performance, which is defined as the employee's fulfilling the work that the employee carries out in accordance with their job description within acceptable limits, can be defined as the ability to perform the tasks assigned to the employee in the organizational context (Yildiz et al., 2017).

One of the conditions that enable organizations to be successful, especially in the intense competitive environment in which they operate in recent years, to survive and achieve their purposes is the performance that employees exhibit. The performance of employees in business life plays a key role to obtain the power of competitiveness (Erdal, 2020).To sustain in the ever changing market environment, companies must develop the unique dynamic features that empower their competitive advantage. For this reason, firms focus more on employee performance (Diamantidis et al.,2019).Sonnentag and Freese (2002) emphasized the importance of employee performance and emphasized that organizations need the high performing individuals to achieve their goals, to offer the products and services in which they specialize, and ultimately to gain competitive advantage.

According to Fischer (2005), in individualistic societies, people expect to be rewarded because of their individual contributions. Individual performance appraisals are common in such societies, and individuals are rewarded in line with their individual contributions.

While achieving the assigned tasks and exhibits a performance at a high level can be a source of satisfaction by the employees, low performance and failure to reach the purposes can be perceived as dissatisfaction and even personal failure (Sonnentag and Freese, 2002).

## 1.6 THE IMPACT OF SERVANT LEADERSHIP ON PSYCHOLOGICAL OWNERSHIP AND JOB SATISFACTION AND EMPLOYEE PERFORMANCE

In today's highly competitive environment, thanks to the characteristic of the leader who influences the employees in the achievement of the

organizational purposes, every movement, attitude, and behavior have a great impact on the employees (Begenirbas and Rukiye, 2020).

The servant leadership style, which has not completed its theoretical development (Liden et al., 2014), is a leadership model that aims to build trust among employees and tries to infuse into the followers the belief that their leaders really care about their own well-being (Ozlem, 2019).A servant leader is someone who constantly tries to solve the problems of the employees and encourages the employees for their personal growth (Sherman, 2012).Servant leadership is a style in which a manager offers physical help to the employees to execute their job better (Ece, 2019).McCann et al. (2014) define servant leadership as a new leadership model that assumes first and foremost a commitment to serving others (Hamidi and Lukito, 2019).

The changes in organizational and social areas have also caused changes in the expectations of employees in the workplace. Employees want to be a part of their workplace and are able to speak about the decisions that affect them. Accordingly, extrinsic rewards are not enough to satisfy the employees, new relational approaches between the leader and the employee are needed (Sutbas and Atilla, 2020).

In the literature review, it is seen that servant leadership has a very close relationship with the concepts such as employee performance, psychological ownership, and job satisfaction. In the businesses where the servant leadership is dominant, it is possible to mention that the service quality, the extra effort that the followers show, the motivational growth, the increasing organizational commitment, and due to all these, the performance has increased  (Yildiz., 2016).Simamora and Sudiarditha (2019) presented in their study that servant leadership has a direct effect towards employee performance and psychological ownership, and at the same time, psychological ownership also affects employee performance.

*P1: Servant leadership behaviors influence positively employee job satisfaction.*

Positive emotions such as love, ownership, and trust that employees feel towards their organizations are a significant factor that increases job satisfaction. In this context, servant leaders who always elevates the interests of their employees make it easier for employees to gain job satisfaction with the motivation and the feeling of confidence they create on their employees (Yalcintas and Eren 2017). In other words, the more the needs of the employees are met, the greater the satisfaction of the employees is, that is, there is a direct proportion between meeting the needs of the employees and the feeling of employee satisfaction (Wibowo and Bhinekawati, 2021)

Begenirbas and Yalcin (2020) revealed that servant leadership has a meaningful effect on job satisfaction and also has the same effect on employee performance, which is a natural result of job satisfaction, in their study. Also, it is revealed in the study that employees with higher levels of education are less influenced by the leader because they tend to have little need of the leaders. In the study, it is clearly stated in brief that servant leadership has a partial positive effect on educated employees, and it has a highly positive effect on job satisfaction and performance of employees with lower education levels.

Aslan (2020b) in his study titled "The Mediator Role of Psychological Ownership in the Effect of Servant Leadership on Job Satisfaction" stated that the feeling of psychological ownership leads to the development of the sense of sharing towards the job and the organization that the employees develop, and indicated that this situation positively affects the job satisfaction levels of the employees. According to Aslan (2020b), servant leaders' guidance for the development of their followers and having altruistic acts affect the respect and loyalty of the followers, and as a natural result of this, the feelings and behaviors of the followers are also influenced by the leader. Therefore, the positive effect of servant leaders on their followers will increase the psychological ownership of the followers and will motivate them to protect their job or organization, and this psychological ownership created will positively influence job satisfaction.

*P2: Servant leadership behaviors have a positive effect on the performance of employee.*

Considering that leadership behavior is an important factor that directly affects the performance of employees (Mengmeng, 2019, Gelmez and Urturk, 2019), we can express that servant leadership behavior has an important effect on the performance of the employees. The satisfaction which the servant leadership model reveals in the employees positively affects the employee performance (Neubert et al., 2016). There are many studies in the literature that show servant leadership affecting employee performance and contributing positively (Ozer, 2019).In the studies conducted by Avolio and Bass (1995), Liden et al., (2014), Chouldhary, Akhtar, and Zaheer (2013), it was revealed that there is a positive relationship between the perception of servant leadership and the performance of the employees (Karacaoglu and Satir, 2019).

Servant leadership, which focuses on employees and aims to make employees feel safer and happier, is closely related to employee performance. The servant leader tries to ensure their employees to get used to the work by dealing with the employees' all kinds of problems. Servant

leader greatly affects employee performance with the effect it creates (Setyaningrum and Pawar, 2020).

Baykal et al. (2018) obtained empirical evidences in their empirical study for that servant leadership has positive effects on the empowerment and gratitude felt by followers, and for that these emotions also influence innovativeness and performance. The study revealed that the servant leadership style is an important and positive leadership style that is conceptually and empirically related to performance in at least two ways.

In the study conducted by Cinnioglu (2019) for the aim of determining the effect of the servant leadership behavior perceived by employees in the food and beverage business from their managers on the job performance of the employees and the level of organizational identification they have; it has been revealed that there is a link between having tendency to the servant-leadership by the managers and the performance of the employees. In this conducted study, it was presented that the followers of the managers who are closely interested in their employees and try to solve their problems without ignoring them, that is, have the servant leader characteristic have high performance.

Also, in many studies such as Karacaoglu and Satir (2019), Laschinger (2012), Liden et al. (2014) with Chouldhary, Akhtar, and Zaheer (2013), it was shown that servant leadership causes a positive effect on job performance. In the light of all this information, it is possible to conclude that servant leadership affects employee performance in an affirmative way.

*P3: Servant leadership behaviors have an affirmative effect on a sense of psychological ownership.*

The main goals of servant leaders are to meet the needs of their followers, to keep their followers' psychological well-being above all else, to contribute to the personal development and improvement of employees (Gunaydın et al., 2016). In this direction, it is a circumstance which servant leaders desire employees to be psychologically comfortable, to have an ownership towards the job they execute and the organization.

The servant leaders creating a trust environment, showing care, and attention towards their followers, behaving by putting themselves in the place of their followers affect the psychological ownership of the employees. In the same line, leadership behaviors including the empowering, trust-creating and ethical exhibited by servant leaders will, also, increase the psychological ownership of the employees (Aslan, 2020b).

Yildiz ve Yildiz (2015) stated in their study that in organizational environments where servant leadership is dominant, servant leadership plays a decisive role in the sense of psychological ownership. According

to Yildiz, asking employees to develop positive behaviors causes psychological ownership as a must.

*P4: Mediator role of psychological ownership in the effect of Servant Leadership on Employee performance and job satisfaction; a conceptual model proposal:*
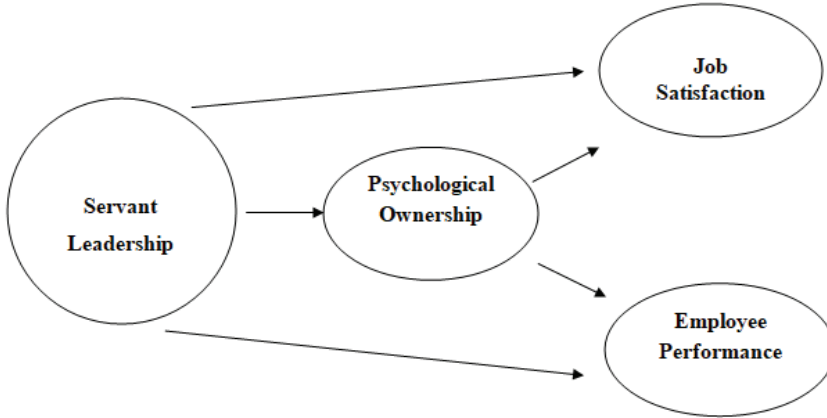


According to the literature review, it is possible to present that servant leadership has a positive effect on job satisfaction and employee performance. In the same direction, we can express that psychological ownership plays a mediating role in the effect of servant leadership on job satisfaction and employee performance.

## CONCLUSION

Nowadays, the increasing competitive environment entails companies to increase their performance. For this reason, companies have to make continuous innovations in order to extend their life span and grab the success in their sector, and they feel the need of being sensitive to their environment.

Companies have to consider many issues such as productivity, innovation, employee performance and satisfaction, technology, organizational structure, and functioning in order to achieve the aims and objectives of companies. The leader, who serves as a bridge between the employees and the organization, plays a crucial role in establishing an effective and strong organizational structure and reaching the determined goals. In this regard, leader and what types of leadership are and what kind of effect leadership types have on both the organizational structure and the employees are among the major subjects that need to be carefully studied.

Servant leadership, which is one of the vital leadership types, is the type of leader who considers about their employees more than themselves,

and, also, deals with problems in the work life or outside of their work life. The servant leader is the mentor person who makes their employees to feel happy, to improve their selves, and to be promoted. The servant leader, who takes a close interest in their followers and deals with all kinds of problems of their followers, gains the love and appreciation of their employees because of these behaviors.

The studies that have been carried out so far have also revealed that the servant leadership model has a positive effect on its employees, and this situation affects the job satisfaction, performance and sense of ownership of the employees in an affirmative way. It is a well-known fact that the positive attitude towards the works of the followers of servant leaders and their satisfaction in the high level will cause high performance at the same time (Begenirbas and Yalcin, 2020). The servant leader, acting with the sense of serving, attracts the attention and appreciation of their employees and then will be imitated by their followers. Therefore, employees will move forward with the sense of serving, they will own more of the work they execute, they are satisfied with the work they do, too. As a natural consequence of this (Aslan, 2020), raises in their performance significantly occur.

Although there are many empirical studies that explain servant leadership and its relationship to the concepts mentioned in the study, they are not sufficient with regard to completing the academic development of the subject. It is useful to conduct more empirical studies in order to measure the effects of servant leadership on job satisfaction and employee performance and to better understand of the mediating role of psychological ownership among these concepts.

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# Chapter 6

## THE CONTENT ANALYSIS OF GRADUATE THESES ON FINTECH: TURKEY CASE

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## 1. INTRODUCTION

Financial technology (Fintech) is a new and rapid developing part of financial industry which use technology to advance financial activities (Schueffel, 2016, 33). Fintech can also be defined as any innovative ideas that improve financial service practices by offering technological solutions for diverse business circumstances. The historical process of the Fintech concept can be given as follows (Arner et al., 2016):

• Fintech 1.0: 1866 - 1967, A new term,

• Fintech 2.0: 1967 - 2008, Digitization of traditional financial services,

• Fintech 3.0: 2008 - ……, Present.

Fintech has a focused importance that uses technological innovations which can be challengers to the traditional financial institutions. The developments in financial services started to cover new needs of consumers and businesses, investors, and regulators. The possible obligations of Fintech companies can be listed as fallows. Consumers will have more alternative, services, and different pricing. Small-and medium-sized businesses will have right to use to new credit options. Banks will change their operations to be productive and offer lower transaction costs. The depth of financial system will increase with diversity and financial services will be more individual oriented (Hill, 2018, 4). Fintech is a cross-disciplinary subject as given in Figure 1 (Leong and Sung, 2018, 75).
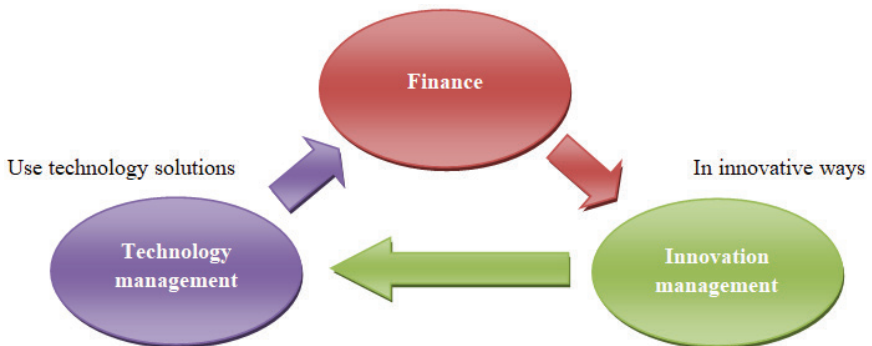


*Figure 1.* Fintech's relation with other disciplines

Financial companies move ahead in electronic finance and mobile technology which accelerated the innovation of Fintech after 2008. This improvement in financial industry was shaped by integration in electronic finance innovation, internet, social media, artificial intelligence, and big data. Start-ups have an important place in the fintech sector. Studies on Fintech have categorized start-ups in different ways. Although

classifications and fintech ecosystem maps differ, the groupings are generally grouped under certain main headings (Thakor, 2020, 3; Alt et al., 2018, 238; Saxonova and Kuzmina-Merlino, 2017, 965-967). Haddad and Hornuf (2019) categorized Fintechs into 9 different start-up types: payments, asset management, insurance (insurtech), loyalty programs, risk management, clearing, regulation technologies (regtech), and other business activities.

The ecosystem of Fintech is given in Figure 2 to show Fintech innovation as a result of competition and collaboration (Lee and Shin, 2018, 36-37).

Payment, Wealth Management, Lending, Crowdfunding, Capital Market, and Insurances Fintech companies

Big Data Analytics, Cloud Computing, Cryptocurrency, and Social Media Developers

Financial Regulators and Legislature

Fintech Startups

Tecnology Developers

Government

Fintech Ecosystem

Individuals and Organizations

Traditional Banks, Insurance Companies, Stock Brokerage Firms and Venture Capitalists

Financial Customers

Traditional Financial Institutions

*Figure 2.* The elements of fintech ecosystem

Financial innovation challenges many traditional financial institutions to build up their business models in a new way (Davis, Maddock and Foo, 2017, 33-34). On the other side, start-ups entered the financial services industry to take advantage of this new opportunity (Gimpel, Rau and Röglinger, 2018, 246).

The first of these elements is Fintech start-ups. Fintech startups differ according to their fields of activity. For example, Fintech startups operating in areas such as asset management, lending, crowdfunding, payment management and insurance are the first element of the ecosystem. The second element is explained as technology developers. Technology developers are developing new technologies used by Fintech startups. For example, new technologies such as blockchain, cloud computing, big data analytics, artificial intelligence, virtual reality, cryptocurrency and mobile payment. The third element is banking supervisory and regulatory boards, independent supervisory companies, and governments with legislative bodies. The fourth element in the Fintech ecosystem is real and legal customers using financial services. The last element is the financial institutions that provide financial services. For example, traditional banks,

investment banks, insurance companies, stock brokers and angel investors. These factors contribute to innovation within the country, stimulate the economy, facilitate cooperation and competition in the banking and finance sector, and ultimately benefit consumers using financial services (Lee, 2016: 58). Fintech business models can be divided into six: insurance, payment, lending, wealth management, capital markets, and crowdfunding (Suryono et al., 2019, 205).

The aim of this study is to analyze the content of graduate theses written in the field of financial technology in Turkey. In the introduction part of the study, the concept of financial technology, related disciplines with financial technology, Fintech ecosystem and the purpose of the study are given. In the second part, the scope and methodology of the study are explained. In the third part, the findings related to the theses that examined are presented and suggestions are included in the conclusion part.

## 2. SCOPE AND METHODOLOGY

The scope of this study includes the graduate theses written in universities related to financial technology in Turkey. The search for graduate theses was made on the thesis search page of the Higher Education Institution of Turkey by July, 2021. In the thesis search page of Higher Education Institution, the words financial technology and fintech were searched as keywords, and 27 graduate theses written in public and private universities were identified. Of these financial technology related graduate theses, 3 are doctoral theses and 24 are master's theses.

Content analysis method was used in this research based on document analysis. Content analysis is accepted as a method that enables the classification and evaluation of verbal, written and other materials in an objective and systematic way, and its purpose is to make inferences about the content through the features of open communication. The variables and analyzes revealed can provide comprehensive information about the trends in the research subject (Krippendorff, 2004; Lac, 2016). One of the most distinctive features of content analysis is that it can contribute to the production of quantitative results by digitizing the findings, and that the research results can also be presented in the form of qualitative descriptions. For this reason, qualitative and quantitative results are complementary elements in content analysis. In other words, this method is suitable for both qualitative and quantitative research, and the contents can be evaluated with both inductive and deductive reasoning (Bengtsson, 2016). In this study, the distribution of graduate theses according to universities, years, types, language, institutes, departments, supervisor's academic degree, aims, scopes, sample size and research methods are given in the content analysis.

### 3. FINDINGS

The distribution of graduate theses related to financial technology by universities is given in Table 1. 7 of 27 graduate theses were made at Bahçeşehir University, and also each 3 graduate theses in Boğaziçi, İstanbul and Marmara University and 2 graduate theses in Orta Doğu Teknik University. 11 of the 27 graduate theses were written in private universities and 16 of graduate theses were written in public universities. The distribution of theses by universities is given in Table 1.

***Table 1.*** *The distribution of theses by universities*

| University | Public/Private | Number of Thesis |
|---|---|---|
| Bahçeşehir University | Private | 7 |
| Boğaziçi University | Public | 3 |
| İstanbul University | Public | 3 |
| Marmara University | Public | 3 |
| Orta Doğu Teknik University | Public | 2 |
| Çankaya University | Private | 1 |
| Galatasaray University | Public | 1 |
| Gazi University | Public | 1 |
| Gümüşhane University | Public | 1 |
| Haliç University | Private | 1 |
| İstanbul Teknik University | Public | 1 |
| İstanbul Ticaret University | Private | 1 |
| Mersin University | Public | 1 |
| Yeditepe University | Private | 1 |
| Total | | 27 |

In the graduate thesis search, 27 theses on financial technology were written between 2017 and 2021 (as of July 2021). There are 2 graduate theses as of July 2021, 8 graduate theses in 2020, 11 graduate theses in 2019, 4 graduate theses in 2018 and 2 graduate theses in 2017. The distribution of theses by years is given in Table 2.

***Table 2.*** *The distribution of theses by years*

| Year | Number of Thesis |
|---|---|
| 2021 | 2 |
| 2020 | 8 |
| 2019 | 11 |
| 2018 | 4 |
| 2017 | 2 |

Of the 27 theses on financial technology, 3 of graduate theses are doctorate and 24 of graduate theses are master's theses. The language of doctorate theses is Turkish. The language of 13 of the master's theses is Turkish and the language of 11 of master's theses is English. The distribution of theses according to their type and language is given in Table 3.

*Table 3. The distribution of theses according to types and languages*

| Thesis Type | Thesis Language | |
|---|---|---|
| | Turkish | English |
| Doctorate | 3 | 0 |
| Master | 13 | 11 |
| Total | 16 | 11 |

When 27 graduate theses on financial technology were examined, 12 of them were made in the department of social sciences and business administration, and 4 of them were made in the department of management information systems of the institute of social sciences. 24 of the graduate theses were written in the institute of social sciences. Out of 3 doctoral theses, 2 were written in business administration and 1 in banking department. 3 of the master's theses are related to the field of engineering. The distribution of theses by institute and departments is given in Table 4.

*Table 4. The distribution of theses by institute and department*

| Institute | Department | Number of Thesis |
|---|---|---|
| Social Sciences | Business Administration | 12 |
| Social Sciences | Management Information Systems | 4 |
| Social Sciences | International Trade | 1 |
| Social Sciences | Numerical Methods | 1 |
| Social Sciences | Science and Technology Policy Studies | 1 |
| Social Sciences | Management | 1 |
| Social Sciences | Private Law | 1 |
| Social Sciences | Money, Capital Markets and Financial Institutions | 1 |
| Social Sciences | Entrepreneurship and Innovation | 1 |
| Natural and Applied Sciences | Engineering Management | 1 |
| Natural and Applied Sciences | City and Regional Planning | 1 |
| Graduate Studies | Computer Engineering | 1 |
| Banking and Insurance | Banking | 1 |

The supervisor's academic degree of 10 of the 27 graduate theses on financial technology are professors, 9 of them associate professors, 6 of them assistant professors and 2 of them are Ph.D.. The supervisors which have Ph.D. academic degree are in private university. There is a second supervisor in 1 of the master's theses. The distribution of graduate theses according to their supervisor's academic degree is given in Table 5.

**Table 5.** *The distribution of theses according to supervisor's academic degree*

| Supervisor's Academic Degree | Number |
|---|---|
| Professor | 10 |
| Associate Professor | 9 |
| Assistant Professor | 6 |
| Ph.D. | 2 |

The distribution of 27 graduate theses written between 2017 and 2021 on financial technology according to their aims is given in Table 6.

**Table 6.** *The distribution of theses between 2017 and 2021 according to purposes*

| Year | Purpose |
|---|---|
| 2021 | To investigate consumer perception of financial technologies in Turkey and Azerbaijan according to demographic factors such as education level, income level, age and gender |
| 2021 | To determine the factors that play a role in the development of the fintech sector in Turkey |
| 2020 | To raise awareness about the developments in the financial services sector and to determine the outputs of these developments for the traditional banking system |
| 2020 | To identify critical success factors for the implementation of Private (Permissioned) Blockchain Networks in the field of Financial Technology |
| 2020 | To measure the attitudes towards mobile money use in Turkey |
| 2020 | To determine the factors affecting the use of fintech in Malatya Province in Turkey |
| 2020 | To measuring and examine the efficiency performance of fintech companies |
| 2020 | To reveal the situation of the Turkish Banking Sector against fintechs and the Turkish fintech Sector against banks |
| 2020 | To examine the potential effects of the financial services industry on the use of blockchain elements exemplified by the Malta and Turkey experiences |
| 2020 | To understand the effect of digitalization and the digitalization based changes during Covid-19 pandemic on Turkish Banking Sector (TBS) |
| 2019 | To evaluate the approach of customers using the mobile contactless card payment product through electronic service quality |

| 2019 | To investigate the impact of financial literacy levels of users on fintech usage intention while using a combined benefit and risk framework. |
| 2019 | To identify the interest areas of Twitter users who tweeted about cryptocurrencies |
| 2019 | To explore how reputation and application quality affect trust formation and secondly, how the trust dimensions impact willingness to depend on the neobank and perceived risk |
| 2019 | To analyze the changes in the markets and legislation and the reasons that led to this change, analyzing the change in financial markets with its positive and negative aspects, and gathering the effects of the fintech movement on banking law and the new institutions that fintech is an intermediary in, under a single roof. |
| 2019 | To investigate the economic and technological determinants of fintech startups emerging in the global financial technology market. |
| 2019 | To make inferences about the future by comparing the financial technology sectors of the two countries (Turkey and Russia) |
| 2019 | To examine the blockchain infrastructure, its core components, how it is used for financial technologies, existing platforms and applications, challenges and security in blockchain applications |
| 2019 | To examine the types of information that constitute innovations and the types of proximity that are effective in transferring information in order to contribute to the production of more accurate innovation policies on Istanbul FinTech-Banking companies in the future. |
| 2019 | To analyze whether the use of mobile banking applications has an impact on the financial performance in the banking sector, with the data of the Banks Association of Turkey |
| 2019 | To examine the factors that affect the emergence of fintech entrepreneurship density and how these factors are affecting it |
| 2018 | To review fintech sector based on various aspects in Turkey and Poland, and to provide recommendations for Turkey Financial Technologies sector. |
| 2018 | To understand the new FinTech market conditions in Turkey. |
| 2018 | To examine the customer's readiness for digital banking services |
| 2018 | To evaluate the effects and application areas of Blockchain technology in the financial services sector |
| 2017 | To evaluate how financial technology companies will affect the banking sector in Turkey |
| 2017 | To investigate and identify the present and future effects of digitalization and financial technologies which are improved by new generation technologies. |

Word cloud is given for visual analysis of the frequent usage of specific words. The word cloud prepared for the purposes of graduate theses from Table 6 is given in Figure 3.

**Figure 3.** The word cloud of Fintech related graduate theses' purpose

The word cloud prepared for the frequent usage of specific words in scopes of graduate theses from Table 8 is given in Figure 4.

*Figure 4. The word cloud of Fintech related graduate theses' scope*

The distribution of theses written between 2017 and 2021 on financial technology according to their scope is given in Table 7.

*Table 7. The distribution of theses between 2017 and 2021 according to scopes*

| Year | Scope |
|------|-------|
| 2021 | Financial service users in Turkey and Azerbaijan |
| 2021 | Experts from Fintech startups |
| 2020 | Fintech related books, earlier published papers, articles, reports, and websites |
| 2020 | Experts on Blockchain technology |
| 2020 | University students and individuals in shopping malls in Ankara Province in Turkey |
| 2020 | Individuals who use financial technology applications and have knowledge and tend to use financial technology applications, including private companies, public employees, retired individuals and non-working individuals in the province of Malatya in Turkey. |

| 2020 | Companies in KBW Nasdaq Financial Technology Index-KFTX |
|---|---|
| 2020 | Top Employees of the Turkish Banking Sector and Managers of Fintech Companies |
| 2020 | Fintech companies in Turkey and Malta |
| 2020 | Turkish Banks |
| 2019 | E-bank customers who use internet banking, mobile banking, mobile contactless card payment in Turkey |
| 2019 | Online survey with purposive sampling |
| 2019 | Twitter users who tweeted about cryptocurrencies |
| 2019 | People live in the UK or Ireland who engaged with famous neobank applications accounts in Twitter and LinkedIn |
| 2019 | Fintech applications and relevant international banking legislation, positive regulations in Turkey, primarily EU legislation; secondly, other legislative approaches and current legislations that work intensively on the relevant legal and practical regulations. |
| 2019 | Countries |
| 2019 | Fintech Sectors of Turkey and Russia |
| 2019 | Designing model for identity management |
| 2019 | Fintech companies operating in the field of banking and located in İstanbul |
| 2019 | Mobile banking data of deposit banks in Turkey from the first quarter of 2011 to the first quarter of 2019 and return on assets and return on equity values of the banking sector |
| 2019 | Fintech startup companies in 115 countries |
| 2018 | Fintech sector in Poland and Turkey with Deloitte Global Hub scoring results and Global Financial Center, Doing Business and Global Innovation Index |
| 2018 | SME owners and financial sector managers. |
| 2018 | Individuals in İstanbul |
| 2018 | Global Finance Applications of Blockchain |
| 2017 | Pioneering organizations, startups and professionals working on financial technologies |
| 2017 | Countries' banking operations. The Bank Association of Turkey and Bank for International Settlements as banks' yearly financial reports. |

The distribution of theses written between 2017 and 2021 on financial technology by their sample size is given in Table 8.

**Table 8.** *The distribution of theses between 2017 and 2021 by sample size*

| Year | Total Sample Size | Minimum | Maximum |
|---|---|---|---|
| 2021 | 409 | 12 | 397 |
| 2020 | 1.014 | 4 | 600 |
| 2019 | 27.835 | 11 | 23.610 |
| 2018 | 415 | 2 | 300 |
| 2017 | 11 | 11 | 11 |
| Total | 29.684 | | |

The total sample size in the research of the graduate theses written in 2017 and 2021 is 29.684.

The distribution of theses written between 2017 and 2021 on financial technology by research methodology is given in Table 9.

***Table 9.*** *The distribution of theses between 2017 and 2021 by research methodology*

| Year | Research Methodology |
|------|----------------------|
| 2021 | Qualitative Research ,Survey, Frequency and Factor Analysis |
| 2021 | Qualitative Research, Semi-Structured Interview, SWOT |
| 2020 | Qualitative Research, SWOT |
| 2020 | Qualitative Research, Blockchain Maturity Model, Multi-Criteria Decision Making |
| 2020 | Qualitative Research, Survey, ANOVA, MANOVA |
| 2020 | Qualitative Research, Survey, Structural Equation Modeling |
| 2020 | Data Envelope Analysis, 2 Stage Input-Output Model |
| 2020 | Qualitative Research, Survey, A'WOT |
| 2020 | Qualitative Research ,Survey, SWOT |
| 2020 | Qualitative Research, Structured Interview |
| 2019 | Qualitative Research, E-S Qual Scale-ANOVA |
| 2019 | Qualitative Research, Regression |
| 2019 | Tweet API and LDA |
| 2019 | Qualitative Research ,Partial Least Squares (PLS), Confirmatory Factor Analysis (CFA) |
| 2019 | Qualitative Research, Comparative Analysis |
| 2019 | Regression |
| 2019 | Qualitative Research, Comparative Analysis |
| 2019 | Modeling |
| 2019 | Exploratory Research-Qualitative Analysis |
| 2019 | Qualitative Research, ARDL (Autoregresive Distributed Lag) |
| 2019 | Qualitative Research, Multivariate Panel Regression |
| 2018 | Qualitative Research Comparative Analysis |
| 2018 | Qualitative Research, Online survey and face to face interview |
| 2018 | Qualitative Research, Descriptive Screening Model |
| 2018 | Literature Review |
| 2017 | Qualitative Research, Semi-Structured Interview |
| 2017 | Qualitative Research, Descriptive Analysis |

As can be seen in Table 9, 21 of the 27 graduate theses written in Turkey are based on qualitative research. Basic statistical methods were used in the evaluation of the surveys.

## CONCLUDES

The aim of this research is achieved with revealing the analysis of the content of graduate theses written in the field of financial technology in Turkey. The 27 theses written in universities in Turkey examined within the scope of this study are not numerically sufficient. The reason for this is that the subject of financial technology has just started to be studied in Turkish academy. The beginning of theses on the subject in 2017 shows this. The fact that the majority of theses on financial technology are written in private universities and in leading universities in Turkey may be related to the fact that the academicians here follow new developments more closely.

Despite the close relationship between technology and engineering, most of the theses are in the field of social sciences. This number will likely increase in the coming years. Theses in the field of social sciences are based on qualitative research and especially on survey studies. Field studies on financial technology companies in Turkey and numerical research based on the data of financial technology companies will contribute to the literature. One way to improve financial services will be inter-agency collaborations, which are becoming possible thanks to emerging technology. Future research can include studies that examine all stakeholders of the financial technology ecosystem and include country-specific ecosystem designs. Most of the theses examined the banking sector within the scope of financial technology research. Although the banking sector is the first thing that comes to mind when financial technology is considered, research in different fields such as education, fundraising, non-profits and investment management is required. Business models related to financial technology can be explored and these models can be alternative credit scoring, alternative insurance underwriting, transaction delivery, peer-to-peer lending, small ticket loans, payment gateways, and digital wallets.

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# Chapter 7

## ANALYSIS OF THE FINANCIAL PERFORMANCES OF BANK GROUPS IN TURKEY WITH THE CAMELS RATING SYSTEM APPROACH

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**Introduction**

The measures taken by the supervisors to eliminate the negative consequences of financial innovation and globalization have brought new regulations in banking supervision and new systems have been introduced accordingly. These new systems are used to monitor and evaluate changes in a bank's financial condition and risk profile, and to create timely alerts to take action (Sarker, 2005: 3). The risk management applied in banks and the surveillance and audit activities carried out accordingly differ between countries. Although there are different regulations applied in each country, common points are generally acted upon. In general, two basic systems are used in surveillance and inspection activities, namely "on-site inspections" and "off-site monitoring" (Çinko ve Avcı, 2008: 26). In on-site audit activities, auditors evaluate banks by subjecting them to audits in many ways. When these audit activities are carried out frequently, the cost increases for the banks and also includes the subjective evaluation of the auditor. Supervisors have developed remote surveillance systems or early warning models to provide an up-to-date assessment of banks' financial position and to supplement the periodic on-site audit rating system (Cole ve Gunther, 1998: 2).

Banks, which form the basis of our financial system in the country, act as an intermediary in ensuring that the savings are taken from those with surplus funds and transferred to public or private institutions that have a fund deficit. In this respect, transferring the resources provided to productive and profitable areas has a positive effect on the country's economy and adds dynamism to economic development. As in every country, economic, social and political developments in our country have an impact on the qualifications, structuring and direction of the banking sector. It is expected that the banking sector will be in continuous development in order to diversify economic activities with the effect of globalization and to respond to the increasing financing need as a result. The banking sector, which is of great importance for the healthy functioning of the country's economy, has become one of the sectors most sensitive to the changes in our country's economy. In this context, while the crises that occurred in the country affected the entire economy, they also had very negative consequences on the fragile and uncertain structure of the Turkish banking system. As a result of these negativities, liquidation and mergers were experienced in the sector and new regulations related to the sector were introduced. Thus, it is important to measure and audit the performance of the banking sector.

Traditional banks and participation banks differ in terms of their activities and functioning. Therefore, they should be able to be distinguished from each other with the help of some financial data that can be obtained

from the financial position statement and income and expense statement they have prepared. However, since all these banks operate in the same competitive environment and are regulated in a similar way, they are likely to show similar financial characteristics (Parlakkaya & Çürük, 2011). One of the methods developed for banks to predict various risks and take precautions is the CAMELS rating system. This method helps banks to conduct remote supervision through their financial ratios. In this study, it is aimed to evaluate and compare the financial performances of deposit banks operating in Turkey between 2010-2020 with the help of CAMELS rating model, which is accepted as an important rating model in the literature and rates banks with the help of ratios. Deposit banks are categorized as public, domestic private capital and foreign capital banks.

## 1. Banking Sector in Turkey

The banking sector is an important market participant in the financial system that can meet the fund needs of private or legal persons or the public. Deposit banks, development and investment banks and participation banks, which have been developing rapidly since 2005, serve in the Turkish banking sector. Today, the Turkish banking sector has come to the position of exporting important services not only to the domestic market but also to abroad by adapting to developing technologies, developing innovative products and tools in order to maintain their rightful place in the global financial system and to compete. The economic, social, political and legal regulations of our country include supportive steps for the banking sector to have a solid structure and for its development to gain continuity. Deposit banks operating in the sector collect these funds from investors with surplus savings as deposits and reintroduce them to the system as loans (Yıldız, 2018: 256).

Recently, participation banks have been operating together with deposit banks within the Turkish Banking System. However, the working methods of participation banks differ from conventional banking. While the working principle of conventional banking is based on interest, participation banking operates on the basis of profit/loss sharing. While acting with the aim of generating income over the pre-announced interest rate in return for the loans extended in the traditional conventional banking system, participation banks act by considering the purpose and location of the funds they will use, and the contributions they will provide to their customers, as well as the procedures such as asking for invoices in return (Toraman vd, 2015: 302).

As of the end of 2020, 53 banks operate in Turkey. 34 of these banks serve as deposit banks, 13 as development and investment banks and 6 as participation banks (BDDK, 2020: 1-3).

**Table 1:** *Classification of Banks Operating in Turkey According to Types*

| BANKS | DEPOSIT BANKS | DEVELOPMENT AND INVESTMENT BANKS | PARTICIPAITON BANSK |
|---|---|---|---|
| Public Capital | 3 | 3 | 3 |
| Private Equity | 9 | 6 | |
| Established in Turkey with Foreign Capital | 16 | 4 | 3 |
| Foreign Capital with a Branch in Turkey | 5 | - | - |
| Transferred to TMSF | 1 | - | - |
| TOPLAM | 34 | 13 | 6 |

Source: BDDK, 2020

## 2. CAMELS Rating System

The CAMELS rating system was first adopted as a review method by the Federal Financial Institutions Review Committee in 1979. CAMELS identifies a bank's financial, managerial and operational strengths and weaknesses. The purpose of the CAMELS rating system is to provide a comprehensive and standardized assessment of all financial institutions and to distinguish financially weak institutions (FED, 1996). "S" market risk sensitivity component was added to the system, which was used with 5 components until 1997. CAMELS is a generally accepted rating system and is also used by the BDDK in our country.

Banks within the framework of the CAMELS rating system; It is evaluated according to C (Capital Adequacy), A (Asset Quality), M (Management Quality), E (Earnings), L (Liquidity Status) and S (Market Risk Sensitivity) factors. Under each factor, there are financial ratios that will represent that factor well. CAMELS subcomponents refer to six components that should be handled under the remote supervision of a bank. Capital Adequacy (C) measures the amount and quality of capital a bank holds. Asset Quality (A) focuses on a bank's loans and the risks of those loans. Management Quality (M) measures a bank's operational capacity and oversight quality. Earnings (E) deals with the sustainability of a bank's earnings. Liquidity (L) measures the ability of a bank's assets to convert into cash. Market Risk Sensitivity (S), on the other hand, measures the sensitivity of a bank's earnings to negative developments in the market (Gilbert, Meyer ve Vaughan, 2002:47).

The CAMELS rating system is based on the assessment of a bank's managerial, operational and financial compliance performance. The banks' calculated CAMELS rating is between 1 and 5. The grading range and grading analyzes of the CAMELS components are given in Table 2.

**Table 2:** *Grading of CAMELS Components*

| Rating Scale | Rating Range | Rating Analysis |
|---|---|---|
| 1 | 1,0-1,4 | Powerful Performance |
| 2 | 1,5-2,4 | Sufficient Performance |
| 3 | 2,5-3,4 | Medium Performance |
| 4 | 3,5-4,4 | Marginal Performance |
| 5 | 4,5-5,0 | Poor Performance |

Source: Sahajwala ve Bergh, 2000:47

In this direction, 1 shows the best performance; The increased rating indicates the worsening condition of the bank. After the factors under each component are calculated separately, the weighted average of the said components is taken to reach the overall rating of that bank. At the time of evaluation, weights are determined under the control of the auditor, taking into account many variables such as the structure and size of the bank. For a bank to receive a rating of 1, each component must have a rating of 1 or 2. If the value of each component is not worse than 3, the CAMELS rating of the bank is determined as 2 (Kaya, 2001: 6).

## 3. Literature Review

When we look at the literature on the subject of the study, it is seen that there is a satisfactory number of studies comparing traditional banks through the ratios used in CAMELS analysis and various other ratios. It is noteworthy that the studies conducted in Turkey on the subject are insufficient. Most of the studies are recent studies.

**Table 3:** *Literature on the CAMELS Rating System*

| AUTHORS AND YEAR | COUNTRY | METHOD | RESULTS |
|---|---|---|---|
| Whalen & Thomson (1988) | USA | Logistics Regression Analysis | A positive correlation was found between low capital, poor asset quality, lower profitability or less liquidity and a lower CAMELS rating. |
| Kaya (2001) | Turkey | Probit Regression Analysis | CAMELS predicts banks that are suitable for Turkish banking and fail the model with an accuracy of 60% in 1997 and 83% in 2000. |
| Samad (2004) | United Arab Emirates | CAMELS Rating System | Traditional and participation banks operating in Bahrain were compared and it was determined that there was no significant difference between these two bank types in terms of profitability and liquidity. |

| | | | |
|---|---|---|---|
| Derviz & Podperia (2004) | Czech Republic | CAMELS Rating System | They found that capital adequacy, increase in loans, debt-to-asset ratio and risk of total assets are financial ratios that have significant explanatory capacity in the analysis. |
| Canbaş & others (2005) | Turkey | CAMELS Rating System | Financial characteristics of privately owned commercial banks in Turkey are not compatible with each other. |
| Moin (2008) | Pakistan | t-Test | It has been observed that participation banks have less profitability, and there is no statistically significant difference between both types of banks in terms of liquidity. |
| Christopoulos &Others (2011) | USA | CAMELS Rating System | They revealed that the managers of Lehman Brothers, whose loans were bad and doubtful between 2003 and 2007, could not manage the company well, could not show good management during the collapse before the bankruptcy, and the supervisors could not foresee the bankruptcy of the company. |
| Bascı &Others | Turkey | Post Hoc Analysis | According to analyse we determined differences between banks which are 3 banks as state-owned banks, 10 banks as privately-owned banks and 8 banks as foreign capital banks. As a result of analyses we obtained a financial performance of separate banks for two dimensions. One dimension represents a successful banking, and others unsuccessful. In this analyse ,we have used Post Hoc Analysis and especially Scheffé's method. |
| Çağıl & Mukhtarov (2014) | Azerbaijan | CAMELS Rating System | They observed that foreign banks performed better and their CAMELS composite performance was consistently positive. |
| Gümüş &Nalbantoğlu (2015) | Turkey | CAMELS Rating System | As a result of the research; private domestic banks took the first place and public banks took the second place. It has been determined that foreign banks are weak in terms of profitability and management quality due to the increase in NPL ratios, while the capitals of participation banks are weak compared to other types of banks. |
| Ege & others (2015) | Turkey | CAMELS Rating System | Although public banks are close to other groups, they are in a better position in terms of Management Quality, Earnings, Capital Adequacy and Market Risk Sensitivity; On the other hand, they revealed that foreign banks are stronger than other groups according to the Asset Quality and Liquidity Status components. |

| | | | |
|---|---|---|---|
| Emir &Akyüz (2018) | Turkey | CAMELS Rating System | It has been determined that foreign capital deposit banks show the highest performance in capital adequacy, asset quality and liquidity components, state-owned deposit banks in management capability and profitability components, and private capital deposit banks in market risk sensitivity component. |
| Karaçor & others (2018) | Turkey | CAMELS Rating System | While private banks have a better outlook in terms of capital adequacy, management quality and asset (asset) quality; On the other hand, the opposite situation was determined in terms of earnings and liquidity. |
| Bayramoğlu & Gürsoy (2017) | Turkey | CAMELS Rating System | Private banks are strong according to the Capital Adequacy and Liquidity Status components, but weak according to the Management Quality component; On the other hand, foreign banks are strong in terms of Asset Quality and Sensitivity to Market Risk components, while they are weak in terms of Management Quality and Liquidity Status. |
| Uslu & others (2019) | Turkey | CAMELS Rating System | As a result of the analysis, it was determined that the CAMELS composite value increased in 33% of public banks and 75% of private banks. |
| Batır (2019) | Turkey | CAMELS Rating System | Although public participation banks have a grade below the sector in some items that make up the CAMELS system, it has been observed that they have a score above the sector in the average CAMELS rating. |

## 4. Data, Model and Analysis Results

In this study, the performance of a total of 27 banks operating in Turkey, including 3 state-owned banks, 8 private-capital banks and 16 foreign-owned banks; It is estimated using the CAMELS assessment method for the period 2010-2020. The ultimate aim of the study is to determine whether there is a difference in the performance of banks grouped according to capital criteria. The banks included in the analysis are shown in Table-4.

**Table 4:** *Banks Included in the Analysis*

| State-owned Deposit Banks | Private Equity Deposit Banks | Foreign Capital Banks |
|---|---|---|
| Türkiye Cumhuriyeti Ziraat Bankası A.Ş. | Akbank T.A.Ş. | Alternatifbank A.Ş. |
| Türkiye Halk Bankası A.Ş. | Anadolubank A.Ş. | Arap Türk Bankası A.Ş. |

| Türkiye Vakıflar Bankası T.A.O. | Fibabanka A.Ş. | Bank of China Turkey A.Ş. |
| | Şekerbank T.A.Ş. | Burgan Bank A.Ş. |
| | Turkish Bank A.Ş. | Citibank A.Ş. |
| | Türk Ekonomi Bankası A.Ş. | Denizbank A.Ş. |
| | Türkiye İş Bankası A.Ş. | Deutsche Bank A.Ş. |
| | Yapı ve Kredi Bankası A.Ş. | HSBC Bank A.Ş. |
| | | ICBC Turkey Bank A.Ş. |
| | | ING Bank A.Ş. |
| | | MUFG Bank Turkey A.Ş. |
| | | Odea Bank A.Ş. |
| | | QNB Finansbank A.Ş. |
| | | Rabobank A.Ş. |
| | | Turkland Bank A.Ş. |
| | | Türkiye Garanti Bankası A.Ş. |

Source:TBB

## 4.1. Method and Model

Within the scope of the study, a total of 21 financial ratios that can form the sub-components of the CAMELS system have been determined; The data set for the variables was obtained from the database of the Banks Association of Turkey. While determining the aforementioned rates and their weights in the system, previous studies on the subject and subjective criteria were used. The financial ratios included in the analysis and the weights given to the related ratios are shown in Table-5.

**Table 5:** *CAMELS Ratios, Relationship Direction and Weights Used in the Study*

| VARIABLES | DIRECTION OF THE RELATIONSHIP | FINANCIAL WEIGHT * |
|---|---|---|
| CAPITAL(Capital Adequacy) | | 20% |
| C1- Shareholders' Equity / (Credit + Market + Amount Subject to Operational Risk) | (+) | 50% |
| C2- Shareholders' Equity / Total Assets | (+) | 30% |
| C3- (Shareholders' Equity - Permanent Assets) / Total Assets | (+) | 20% |
| ASSET (Asset Quality) | | 20% |
| A1- Total Loans / Total Assets | (+) | 40% |

| | | |
|---|---|---|
| A2- Loans under follow-up (gross) / Total Loans and Receivables | (-) | 30% |
| A3- Permanent Assets /Total Assets | (-) | 30% |
| MANAGEMENT (Management Quality) | | 10% |
| M1- Loans under follow-up (gross) / Total Loans and Receivables | (-) | 40% |
| M2- Non-Interest Income / Other Operating Expenses | (+) | 30% |
| M3- Profit per Branch | (+) | 30% |
| EARNING (Earning Management) | | 20% |
| E1- Net Profit (Losses) / Total Assets | (+) | 40% |
| E2- Net Profit (Losses) / Total Shareholders' Equity | (+) | 40% |
| E3- Profit (Loss) Before Taxes from Continuing Operations/Total Assets | (+) | 20% |
| LIQUIDITY (Liquidity Management) | | 20% |
| L1- Liquid Assets / Total Assets | (+) | 40% |
| L2- Liquid Assets / Short-Term Liabilities | (+) | 30% |
| L3- Turkish Lira (TP) Liquid Assets / Total Assets | (+) | 30% |
| SENSITIVITY TO MARKET RISK (Market Risk Sensitivity Management) | | 10% |
| S1- FC Assets / FC Liabilities | (-) | 40% |
| S2- Net Interest Income After Specific Provisions /Total Assets | (+) | 30% |
| S3- On Balance-sheet FC Position / Shareholders' Equity | (-) | 30% |

* These ratios have been determined by taking into account previous studies on the subject and the effects of components on bank performances.

In order to calculate the CAMELS performance values, 21 ratios belonging to the 6 main items that make up the CAMELS evaluation system were used. First of all, the averages were calculated based on the ratios of the banks specified in Table 5, which were announced on the TBB website, so that the reference values of the deposit banking sector for the years 2010-2020 were found. Then, the actual values of each deposit bank group operating in that period for the same periods were determined. Then, the realized values belonging to each bank group were divided by the reference values and multiplied by 100, thus the index value was obtained. If these index values have a positive relationship with respect to the variable's relationship direction, 100 was subtracted from the index value obtained, and if it had a negative relationship, the deviation value was calculated by subtracting the index value from 100. After this step, the values to be used in the CAMELS analysis of each item were calculated by multiplying each deviation value with the weight ratio of its own variable. The results obtained after the multiplication were collected within the scope of each

item. Each total obtained revealed the CAMELS score of the relevant component, and the coefficients determined for each item that make up the CAMELS system were multiplied by the grade of the relevant item, and the result obtained by adding these multiplications gave its performance in the CAMELS evaluation system. The steps followed in calculating the CAMELS ratio are briefly summarized in Table 6. The sample calculation of the CAMELS performance system is shown in Table 7.

**Table 6:** *Steps Followed in Calculating the CAMELS Ratio*

| Stages | Value Determination | Hesaplanma Yöntemi |
|--------|--------------------|--------------------|
| 1. Stage | Reference Value | All banks in the industry the average rate for the relevant year is determined. |
| 2. Stage | Index Value | The reference value of the ratio value of the bank groups divided by the value and multiplied by 100. |
| 3. Stage | Deviation Value | Relationship direction between ratios and component 100 basis points with index value based on difference is obtained. |
| 4. Stage | Ratio Weight x Deviation Value | Deviation value with weight given to the ratio multiplied by it. |
| 5. Stage | Addition of Weighted Deviation Values | The values obtained in the previous step are is collected on a component basis.. |
| 6. Stage | Total Weighted Deviation Values x of components weight | With total weighted deviation values weights given to the components is multiplied. |
| 7. Stage | Compound CAMELS Value | It is the sum of the obtained values. |
| 8. Stage | CAMELS Note | Compound CAMELS value, 1-5 is graded. |

Source: Kandemir ve Arıcı, 2013: 73.

**Table 7**: *Example Calculation of the CAMELS Performance System*

| Variables | Aspect of Relationship | Ağırlık | Reference Value for ….. | Bank Group | Index Value | Deviation Value | CAMELS Value |
|---|---|---|---|---|---|---|---|
| Shareholders' Equity (+) / Total Assets | | 30% | A | X | 100*(X/A) = C | C-100 = E | E*0,3 |
| Loans under follow-up (gross) / Total Loans and Receivables | (-) | 20% | B | Y | 100*(Y/B) = D | 100-D =F | F*0,2 |

Source: Batır, 2019: 199.

## 4.2. Analysis Results

In the analysis and interpretation of the composite CAMELS value calculated as the performance index of the Turkish Banking Sector, deposit banks are divided into three groups as state-owned, private-capital, and foreign capital established in Turkey or opened branches in Turkey. In the study, the steps described in Table 7 within the scope of CAMELS analysis were applied respectively and the items of each participation bank regarding the CAMELS system were calculated. The ratios that make up these items and the total score of the items are given in Table 8, Table 9 and Table 10 in detail according to each year and each bank.

**Table 8:** *Scores of State-owned Deposit Banks Used in CAMELS Analysis by Years*

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CAPITAL | | | | | | | | | | | |
| C1 | -6,51 | -6,58 | -2,48 | -6,16 | -2,43 | -3,2 | -4,83 | -5,36 | -6,61 | -6,16 | -5,05 |
| C2 | -7,83 | -7,05 | -1,05 | -5,3 | -2,8 | -3,85 | -3,51 | -4,32 | -5,13 | -6,16 | -6,53 |
| C3 | -5,11 | -4,81 | -4 | -3,88 | -3,2 | -2,46 | -2,9 | -3,17 | -2,78 | -4,21 | -3,52 |
| CAPITAL NOTE | -19,45 | -18,4 | -7,53 | -15,3 | -8,43 | -9,51 | -11,24 | -12,85 | -14,52 | -16,53 | -15,1 |
| ASSETS | | | | | | | | | | | |
| A1 | -6,75 | -2,09 | -3,04 | -2,31 | -1,24 | -0,18 | 0,66 | 0,59 | 1,79 | 2,01 | 0,31 |
| A2 | 3,08 | 1,48 | -4,58 | -2,28 | -2,58 | 2,29 | 2,53 | 2,3 | 6,52 | 6,85 | 8,14 |
| A3 | 8,3 | 7,05 | 4,06 | 3,59 | -0,17 | 2,47 | 2,02 | 4,28 | 7,19 | 6,34 | 8,7 |
| ASSETS NOTE | 4,63 | 6,44 | -3,56 | -1 | -3,99 | 4,58 | 5,21 | 7,17 | 15,5 | 15,2 | 17,15 |
| MANAGEMENT | | | | | | | | | | | |
| M1 | 4,11 | 1,98 | -6,11 | -3,04 | -3,44 | 3,05 | 3,38 | 3,07 | 8,7 | 9,14 | 10,86 |
| M2 | 0,14 | -2,85 | -1,56 | 0,37 | 1,74 | 4,98 | 0,79 | 6,81 | -4,9 | -14,44 | -14,17 |
| M3 | 3,33 | -1,38 | -0,42 | 1,6 | 1,49 | 3,46 | -1,6 | -1,86 | -6,11 | -11,03 | -7,31 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MANAGEMENT NOTE | 7,58 | -2,25 | -8,09 | -1,07 | -0,21 | 11,49 | 2,57 | 8,02 | -2,31 | -16,33 | -10,62 |
| EARNING | | | | | | | | | | | |
| E1 | 1,38 | -2,51 | 0,7 | 4,36 | 4,18 | 9,01 | 2,57 | 1,05 | -6,11 | -13,95 | -11,1 |
| E2 | 17,3 | 9,84 | 11,2 | 13,94 | 10,79 | 14,51 | 7,89 | 7,46 | 0,39 | -7,81 | -3,05 |
| E3 | 0,78 | -0,02 | 0,8 | 3,07 | 1,95 | 4,62 | 1,58 | 0,45 | -3,42 | -7,24 | -5,91 |
| EARNING NOTE | 19,46 | 7,31 | 12,7 | 21,37 | 16,92 | 28,14 | 12,04 | 8,96 | -9,14 | -29 | -20,06 |
| LIQUIDITY | | | | | | | | | | | |
| L1 | -3,21 | -4,07 | -1,23 | 2,39 | 0,95 | 0,08 | -0,63 | -0,52 | -11,07 | -13,8 | -8,23 |
| L2 | -5,24 | -6,77 | -3,26 | -1,3 | -2,31 | -2,75 | -3,4 | -2,82 | -10,87 | -11,71 | -8,57 |
| L3 | -1,53 | -2,2 | -2,19 | 1,48 | 0,34 | -0,01 | -0,51 | 0,4 | -15,95 | -23,55 | -15,45 |
| LIQUIDITY NOTU | -9,98 | -13 | -6,68 | 2,57 | -1,02 | -2,68 | -4,54 | -2,94 | -37,89 | -49,06 | -32,25 |
| SENSITIVITY TO MARKET RISK | | | | | | | | | | | |
| S1 | -4,03 | -5,81 | -3,77 | -4,84 | -5,03 | -4,93 | -5,73 | -5,25 | -2,93 | 0,55 | -1,3 |
| S2 | -0,99 | 0,67 | 1,24 | 1,89 | -0,58 | 0,31 | 1,12 | -1,61 | -1,85 | -2,21 | -1,84 |
| S3 | 18,4 | 25,98 | 19,1 | 19,65 | 20,99 | 22,98 | 32,93 | 20,24 | 16,19 | -4,02 | 3,36 |
| SENSITIVITY TO MARKET RISK NOTE | 13,38 | 20,84 | 16,57 | 16,7 | 15,38 | 18,36 | 28,32 | 13,38 | 11,41 | -5,68 | 0,22 |

**Table 9:** *Scores of Private Equity Deposit Banks Used in CAMELS Analysis by Years*

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CAPITAL | | | | | | | | | | | |
| C1 | -2,6 | -3,59 | -2,76 | -1,94 | -3,35 | -3,21 | -3,23 | -2,08 | -1,44 | 0,27 | 1,33 |
| C2 | 0 | -0,5 | 5 | 0,26 | -0,5 | -0,8 | -0,27 | 0,81 | 1,89 | 2,67 | 3,86 |
| C3 | -1,39 | -2,02 | -0,88 | -0,27 | -0,53 | -1,85 | -1,61 | -1,58 | -0,25 | 0,26 | 0,59 |
| CAPITAL NOTE | -3,99 | -6,11 | 1,36 | -1,95 | -4,38 | -5,86 | -5,11 | -2,85 | 0,2 | 3,2 | 5,78 |
| ASSETS | | | | | | | | | | | |
| A1 | -1,01 | 0,48 | 0,6 | 0,77 | 0,31 | 0 | -0,36 | -1,07 | -2,28 | -2,62 | -1,69 |
| A2 | 3,24 | 3,23 | 6,39 | 4,68 | 3,6 | 1,2 | -1,47 | -1,7 | -5,55 | -8,06 | -5,55 |
| A3 | -3,89 | -3,6 | -1,85 | -1,53 | -0,5 | -2,23 | -2,3 | -4,16 | -7,54 | -7,28 | -10,17 |
| ASSETS NOTE | -1,66 | 0,11 | 5,14 | 3,92 | 3,41 | -1,03 | -4,13 | -6,93 | -15,37 | -17,96 | -17,41 |
| MANAGEMENT | | | | | | | | | | | |
| M1 | 4,32 | 4,31 | 8,5 | 6,25 | 4,81 | 1,6 | -1,96 | -2,26 | -7,41 | -10,75 | -14,98 |
| M2 | 7,24 | 6,34 | 4,94 | 4,98 | 3,69 | 3,46 | 4,14 | 3,02 | 0,91 | -1,25 | 0,29 |
| M3 | 3,89 | 2,74 | 2,69 | 4,71 | 1,95 | -2,11 | -0,93 | -2,4 | -1,33 | -2,12 | -0,07 |
| MANAGEMENT NOTE | 15,45 | 13,39 | 16,13 | 15,94 | 10,45 | 2,95 | 1,25 | -1,64 | -7,83 | -14,12 | -14,76 |
| EARNING | | | | | | | | | | | |

| E1 | 2,33 | 1,76 | 0,66 | 3,11 | 0,96 | -7,29 | -0,54 | -2,04 | 0,98 | 0,87 | 6,15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E2 | 2,8 | 2,26 | 1,26 | 3,14 | 1,13 | -6,89 | 0,12 | -2,24 | -0,79 | -2,17 | 1,38 |
| E3 | 1,14 | 0,74 | 0,19 | 1,22 | 0,72 | -1,69 | -0,38 | -1,03 | 0,73 | 0,33 | 3,75 |
| EARNING NOTE | 6,27 | 4,76 | 2,11 | 7,47 | 2,81 | -15,9 | -0,8 | -5,31 | 0,92 | -0,97 | 11,28 |
| LIQUIDITY | | | | | | | | | | | |
| L1 | 1,56 | 0,77 | 0,46 | -1,44 | -0,73 | 1,74 | 1,75 | 2,91 | 2,68 | 5,49 | 2,65 |
| L2 | 1,21 | 0,83 | 0,27 | -0,66 | -0,11 | 0,7 | 0,48 | 1,34 | 1,45 | 2,78 | 1,16 |
| L3 | -0,1 | -1 | -0,87 | -2,9 | -2,45 | -0,43 | 0,9 | 2,82 | 2,3 | -5,4 | -5,06 |
| LIQUIDITY NOTU | 2,67 | 0,6 | -0,14 | -5 | -3,29 | 2,01 | 3,13 | 7,07 | 6,43 | 2,87 | -1,25 |
| SENSITIVITY TO MARKET RISK | | | | | | | | | | | |
| S1 | -2,79 | -0,79 | -0,97 | -0,22 | -0,23 | 0,64 | 1,04 | 2,22 | 2,42 | 1,16 | 2,8 |
| S2 | -2,66 | -3,07 | -2,93 | -1,68 | -0,92 | -1,98 | -2,21 | -2,23 | 0,08 | 0,61 | 3,76 |
| S3 | 10,23 | -0,71 | 2,47 | -0,97 | -1,29 | -4,83 | -7,93 | -9,53 | -12,18 | -3,27 | -7,83 |
| SENSITIVITY TO MARKET RISK NOTE | 4,78 | -4,57 | -1,43 | -2,87 | -2,44 | -6,17 | -9,1 | -9,54 | -9,68 | -1,5 | -1,27 |

**Table 10:** *Scores of Foreign Capital Deposit Banks Used in CAMELS Analysis by Years*

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CAPITAL | | | | | | | | | | | |
| C1 | -4,94 | 0,6 | -1,38 | 0 | 0 | 0,32 | 4,51 | 5,05 | 4,6 | 2,93 | 0,8 |
| C2 | 0,45 | 0 | 5 | -2,65 | -3,55 | -1,06 | 0,54 | 1,08 | 1,35 | 2,67 | 3,56 |
| C3 | -1,63 | -1,52 | -2,22 | -4,72 | -4,8 | -2,46 | -1,29 | -1,27 | 0 | 1,05 | 1,18 |
| CAPITAL NOTE | -6,12 | -0,92 | 1,4 | -7,37 | -8,35 | -3,2 | 3,76 | 4,86 | 5,95 | 6,65 | 5,54 |
| ASSETS | | | | | | | | | | | |
| A1 | 0,58 | 1,21 | 2,77 | -0,13 | -0,47 | -0,83 | -1,39 | -1,04 | -2,3 | -1,33 | -0,04 |
| A2 | -5,85 | -3,55 | -5,82 | -5,54 | -2,75 | -5,54 | -2,75 | -3,07 | -3,61 | -4,39 | -4,52 |
| A3 | -5,85 | -3,55 | -5,82 | -5,54 | -2,75 | -3,07 | -3,61 | -4,39 | -4,52 | -4,86 | -7,74 |
| ASSETS NOTE | -11,12 | -5,89 | -8,87 | -11,21 | -5,97 | -9,44 | -7,75 | -8,5 | -10,43 | -10,6 | -12,3 |
| MANAGEMENT | | | | | | | | | | | |
| M1 | -25,45 | -26,03 | -29,41 | -24,59 | -19,13 | -12,47 | -9,63 | -10,03 | -15,55 | -12,9 | -11,62 |
| M2 | -16,9 | -12,78 | -9,54 | -11,82 | -10,91 | -7,66 | -4,78 | -10,3 | 1,95 | 14,22 | 11,74 |
| M3 | -17,61 | -11,47 | -12,99 | -20,44 | -16,24 | -8,08 | -3,19 | -0,73 | 1,83 | 4,92 | -1,62 |
| MANAGEMENT NOTE | -59,96 | -50,28 | -51,94 | -56,85 | -46,28 | -28,21 | -17,6 | -21,06 | -11,77 | 6,22 | -1,5 |
| EARNING | | | | | | | | | | | |
| E1 | -13,51 | -4,83 | -7,04 | -22,06 | -16,28 | -1,75 | -3,69 | 0,57 | 4,62 | 10,8 | 3,27 |

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E2 | -14,84 | -5,41 | -6,79 | -20,92 | -13,47 | 0,84 | -3,51 | -0,38 | 2,87 | 7,47 | -0,94 |
| E3 | -6,75 | -4,33 | -3,35 | -10,94 | -8,13 | -4,17 | -1,77 | 0,6 | 2,92 | 6,65 | 2,61 |
| EARNING NOTE | -35,1 | -14,57 | -17,18 | -53,92 | -37,88 | -5,08 | -8,97 | 0,79 | 10,41 | 24,92 | 4,94 |
| LIQUIDITY | | | | | | | | | | | |
| L1 | 1,34 | 6,03 | 1,22 | 2,72 | 2,97 | -0,76 | 0,63 | -0,13 | 14,57 | 13,7 | 9,79 |
| L2 | 3,8 | 10,1 | 1,37 | 1,29 | 0,77 | -0,1 | 0,53 | -0,34 | 10,47 | 8,09 | 7,67 |
| L3 | 2,8 | 6,65 | 5,23 | 5,64 | 5,93 | -0,42 | -0,27 | -3,06 | 10,29 | 31,67 | 10,79 |
| LIQUIDITY NOTU | 7,94 | 22,78 | 7,82 | 9,65 | 9,67 | -1,28 | 0,89 | -3,53 | 35,33 | 53,46 | 28,25 |
| SENSITIVITY TO MARKET RISK | | | | | | | | | | | |
| S1 | 15,39 | 11,61 | 10,76 | 8,86 | 9 | 3,73 | 4,06 | 3,21 | 1,5 | 0,27 | 0,75 |
| S2 | 11,06 | 9,49 | 8,28 | 1,75 | 3,29 | 2,24 | 1,91 | 5,91 | 3,39 | 1,06 | -1,35 |
| S3 | -84,94 | -55,7 | -54,25 | -44,99 | -49,12 | -23,15 | -27,63 | -14,06 | -8,75 | -0,39 | -2,77 |
| SENSITIVITY TO MARKET RISK NOTE | -58,49 | -34,6 | -35,21 | -34,38 | -36,83 | -17,18 | -21,66 | -4,94 | -3,86 | 0,94 | -3,37 |

**Table 11:** *Composite CAMELS Ratings of State-owned Deposit Banks for the Period 2010-2020*

| | Weight | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Capital note | 0,2 | -19,45 | -18,44 | -7,53 | -15,34 | -8,43 | -9,51 | -11,24 | -12,9 | -14,52 | -16,53 | -15,1 |
| Assets note | 0,2 | 4,63 | 6,44 | -3,56 | -1 | -3,99 | 4,58 | 5,21 | 7,17 | 15,5 | 15,2 | 17,15 |
| Management note | 0,1 | 7,58 | -2,25 | -8,09 | -1,07 | -0,21 | 11,49 | 2,57 | 8,02 | -2,31 | -16,33 | -10,62 |
| Earning note | 0,2 | 19,46 | 7,31 | 12,7 | 21,37 | 16,92 | 28,14 | 12,04 | 8,96 | -9,14 | -29 | -20,06 |
| Lıquidity notu | 0,2 | -9,98 | -13,04 | -6,68 | 2,57 | -1,02 | -2,68 | -4,54 | -2,94 | -37,89 | -49,06 | -32,25 |
| Sensitivity to market risk note | 0,1 | 13,38 | 20,84 | 16,57 | 16,7 | 15,38 | 18,36 | 28,32 | 13,38 | 11,41 | -5,68 | 0,22 |
| Average CAMELS | 1 | **1,02** | **-1,68** | **-0,16** | **3,08** | **2,21** | **7,09** | **3,38** | **2,20** | **-8,3** | **-18,08** | **-11,09** |

**Table 12:** *Composite CAMELS Ratings of Private Equity Deposit Banks for the Period 2010-2020*

| | Weight | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Capital note | 0,2 | -3,99 | -6,11 | 1,36 | -1,95 | -4,38 | -5,86 | -5,11 | -2,85 | 0,2 | 3,2 | 5,78 |
| Assets note | 0,2 | -1,66 | 0,11 | 5,14 | 3,92 | 3,41 | -1,03 | -4,13 | -6,93 | -15,4 | -17,96 | -17,41 |
| Management note | 0,1 | 15,45 | 13,39 | 16,13 | 15,94 | 10,45 | 2,95 | 1,25 | -1,64 | -7,83 | -14,12 | -14,76 |
| Earning note | 0,2 | 6,27 | 4,76 | 2,11 | 7,47 | 2,81 | -15,87 | -0,8 | -5,31 | 0,92 | -0,97 | 11,28 |
| Lıquidity notu | 0,2 | 2,67 | 0,6 | -0,14 | -5 | -3,29 | 2,01 | 3,13 | 7,07 | 6,43 | 2,87 | -1,25 |
| Sensitivity to market risk note | 0,1 | 4,78 | -4,57 | -1,43 | -2,87 | -2,44 | -6,17 | -9,1 | -9,54 | -9,68 | -1,5 | -1,27 |
| Average CAMELS | 1 | 2,68 | 0,75 | 3,16 | 2,19 | 0,51 | -4,47 | -2,17 | -2,72 | -3,32 | -4,13 | -1,92 |

**Table 13:** *Composite CAMELS Ratings of Foreign Deposit Banks for the Period 2010-2020*

### Conclusıon And Evaluatıon

Banks are institutions that are indispensable for national economies. For this reason, the supervision and surveillance of banks is an issue that needs to be constantly improved and reviewed. With the effect of globalization on banks, international solutions created for banks draw attention. Various techniques are being developed especially for the remote supervision of banks. The CAMELS rating system is a system developed for remote supervision of banks, which is generally accepted all over the world. In our country, the BDDK measures the comparative performance of banks in the Turkish banking system with the CAMELS system, but does not share the analysis results with the public.

In this study, with the help of CAMELS rating model, a comparative analysis of 3 public, 8 domestic and 16 foreign capital bank groups operating in Turkey between the years 2010-2020 was made. The results obtained within the scope of the study can be stated as follows:

• **Capital Adequacy:** Capital adequacy is an indicator of a bank's financial strength and reflects the bank's ability to recoup unexpected losses. This component is positively related to the financial soundness of the bank. In order to calculate the capital adequacy of the banks, the literature and the ratios presented by the TBB regarding the item were taken into account. These ratios are; Preferred as "Shareholders Equity / (Credit + Market + Amount Subject to Operational Risk), Shareholders' Equity / Total Assets, (Shareholders' Equity - Permanent Assets) / Total Assets". Taking into account the weights given in Table 5, the relevant ratios were multiplied by the weight ratios of 50 percent, 30 percent and 20 percent, respectively, and the capital adequacy item of CAMELS was calculated. Considering that the CAMELS grade share of the sector average is zero, it has been determined that the capital adequacy of foreign banks outperformed public and domestic private banks according to the average values between 2010 and 2020. These findings are in line with the results of the studies conducted by Kılıç and Fettahoğlu (2005), Çağıl and Mukhtarov (2014), Güney and Ilgın (2015), Emir and Akyüz (2018) examining the performance evaluation of the Turkish Banking Sector.

• **Asset Quality:** Asset quality item is used to measure the quality of assets belonging to banks. Literature information and the ratios presented by the TBB were also taken into account for this item in which the income generating power of the bank's assets, its ability to turn into cash and whether it is suitable for the resource structure of the enterprise. The ratios "Total loans / Total assets, Loans under follow-up (gross) / Total Loans and Receivables, Permanent Assets /Total Assets" are used. While asset quality is measured by item grade, which is calculated by using 40 percent,

30 percent and 30 percent weight ratios, respectively, loan origination skills, return on loans, presence of problem loans and collection skills are evaluated. On the basis of bank groups, it was determined that state-owned deposit banks showed the highest performance in the asset quality component.

• **Management Competence:** Management capability is considered as the most forward-looking component when the 6 components are compared. Measuring this component is more difficult than other components. This is because it is not dependent solely on current financial performance. This component also includes a wide range of elements such as education level and management expertise. Literature has been followed for this item, which represents the capacity and performance of the bank's management. "Loans under follow-up (gross) / Total Loans and Receivables, Non-interest income / Other operating expenses and profit ratios per branch" are used. Each ratio was multiplied by the weight values using 40 percent, 30 percent and 30 percent weight shares, respectively, and the management note for the item was calculated by taking their totals. It was determined that deposit banks with domestic capital showed the highest performance in the management capability component on the basis of bank groups.

• **Earnings Status:** In the study, representing the profitability component, three ratios are used: "net profit (losses) /total assets, Net Profit (Losses) / Total Shareholders' Equity and Profit (Loss) Before Taxes from Continuing Operations/Total Assets". Each of these ratios has a positive effect on the component. Among these ratios, return on assets and return on equity ratios have a higher weight in the component. It has been determined that state-owned deposit banks show the highest profitability component on the basis of bank groups. These findings are in line with the results of the studies examining the performance evaluation of the Turkish Banking Sector conducted by Kandemir and Demirel Arıcı (2013), Ege & others (2015) and Emir and Akyüz (2018) using the CAMELS Evaluation system.

• **Liquidity Situation:** In the calculation of this item, which is used to measure the ability of banks to turn into cash, the ratios "Liquid assets / Total assets, Liquid assets / Short-term liabilities, TL (Turkish Currency) liquid assets / Total assets" were preferred. This item, which is calculated by using 40 percent, 30 percent and 30 percent weight ratios, respectively; It provides information on issues such as the evaluation of liquid resources for the current time and the future, and the conversion of assets into securities. On the basis of bank groups, it has been determined that the highest performance in the profitability component is shown by foreign-capital deposit banks, which are above the sector average. It has

been determined that the foreign capital deposit banks are followed by the private capital domestic deposit banks whose performance is below the sector average, and the lowest performance is the state-owned deposit banks whose performance is below the sector average. These findings are in line with the results of the studies examining the performance evaluation of the Turkish Banking Sector conducted by Çağıl and Mukhtarov (2014), Güney and Ilgın (2015), Gümüş and Nalbantoğlu (2015) and Emir and Akyüz (2018).

• **Sensitivity to Market Risk:** It is an item used to measure the level of preparedness of the bank against risks such as exchange rates, interest rates, commodity prices and changes in stock prices that may occur in the market. In order to be used in the calculation of the item, "FC assets / FC liabilities, Net Interest Income After Specific Provisions /Total Assets, On Balance-sheet FC Position / Shareholders' Equity" were selected based on the literature. It has been determined that state-owned deposit banks have the highest performance in the market risk sensitivity component on the basis of bank groups. It has been determined that the lowest performance is shown by the foreign capital deposit banks, which are below the sector average, so it is the group most exposed to market risk. These findings are in line with the results of the studies conducted by Kandemir and Demirel Arıcı (2013), Çağıl and Mukhtarov (2014), Güney and Ilgın (2015), and Gümüş and Nalbantoğlu (2015) examining the performance evaluation of the Turkish Banking Sector.

With this study, it is aimed to provide information about banks that contribute to the continuity and development of the financial system by using it as an early warning system in showing the financial status of banks to bank managers, public and private audit institutions, investors and other people and institutions interested in the sector. The high performance of the banking sector depends on the strong financial structure of all operating banks. Therefore, it is of great importance to take policies and measures to eliminate negativities by periodically performing the necessary audit and surveillance activities in banks.

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# Chapter 8

## ONE CRISIS AFTER ANOTHER: A DYNAMIC UNEMPLOYMENT PERSISTENCE ANALYSIS FOR THE GIPS COUNTRIES

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Unemployment, with its steadily increasing pattern, has been on the front burner of the agenda in the world economy since the first oil shock of the early 1970s and has led many researchers to reconsider the natural rate hypothesis proposed by Phelps (1967, 1968). The natural rate hypothesis characterizes the unemployment rate as a process fluctuating around a natural or equilibrium rate associated with a fully equilibrated labor market. Hence, with this hypothesis, unemployment is expected to follow a stationary mean-reverting pattern with shocks only having temporary effects. However, experiences in the 1980s have cast doubt on the empirical validity of the natural rate hypothesis, especially in European countries. Being a puzzle that the natural rate hypothesis was not able to explain, European unemployment rates have experienced substantial increases during the 1970s and have shown no tendency to revert to their pre-shock levels.

This puzzle gave rise to three alternative hypotheses, structuralist, persistence, and hysteresis hypotheses. Being a restricted version of the natural rate hypothesis, the structuralist hypothesis by Phelps (1994) claims that some occasional shocks arising from factors such as technology, institutions, or even real macroeconomic variables like inflation or interest rates might lead to permanent changes in the level of the equilibrium unemployment rate over time, though most of the shocks to the unemployment rate are temporary. Accordingly, the unemployment rate could follow a stationary path that is subject to occasional but permanent structural changes. The hysteresis hypothesis, as revealed by Blanchard and Summers (1986), characterizes the unemployment rate as a non-stationary process with the effects of shocks to the unemployment rate being permanent due to a number of rationales, including insider-outsider theory, long-term unemployment, and decline of physical capital stock during high unemployment periods (Blanchard and Summers (1986), Phelps (1972), and Pissarides (1992)). Finally, the persistence hypothesis, also named partial hysteresis, suggests that the unemployment rate is a mean-reverting process with a slow speed of adjustment towards the long-run equilibrium level. The popular arguments to explain such a slow adjustment are proposed by Blanchard (2006) as real wage rigidity and union behaviors.

An assessment that is compatible with the dynamic properties of unemployment is important due to unemployment's social consequences and its effects on institutions, market structures, and expectation formations, and hence on the overall functioning of the economy. Accordingly, they are essential for policymakers as well. That is, if unemployment follows a stationary mean-reverting process being consistent with the natural rate hypothesis or its structuralist version, then the shocks to the unemployment

rate would dampen automatically over a short period of time, and the unemployment rate would converge to its equilibrium level without any policy intervention. Dealing with high or full persistence (hysteresis) of unemployment, on the other hand, requires both demand-side policies and structural reforms designed to affect the supply-side dynamics. Many empirical studies have tested these opponent hypotheses to reveal the dynamics of unemployment. Overall, in the literature, while the hysteresis hypothesis is formulated as a unit root process, its rejection provides empirical support for the natural rate or the structuralist hypotheses depending on whether unemployment dynamics are characterized by a stationary process with or without occasional mean shifts.

In this context, earlier studies, including Alogoskoufis and Manning (1988), Brunello (1990), Elmeskov and MacFarlan (1993), Jaeger and Parkinson (1994), and Røed (1996), have focused on testing the hysteresis hypothesis against the natural rate hypothesis through conventional unit root tests such as the augmented Dickey-Fuller (ADF) test and provided, in general, substantial evidence in favor of hysteresis hypothesis in various European and OECD countries. There are two problems with the studies relying on the standard unit root testing procedures. The first one is the well-known low power of the tests in the presence of structural breaks, nonlinear dynamics, and near-unit roots. Secondly, these studies consider only testing two extreme viewpoints without accounting for the potential validity of the structuralist hypothesis. That is, based on this setting, failing to reject the null hypothesis of hysteresis would signal the nonstationarity of unemployment. However, it is quite probable that the failure could arise from the nonlinear path dependence of unemployment or its stationary structure with a number of occasional but permanent mean shifts, both of which point to the validity of the structuralist hypothesis rather than the hysteresis theory.

In response, some of the recent papers accounted for the possibility that unemployment could follow a stationary process with gradual or smooth mean shifts (e.g., Arestis and Mariscal, 1999; Papell et al., 2000; Ewing and Wunnava, 2001; Camarero et al., 2005; Lee and Chang, 2008; Chang, 2011; García-Cintado et al., 2015). Overall, despite a lack of consensus, these studies have provided empirical evidence in favor of the structuralist hypothesis over the hysteresis theory in various European and OECD countries. The incapability of the hysteresis framework to capture potential business cycle asymmetry of unemployment arising from gradual declines during expansions but steep increases during recessions has further lead to the development of another strand of the literature. In this strand, focusing on the business cycle asymmetries, the studies including Bianchi and Zoega (1998), Coakley et al. (2001), Skalin and Teräsvirta (2002),

and Akdoğan (2017) have explored the nonlinearities in unemployment rates of a number of European and OECD countries and described them as stationary nonlinear processes[1].

Another group of studies into unemployment has analyzed the rate of unemployment in a fractional viewpoint (e.g., Tschernig and Zimmermann, 1992; Gil-Alana and Henry, 2003; Caporale and Gil-Alana, 2008, 2009; Cuestas et al., 2011). In this context, instead of using the classical I(0)/ I(1) dichotomy, unemployment is considered to be I($d$), where the fractional parameter $d$, which can take any real value, is used to understand the characteristics of unemployment rates. More specifically, while $0 < d < 0.5$ (with structural breaks) is associated with the natural rate (structuralist) hypothesis, $0 \leq d < 0.5$ and $d \geq 1$ are interpreted as persistence and hysteresis hypotheses, respectively. While this group of studies has associated the degree of persistence of unemployment with its degree of integration, Mitchell (1993), Papell et al. (2000), and Lee and Chang (2008), among others, have utilized the half-lives as a measure for persistence.

Although the fractional integration studies addressed the dichotomy in terms of the order of integration, all of the above studies have the conventional assumption of constant order of integration of unemployment over the entire sample period, which also implies unchanging characteristics of unemployment persistence. Recently, this assumption has turned into being contentious with empirical evidences suggesting that many macroeconomic variables, including output, budget deficit, commodity prices, inflation, and unemployment rates, display changes in persistence, varying stationary and nonstationary regimes (e.g., Kim, 2000; Busetti and Taylor, 2004; Fosten and Ghoshray, 2011; Ghoshray and Stamatogiannis, 2015; Belaire-Franch, 2019; Canarella et al., 2019). With these findings, it appears that it could be quite probable to observe subsamples over which unemployment is characterized by the natural rate and hysteresis hypotheses, while the analysis over the whole sample suggesting an I(1) structure. Hence, a more appropriate way to assess the dynamic properties of unemployment rather than testing for I(1) or I(0) dynamics throughout the data could be permitting for regime shifts between I(0) and I(1) structures.

In that sense, our study aims to investigate the hypothesis of unemployment hysteresis by considering the possibility that the hysteresis and the natural rate hypotheses might be mutually exclusive over the

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1  There are also series of studies focusing on the cross-sectional information and analyzing the order of integration of unemployment rates of blocs of countries or regions of a specific country through panel unit root tests (e.g. Song and Wu (1998), Smyth (2003), León-Ledesma (2002), León-Ledesma and McAdam (2004)).

entire sample period and allow for switches between these two extreme viewpoints. Recent studies sharing a similar ground include Fosten and Ghoshray (2011), Ghoshray and Stamatogiannis (2015), and Canarella et al. (2019). Among these studies, Fosten and Ghoshray (2011) have utilized the methodology proposed by Leybourne et al. (2007) to detect multiple changes in unemployment persistence for several OECD countries. Using annual unemployment rates, they observed multiple changes in persistence for the UK, the USA, Canada, and Denmark. The procedure of Leybourne et al. (2007) tests the null hypothesis of nonstationarity throughout the sample against the alternative hypothesis that the time series is subject to endogenous structural changes in the persistence coefficient and alternates between I(0) and I(1) regimes through doubly recursive sequences of ADF-type statistics applied to various data subsamples. In this procedure, once the most prominent I(0) regime in the sample is identified, one should continue with the reapplication of the test to all subsamples to search for further I(0) regimes. In that respect, a critical limitation of the test of Leybourne et al. (2007) is that during the reapplication of the test, observed break(s) might produce sub-samples that are too small to be tested for further breaks in persistence. In a recent study, using the same null and alternative hypotheses as in Leybourne et al. (2007), Kejriwal et al. (2013) has proposed a superior alternative procedure that is based on the sup-Wald principle, and they showed that their testing procedure performs better than that of Leybourne et al. (2007) in finite samples. Accordingly, Ghoshray and Stamatogiannis (2015) and Canarella et al. (2019) have employed the testing procedure of Kejriwal et al. (2013) to test for multiple persistence changes in unemployment rates of the UK and the USA. The empirical findings of Ghoshray and Stamatogiannis (2015) revealed a switch from the natural rate to the hysteresis hypothesis after the early 1920s (1930) for the UK (USA). Canarella et al. (2019) have investigated changes in unemployment persistence for 20 American states and observed that the Great Recession led to a change in unemployment persistence in most of the states.

Given the outperformance of the multiple persistence change test of Kejriwal et al. (2013) over the test of Leybourne et al. (2007), we intend to investigate the hypothesis of unemployment hysteresis for Greece, Ireland, Portugal, and Spain, collectively the GIPS countries, over the period 1998(4)-2019(4) through the test of Kejriwal et al. (2013). Being severely affected by the Great Recession and the European Sovereign debt crisis that followed, these countries provide a good platform to investigate hysteresis in unemployment with unemployment rates struggling to return to their pre-crisis levels despite the fact that more than ten years have elapsed since the onset of the Great Recession. Roughly, with the

application of the test, we find that the hysteresis (natural rate) hypothesis is confirmed for unemployment in Portugal (Ireland), with observed structural changes affecting only the mean level of the unemployment rate while keeping its persistence unchanged. For the cases of Greece and Spain, on the other hand, it appears that the observed structural changes alternate the persistence of unemployment and produce sub-periods confirming hysteresis and natural rate hypotheses. Furthermore, the estimated break dates for the persistence of Greek and Spanish unemployment rates appear to correspond to the Great Recession, the 2010 European sovereign debt crisis, and the deepening of economic and labor market reforms launched to retrain the impact of the crises.

The rest of the paper is structured as follows. While the following section outlines the econometric methodology we adopt, the data and the empirical results are presented in Section 3, and finally, Section 4 concludes the study.

### Methodology

In this section, we start with the description of the multiple persistence change test of Kejriwal et al. (2013) that is based on the sup-Wald tests. Then, we proceed with the discussion of the hybrid testing procedure that is required to rule out the cases where the process is stable I(0) or it is subject to I(0) preserving changes and to ensure that rejection of the sup-Wald tests indicates that the process under consideration involves switches between I(0) and I(1) regimes.

Kejriwal et al. (2013) consider the following time series process $y_t$ that is exposed to multiple $m$ breaks and contains $m+1$ regimes:

$$y_t = c_i + \alpha_i y_{t-1} + u_{it} \qquad (1)$$

for $t \in [T_{i-1}+1, \ T_i]$, $i = 1,....,m+1$ with $T_0 = 0$ and $T_{m+1} = T$, where $T$ is the sample size and $u_{it}$ are stationary disturbances. Developing a statistic to test the null hypothesis that $y_t$ is I(1) against the alternative that it alternates between I(0) and I(1) regimes requires some knowledge regarding the integration order of the initial regime. Since the initial regime or the direction of change is unknown, Kejriwal et al. (2013) has developed two models depending on whether the initial regime is stationary or not. In Model 1a, the process switches between I(1) and I(0) regimes with a unit root in the first regime (i.e. $c_i = 0$, $\alpha_i = 1$ in odd regimes and $|\alpha_i| < 1$ in even regimes). In Model 1b, similar switches are observed with the only difference that the initial regime is stationary (i.e. $c_i = 0$, $\alpha_i = 1$ in even regimes and $|\alpha_i| < 1$ in odd regimes). Once the models are constructed the null hypothesis that $y_t$ is I(1) throughout the sample is tested by the restriction $c_i = 0$, $\alpha_i = 1$ for all $i$.

To test this null hypothesis, the equation (1) is extended to accommodate higher autoregressive orders and it is re-defined for a fixed number of regime changes $m = k$ as:

$$\Delta y_t = c_i + (\alpha_i - 1) y_{t-1} + \sum_{j=1}^{l_T} \Delta y_{t-j} + v_t \tag{2}$$

where the autoregressive order $l_T$ increases with the sample size[22]. Then, the Wald test is defined for Model 1a as:

$$F_{1a}(\lambda, k) = (T - k - l_T)(SSR_0 - SSR_{k,1a}) / (k SSR_{k,1a}) \text{ if } k \text{ is even}$$

$$F_{1a}(\lambda, k) = (T - k - 1 - l_T)(SSR_0 - SSR_{k,1a}) / ((k+1) SSR_{k,1a}) \text{ if } k \text{ is odd}$$

and for Model 1b as:

$$F_{1b}(\lambda, k) = (T - k - 2 - l_T)(SSR_0 - SSR_{k,1b}) / ((k+2) SSR_{k,1b}) \text{ if } k \text{ is even}$$

$$F_{1b}(\lambda, k) = (T - k - 1 - l_T)(SSR_0 - SSR_{k,1b}) / ((k+1) SSR_{k,1b}) \text{ if } k \text{ is odd}$$

In these test statistics, $\lambda = (\lambda_1, ..... \lambda_k)$ is the vector of break fractions with $\lambda_i = T_i / T$, $SSR_0$ is the sum of squared residuals observed under the null of $c_i = 0$, $\alpha_i = 1$ for all $i$, $SSR_{k,1a}$ and $SSR_{k,1b}$ denote the sum of squared residuals obtained from ordinary least squares (OLS) estimation of equation (2) under the restrictions imposed by Model 1a and Model 1b, respectively.

This setup involves three unknown points to be determined: break dates, characterization of the initial regime, and the number of breaks. To specify the break dates, Kejriwal et al. (2013) define the sup-Wald tests for Model 1a and Model 1b as:

$$\sup F_{1a}(\lambda, k) = \sup_{\lambda \in \Lambda_\varepsilon^k} F_{1a}(\lambda, k)$$

$$\sup F_{1b}(\lambda, k) = \sup_{\lambda \in \Lambda_\varepsilon^k} F_{1b}(\lambda, k)$$

where $\Lambda_\varepsilon^k = \{\lambda : |\lambda_{i+1} - \lambda_i| \geq \varepsilon, \lambda_1 \geq \varepsilon, \lambda_k \leq 1 - \varepsilon\}$ for some arbitrary small number $\varepsilon$. Next, to accommodate the problem that the integration order of the first regime is unknown, $\sup F_{1a}(\lambda, k)$ and $\sup F_{1b}(\lambda, k)$ are combined to produce the second sup-Wald test given by:

$$W_1(k) = \max [\sup F_{1a}(\lambda, k), \sup F_{1b}(\lambda, k)]$$

Finally, to integrate the issue of the unknown number of breaks into

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2 In this setting, Kejriwal et al. (2013) do not allow for changes in short-run dynamics and variance of disturbances in order to direct the test against potential changes in persistence of the process and ensure the highest power possible. Moreover, allowing for such changes under the null hypothesis of $c_i = 0$, $\alpha_i = 1$ would result in limiting distribution of the test statistic to depend on unknown parameters and break dates, which would complicate the asymptotic inference.

the testing procedure, the ultimate sup-Wald test is defined as:

$$W_{max_1} = \max_{1 \leq m \leq A} W_1(m) \tag{3}$$

where $A$ indicates the maximum number of breaks set a priori.

To derive all sup-Wald tests discussed above, one needs to minimize the sum of squared residuals under the alternative hypothesis while imposing the relevant within- and cross-regime restrictions imposed by the model. To this end, Kejriwal et al. (2013) utilize the dynamic programming algorithm proposed by Perron and Qu (2006). Finally, given the nonstandard nature of the limit distributions, which differ regarding whether the alternative hypothesis assigns unit root or stationarity to the initial regime, the critical values are tabulated through Monte Carlo simulations by setting the maximum number of breaks at $A = 5$ and the level of trimming at $\varepsilon = 0.15$.

An important aspect of the inference based on these sup-Wald tests is that rejection of the null hypothesis of nonstationarity of $y_t$ throughout the sample might not always point to the existence of switches between I(1) and I(0) regimes but might suggest that the process is stable I(0) or it is I(0) with persistence changes which preserve I(0) structure of the process without changing its integration order. To clarify this issue Kejriwal et al. (2013) suggest to employ a hybrid testing procedure that requires the joint application of the $W_{max_1}$ test with the structural change test of Bai and Perron (1998) ($BP(m)$) and the Ng and Perron (2001) unit root tests. In that respect, following the rejection of the null of nonstationarity of $y_t$ throughout the sample by $W_{max_1}$, to distinguish between stable I(0) and at least one switch between I(1) and I(0) regimes, $BP(m)$ is applied to test for structural changes in the intercept term and the autoregressive parameter in (2) while keeping the short-run dynamics fixed. If both $W_{max_1}$ and $BP(m)$ reject, one can eliminate the possibility of having a stable I(0) process. In order to distinguish between a process with I(0) preserving changes and the one with I(1)/I(0) switches, Kejriwal et al. (2013) suggest to apply the Ng and Perron (2001) unit root tests with the idea that if the process includes at least one I(1) segment, those unit root tests will fail to reject the null hypothesis. Hence, the decision rule, labeled the $J_m$ test, is to reject the null of nonstationarity of $y_t$ throughout the sample against the alternative that the process is subject to switches between I(1) and I(0) regimes if both $W_{max_1}$ and $BP(m)$ reject while the Ng and Perron (2001) unit root tests fail to reject.

### Data and Empirical Results

We employ monthly seasonally adjusted unemployment rates of the GIPS countries covering the period 1998(4)-2019(4), which is the most

comprehensive interval available and covers both the Great Recession and the European Sovereign Debt crisis periods. All data is extracted from Federal Reserve data (FRED).

Results of the persistence change test of Kejriwal et al. (2013) are displayed in Table 1. According to the results, we can reject $W_{max_1}$ and $BP$ tests but fail to reject the Ng and Perron (2001) unit root tests for the countries Greece and Spain, which points to the existence of persistence changes and switches between hysteresis and natural unemployment rate hypotheses for those countries. In the case of Ireland, the rejection of $W_{max_1}$ test together with rejections of $BP$ and the Ng and Perron (2001) tests indicates empirical validity of the (structural) natural rate hypothesis throughout the sample with structural changes altering the mean level of the unemployment rate without affecting its degree of persistence. For Ireland, as illustrated in Figure 1, we observe two structural changes in 2008(5) and 2012(2), which possibly coincide with the Great Recession and the beginning of the recovery from the European debt crisis. In their analyses, Ghoshray and Stamatogiannis (2015) and Canarella et al. (2019) do not employ the hybrid testing procedure but use only the $W_{max_1}$ test to provide inferences regarding persistence changes in unemployment rates of the UK and the USA. However, as it becomes apparent in the case of Ireland, inferences based on the $W_{max_1}$ test alone might result in misleading inferences so that without application of the hybrid testing procedure, one might conclude that unemployment alternates between I(0) and I(1) regimes due to the rejection of $W_{max_1}$ test though its actual form is I(0) with persistence changes preserving its I(0) structure. For Portugal, on the other hand, rejection of the $BP$ test only suggests that the unemployment rate follows a nonstationary path over the entire sample, with structural changes preserving its I(1) nature. As seen in Figure 1, the observed structural change in 2013(2) possibly corresponds to the date when the recovery period began with an apparent downward trend in unemployment following the European Sovereign debt crisis, which had triggered unemployment in Portugal.

*Table 1: Results of the Multiple Persistence Change Test of Kejriwal et al. (2013)*

| | $W_{max_1}$ | $BP$ | $MZ_\alpha^{GLS}$ | $MZ_t^{GLS}$ | $MSB^{GLS}$ | $MP_T^{GLS}$ | $J_m$ |
|---|---|---|---|---|---|---|---|
| *Greece* | 50.33[a] | 18.91[a] | -2.67 | -1.10 | 0.41 | 8.98 | CP |
| *Ireland* | 15.61[a] | 25.52[a] | -10.76[a] | -2.29[a] | 0.21[a] | 2.42[a] | NCP (I(0)) |
| *Portugal* | 7.52 | 37.20[a] | -1.14 | -0.76 | 0.66 | 21.47 | NCP (I(1)) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Spain* | 10.69[b] | 22.47[a] | -4.23 | -1.44 | 0.34 | 5.82 | CP |

*Critical Values*

| | | | | | | |
|---|---|---|---|---|---|---|
| 5% | 10.9 | 11.7 | -8.1 | -1.98 | 0.233 | 3.17 |
| 10% | 9.86 | 10.16 | -5.7 | -1.62 | 0.275 | 4.45 |

Notes: $W_{\max_1}$ indicates the sup-Wald statistic of the persistence change test of the Kejriwal et al. (2013), $BP$ is the structural change test of Bai and Perron (1998), $MZ_\alpha^{GLS}$, $MZ_t^{GLS}$, $MSB^{GLS}$ and $MP_T^{GLS}$ are Ng and Perron (2001) unit root test statistics and $J_m$ refers to the decision rule observed through the application of the hybrid testing procedure that involves the joint application of the $W_{\max_1}$ with $BP$ and the Ng and Perron (2001) unit root tests. In all tests, the lag order is chosen using the Bayesian Information Criterion (BIC) with the maximum autoregressive set to be $12\left(T/100\right)^{1/4}$, where T is the sample size. $W_{\max_1}$ is calculated by setting the trimming at 15 percent and the maximum number of breaks at 5. $BP$ test statistic is calculated by keeping the short-term dynamics unchanged, as discussed in the text. [a] and [b] denote rejection of the null hypothesis at 5 percent and 10 percent significance levels, respectively. CP indicates the existence of persistence changes and switches between I(1) and I(0) regimes, while NCP indicates no change in persistence.

The details of the persistence changes observed for the cases of Greece and Spain are summarized in Table 2 and illustrated further in Figure 1. In the case of Greece, with three structural changes in persistence, two stationary regimes are detected, and the series is characterized as an I(1)-I(0)-I(1)-I(0) switching process. The period from 1998(4) to 2007(6), which includes the process of the European Monetary Union from 2001 onwards, is characterized by the hysteresis hypothesis. The first persistence change is observed in 2007(6), and the unemployment is identified by the natural rate hypothesis in the early years of the Great Recession, which may suggest that the initial effects of the world recession were on a temporary basis for the Greek labor market. This could be supported by the ongoing downward trend of unemployment in Greece until the second quarter of 2008 and a marginal increase in unemployment in the last quarter of 2008, as observed in Figure 1. However, it appears that the evolution of the Great Recession into the European debt crisis started in Greece, where the sovereign debt burden became unsustainable, led the unemployment rate to switch to an I(1) regime in 2011(4) and reached its peak in the last quarter of 2013. From 2010 onwards, the Greek economy went through a substantial rescue

package with the joint efforts of the European Union and the International Monetary Fund. Serious reforms were adopted to strengthen its fiscal position and to enhance the flexibility and productivity in the labor market, which was suffering from the high incidence of unemployment[33]. Labor market reforms consisted mainly of institutional changes relating to wage bargaining procedures, including decreasing the minimum wage, suspension of automatic wage increases in collective agreements, and reduction in the overtime premium and salaries paid. As emphasized by OECD (2016), among all reforms implemented with the onset of the debt crisis, labor market reforms are the most powerful ones. Being in line with the proposal of OECD (2016), our results indicate that successful adaption of the labor market reforms led the dynamics of the unemployment rate to switch from I(1) to I(0) in 2014(5) and provided empirical support for the natural rate hypothesis over the period 2014(6)-2019(4).

*Table 2: Persistence Changes Results*

|        | k | Period            | Integration Order |
|--------|---|-------------------|-------------------|
| *Greece* | 3 | 1998(4)-2007(6)   | I(1)              |
|        |   | 2007(7)-2011(3)   | I(0)              |
|        |   | 2011(4)-2014(5)   | I(1)              |
|        |   | 2014(6)-2019(4)   | I(0)              |
| *Spain*  | 3 | 1998(4)-2004(12)  | I(1)              |
|        |   | 2005(1)-2007(11)  | I(0)              |
|        |   | 2007(12)-2012(3)  | I(1)              |
|        |   | 2012(4)-2019(4)   | I(0)              |

Notes: k indicates the observed number of persistence changes.

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3  See Bakas and Papapetrou (2014) and OECD (2016) for further discussion of the reforms in Greece.

## GREECE



## IRELAND



## PORTUGAL
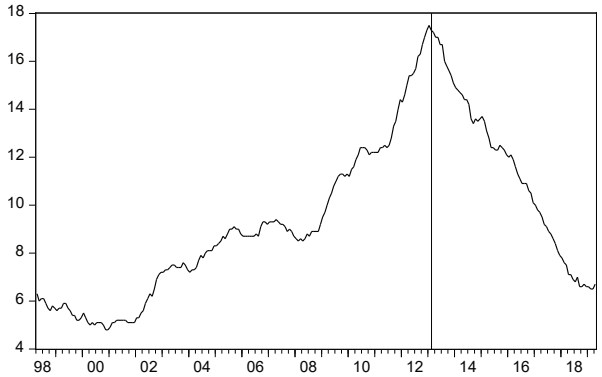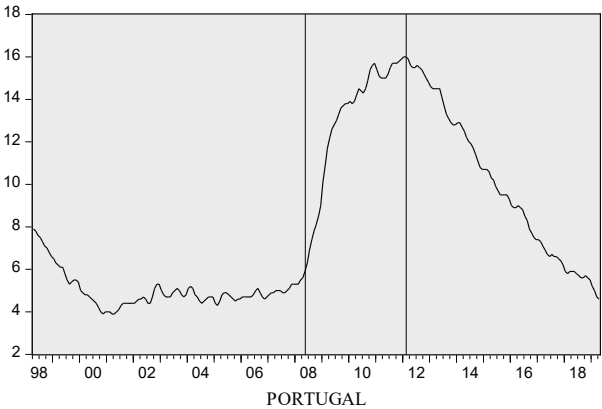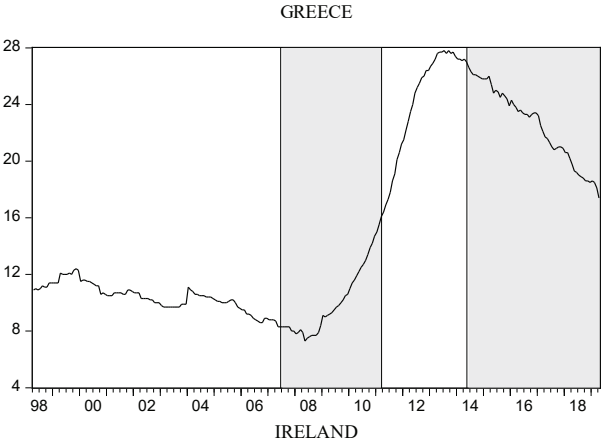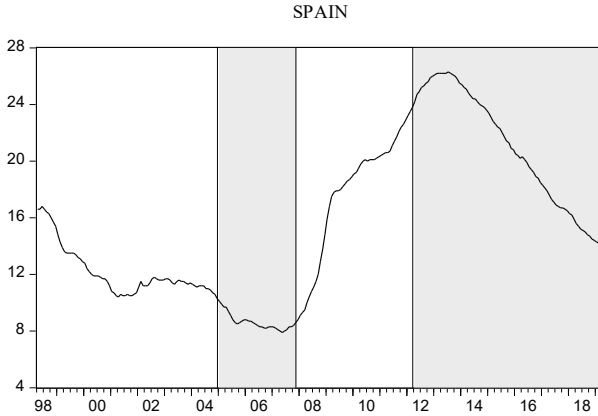
SPAIN



*Figure 1: Unemployment Rates of GIPS Countries*

Notes: The vertical lines represent estimated structural breaks and the shaded areas denote observed I(0) regimes.

Similar to the case of Greece, the unemployment rate in Spain seems to be identified by an I(1)-I(0)-I(1)-I(0) switching process. The period from 1998(4) to 2004(12), which includes the formation of the European Monetary Union in 2001 and the labor market reforms in 2001, 2002, and 2004, which aimed to enhance the functioning of the labor market by fighting the prevalence of temporary employment and encouraging part-time hiring and conversion of temporary contracts into permanent ones, appears to be characterized by the hysteresis hypothesis[44]. Our results reveal that subsequent to these reforms which were coupled with the favorable cyclical impacts that emerged after joining the European monetary union, the first persistence change is observed in 2004(11), and the Spanish unemployment rate switches to an I(0) process. While Spanish unemployment is identified by the natural rate hypothesis over the period of 2005(1)-2007(11), the second persistence change is observed with the outbreak of the Great Recession in 2007(11), and the unemployment rate switches back to I(1). It emerges from Figure 1 that, unlike the case of Greece, the increasing trend in Spanish unemployment started simultaneously with the outbreak of the global economic crisis in the second quarter of 2007 and the hardest stage of the crisis in terms job destruction coincided with the first quarter of 2009 with a sharp upward movement. The rising trend of Spanish unemployment appears to be undergirded further by the impacts of the European debt crisis. Following the crisis, many reforms were implemented by the Spanish government to retrain the impact of the crisis and to drive the economy into a more sound and stable pattern. Among those reforms, one of the major ones was the

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4  See Ramirez and Rodriguez (2014) for further details of the labor market reforms in Spain.

labor market reform launched after the 2010 reforms in February 2012 to generate a labor market that is more dynamic but less segmented. As discussed in detail by OECD (2014), this reform modified several aspects of the Spanish labor market regulation, including collective bargaining rules and collective and individual redundancy procedures and costs. It appears from our findings that the 2012 labor market reform in Spain is a significant step in the right direction with the final persistence change observed in 2012(3) resulting in a switch from I(1) to I(0). Furthermore, the finding that the switch of the Spanish unemployment to an I(0) regime in 2012 (3), almost two years before that of the Greek unemployment, implies that the relatively strong fiscal condition of the Spanish economy expedited the pace of recovery unlike the Greek economy suffering from the excess amount of public debt during the sovereign debt crisis.

## Conclusion

This study has scrutinized the hypothesis of unemployment hysteresis for GIPS countries over the period 1998(4)-2019(4), which coincides with the Great Recession, 2010 European Sovereign debt crisis, and the deepening of economic and labor market reforms launched to retrain the impact of the crises. There is an enormous empirical literature on testing the hysteresis theory, which characterizes the unemployment rate as a nonstationary I(1) process, against the natural rate hypothesis, which requires unemployment to be governed by a stationary mean-reverting I(0) process with shocks only having temporary effects, through the use of increasingly advanced testing procedures. However, most of the existing empirical studies assume constant order of integration of the unemployment rate over the entire sample period without allowing for any switches between the hysteresis and natural rate hypotheses.

Our study moves away from this dichotomy and considers the possibility that the natural rate and hysteresis hypotheses might be mutually exclusive over the entire sample period. As such, we employ the multiple persistence change test of Kejriwal et al. (2013), which tests the null hypothesis of nonstationarity throughout the sample against the alternative hypothesis that the time series is subject to endogenous structural changes in the persistence coefficient and alternates between I(0) and I(1) regimes.

It appears from our results that while the natural rate hypothesis is supported for Ireland throughout the sample with structural changes altering the mean level of the unemployment rate by keeping its degree of persistence unchanged, the hysteresis hypothesis is supported for Portugal with no evidence of interior stationary regime. For Greece and Spain, on the other hand, our empirical results yield interesting findings regarding the alternation between hysteresis and natural rate hypotheses over the entire

period. More specifically, for Greece, we observe two different periods conforming the natural rate hypothesis: one starting around the Great Recession and ending just before the deepening of the European debt crisis and the other one starting just after the adoption of labor market reforms implemented with the onset of the debt crisis to enhance the flexibility and productivity in the Greek labor market. For Spain, similar to the case of Greece, two stationary regimes are detected. The first stationary regime is observed over the period of 2005(1)-2007(11), which is attributable to successful adoptions of the subsequent labor market reforms in Spain. During the Great Recession and the European debt crisis, hysteresis takes over with increasing unemployment rates. Afterwards, following the labor market reform launched in 2012 to retrain the impact of the debt crisis and making the labor market more dynamic and less segmented, Spanish unemployment seems to be identified by the natural rate hypothesis again.

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# Chapter 9

## SUPPRESSIVE REACTIONS OF

## ORGANIZATIONS AGAINST TO WORK-LIFE

## BALANCE POLICIES

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**Introduction**

The increased importance of economic concerns of organizations, developments in new technologies abolished borders between home and work. Workers are expected to be online all the time irrespective of weekends or leisure time. Labor force participation of women, dual-income career families, extended working hours, and rising in the number of single-parent households make it difficult to balance work and life (Davis & Kalleberg, 2006; Radcliffe & Cassell, 2015). These factors triggered not only to make research on work-life balance but also form laws, regulations, policies at the governmental level.

There are studies that confirm positive outcomes of work-life balance for individuals and organizations. Work-life balance practices not only contribute to happiness, welfare, job satisfaction of the individuals, but also positively impact organizational performance, productivity, reputation (Perrigino, Dunford, & Wilson, 2018). On the other hand, some studies explain the reluctance of individuals to use work-life balance initiatives (e.g., Kirby & Krone, 2002). Increased effect of work-life balance on the happiness of people and welfare of the societies direct governments to formulate new regulations and policies such as care leaves, flexible working hours, parental leave.

Work-life balance should not be limited as an individual level necessity because of its impact on happiness, and job satisfaction. The government's role as a formulator of the laws, regulations, and policies has a substantial impact on work-life balance of citizens. Organizations have a practitioner role to transform the rights of employees into practice to balance work and life. Even, individuals seem as the beneficiaries of the work-life instruments, the effectiveness of work-life balance initiatives depends on the governmental and organizational level support. Bardoel & De Cieri (2014) identified the most common work-life instruments. Policies and programs and work organization practices are indicated as important categories that contribute to work-life balance (Bardoel & De Cieri, 2014; p.642).

The government as a formulator of the laws, regulations, and policies is the source of coercive pressure that enforces organizations to comply with the specific rules and standards to gain legitimacy and survive (DiMaggio & Powell, 1983). Coercive mechanisms are among the sources of institutional isomorphism that direct organizations to act and implement the same practice and become more similar (DiMaggio & Powell, 1983). Organizations are aware that non-compliance to coercive pressures weaken their legitimacy. To deal with these pressures, they may develop passive resistance to protect their business interests opposing coercive pressure in the form of law and regulation.

Although there are studies that confirm positive outcomes of work-life balance for individuals and organizations, governmental regulations in the form of coercive pressure to support work life balance may not always be compatible with the business interests of the organizations. The critical question is whether organizations are always eager to implement work-life balance policies. If organizations are not eager to be supportive, how organizations respond to coercive pressures that aim to support work-life balance.

To examine this situation, laws and regulations related to work-life balance issue are chosen to represent formal coercive mechanism in the study. The reason to choose work-life balance issue is; organizations are exposed to the sanctions that they should obey such as maternity or parental leave. Even there are written policies that allow employees to leave for some reasons such as maternity leave, in practice negative signals of employers, the pressure of other peers against to employees who want to use family supportive practices prevent them to use work-life policies. Even though coercive pressures as in the form of law and regulation may impose sanctions on the organizations, organizations may develop invisible reactions to reduce the power of coercive pressures. The purpose of the study is to examine the suppressive reactions of organizations on the utilization of rights and options to balance work and life. Even coercive mechanisms trigger isomorphism among organizations to survive and gain legitimacy, the effectiveness of coercive mechanisms can be blocked by passive resistance of organizations.

The content of the study starts with coercive mechanisms and their impact on organizations. Following the coercive mechanisms, work life balance issue will be examined. After that, suppressive reactions of organizations against coercive mechanisms for work-life balance will be emphasized.

### Impact of Coercive Mechanisms on Organizations

The neo-institutional theory indicates that the institutional environment shapes the structure and processes of organizations (Meyer & Rowan, 1977; Zucker, 1977; Scott & Meyer, 1992; DiMaggio & Powell, 1983). The institutional environment is viewed as imposed power on organizations that forces them to comply because this is the proper way to gain legitimacy and increase survival chances (Scott, 2001). The institutional environment provides "templates for organizing" (DiMaggio & Powell, 1991, p.21). These templates are accepted beyond question and assessed as the proper, right, and appropriate way by organizations (Greenwood & Hinings, 1996, p.1027).

Another proposition of the neo-institutional theory states that organizations in the same institutional environment will be under the effects

of isomorphic processes which direct organizations to act in a similar way (DiMaggio & Powell, 1991). DiMaggio and Powell (1983, p.150) classified sources of institutional isomorphism as "1) coercive isomorphism that stems from political influence and the problem of legitimacy; 2) mimetic isomorphism resulting from standard responses to uncertainty; and 3) normative isomorphism, associated with professionalization."

The coercive mechanism is one of the sources together with normative and mimetic mechanisms to direct organizations. Coercive mechanisms include the capacity to determine rules, laws, and sanctions. They have ability to reward or punish thus influencing future behavior (Scott, 2001). Especially force, fear, and expedience are the basis of compliance to coercive pressures (Scott, 2001). Pressure from the dependent organization and pressure to conform to the cultural expectations of the larger society are two forces trigger coercive mechanism to work (DiMaggio & Powell,1983). Increased resources, legitimacy, and the attainment of accreditation and sanctioning are the benefits of compliance to the coercive pressures (Johnston, 2013).

Although organizations are expected to comply with coercive pressures to gain legitimacy and increase survival chances, organizations may respond to demands, requirements, or pressures of environment strategically even they are in the same organizational field. Different interests, different values, and different interpretations direct organizations to respond strategically (Oliver, 1991; Aracı, Boal & Gurbuz, 2020).

While various organizational and environmental antecedents are available, organizational responses to environmental pressures and demands should not be limited to compliance. Hung & Whittington (1997, p.557) linked strategic diversity to different demands of three systems as technology system, business system, political system in the industry. Pache & Santos (2010) indicated that the nature of demands and internal representation of demands influence an organization's responses. North & Thomas (1973) concluded that actors tend to comply with socially desirable activities only if their private costs are less than private benefits.

Structure of the industry, the relationship between government, complexities in the public management systems, resource dependence, and characteristics of the top management are among the antecedents that trigger organizations to response differently (Powell, 1991; Kraatz & Zajac, 1996; Martinez & Dacin, 1999). For instance; Tolbert & Zucker (1983) study on the U.S. municipal civil service reform diffusion and effects of coercive isomorphism. The size of the city and the proportion of white collars were found significant to comply with the coercive pressures (Tolbert & Zucker,1983). Cole (1989) compared organizations

in Japan, Sweden, and the United States based on the adoption of quality circles as an institutional pressure. They concluded that the more support by governmental agencies, trade associations, and union organizations, the more widely spread adoption of institutional pressure. Ruef & Scott (1998) explained the significance of dominant institutional logic to direct organizations in their study that examines hospitals. Beck & Walgenbach (2005) concluded that organizational size, administrative intensity, and proximity to the sources of institutional pressures enhance the pressure of compliance to the institutional environment. There are studies that indicate public organizations have more tendency to comply with the pressures because of their dependence on the government, because of public scrutinization (e.g., Edwards, Mason, & Washington, 2009; DiMaggio & Powell, 1983; Goodstein, 1994).

### Work-Life Balance

Are we working to live or living to work? Is there any certain rate for the question of to what extent work should cover life? Our individual answers can be shaped based on our personalities. To what extent individuals balance their work and life depend on different antecedents such as work involvement, family involvement, amount of time spent at work, amount of time spent with family, role overload, work stressors, family stressors, age, marital status, tenure, and the number of children at home (Fisher, 2001), women's orientations into three broad categories; family oriented; work oriented and work and family oriented women (Hakim, 2003). On the other hand, influential external environmental factors cannot be ignored. The rising rate of women who are joining the labor force market, an increase in the number of dual-earner families, single-parent families, families with eldercare duties trigger work- life conflict.

Even work-life or work-family is used interchangeably, there are definitions that support the term "life" is more comprehensive than the term "family". Classification of activities as paid work activities and non-work activities is one of the ways to understand the difference.

Another component of the construct that is used interchangeably is "balance" or "conflict". Chang, McDonald, & Burton (2010, p.2389) stated that "low conflict or high satisfaction" in both work and family is assumed as balance in their study that examines the methodological choices in work-life balance research. The conflict reveals as a result of unbalanced outcomes of work and life (Chang, McDonald, & Burton, 2010). Conflict between work and family roles occurs under three conditions (Greenhaus & Beutell, 1985, p.76); "*(a) time devoted to the requirements of one role makes it difficult to fulfill requirements of another; (b) strain from participation in one role makes it difficult to fulfill requirements of another;*

*and (c) specific behaviors required by one role make it difficult to fulfill the requirements of another*".

Hill, Hawkins, Ferris, & Weitzman (2001, p.49) emphasized the importance of balance among the "temporal, emotional and behavioral" dimensions of work and family to define work-family balance. Work-life conflict occurs when work demands, steals from the time that people will spend with their families or vice versa (Hobson, 2011).

Benefits of the work-life balance practices in terms of business, economy, parents and careers, people with disabilities and the workforce are indicated by Hogart, Hasluck, Pierre, Winterbotham, & Vivian (2001, p.2) as; "(1)business, through easier recruitment, improved retention, and easier service delivery; (2)the economy, as the labor market grows more skilled and experienced people are available to work; (3)parents and careers, who can spend quality time at home as well as providing financial support through work; (4)people with disabilities, through improved access to work; and (5)the workforce generally where they are better able to balance their work with other aspects of their lives".

Governmental, organizational, individual and task level factors imply work-life balance. Marital status, age of children, and size of the family are some of the individual level factors that have the potential to affect work-life balance. Being married than unmarried, having younger children than older children, large families than small families experience higher levels of work-family conflict (Greenhaus & Beutell, 1985). There are some work level factors that trigger work-family conflict. Task challenge, variety and importance were negatively correlated with work-family conflict (e.g., Jones & Butler, 1980; Brief, Schuler, & Van Sell, 1981). Job-person fit, lack of job experience, the gap between expectations and practices of employees (Bartolome & Evans, 1980), long and inflexible working hours, extensive travel, overtime working may be associated with work-family conflict (Greenhaus & Beutell, 1985).

Governments attempt to motivate organizations to have policies that reduce work-life conflict. Laws, rules, regulations at the governmental level impose sanctions on organizations to ensure work-life balance of employees. Goodstein (1994) examined the organizational responsiveness to institutional pressures related to work-family issues. This study concluded that the strength of institutional pressures and expectations related to effects of compliance behavior to pressures on technical outcomes are significant to explain compliance behavior of organizations to pressures related to work-life balance. Davis & Kalleberg (2006) studied what kind of organizations use work and family practices. They stated that organizations use family friendly practices for two reasons as for economic

concerns and institutional pressures. Both of them were significant to explain family friendly practices of the organizations. Also, they concluded that organization size is a significant antecedent to explain family friendly practices of organizations. Not only for their resource availability but also being subject to greater scrutiny by external actors is a significant antecedent of being family friendly organization.

However, there are still factors that inhibit exercise and utilize rights and options to balance work and life (Hobson, 2011). This study aims to make suppressive reactions of organizations against work-life balance policies visible. Modern organizations evaluate the family side as competing with the business side and they have a tendency to ignore the family side (Kanter, 1977). Being exposed to strong sanctions because of noncompliance with work demands is more possible than noncompliance with family demands for employees (Greenhaus & Beutell, 1985).

### Suppressive Reactions of Organizations on Utilization from Rights and Options to Balance Work and Life

The impact of environmental, organizational, job level factors on work-life balance has increasing importance. Availability of governmental regulations, policies do not meet the necessity of people to balance work and life. Countries attempt to reduce the gap between the expected and realized situation by formulating policies on leave, care, flexible working hour arrangements. The multilayered structure of work-life balance render governmental level attempts deficient. Organizations are part of this multilayered structure. They have a practitioner role to transform rights and options offered by policies into practice.

Hobson & Fahlen (2009, p.18) stated that "laws and particularly social rights can enhance capabilities: they are part of an individual's capability set to convert her/his assets and resources into positive outcomes". How these laws and social rights are executed in the organizations is critical. If organizational context enables to use of these rights, the aim of the work-life balance policies can be achieved. If these rights are converted into practices, outcomes of work-life balance such as happiness and welfare of the society can be gained.

Conversion of work-life balance policies into practices can be prevented both by individuals and organizations (Hobson & Fahlen, 2009). Hobson & Fahlen (2009) called this problem as an agency gap that refers to the gap between policies and possibilities for employees to exercise them in work-life balance. People may restrain to use these rights based on their own individual preferences (Emslie & Hunt, 2009; Caproni, 2004). For instance, economic conditions of the family or career concern may remove the individual to benefit from work-life balance policies. On

the other hand, an unsupportive organizational culture of organizations may alienate individuals to make use of work-life balance policies and may limit their ability to ensure work life balance (Kirby & Krone, 2002; Hobson & Fahlen, 2009).

Even the coercive mechanisms direct organizations to offer rights and options such as parental leave, daycare policies, flexible working hours for employees, organizations still have the option to select from among the strategic responses (Oliver, 1991; Goodstein, 1994; Aracı, Boal, & Gurbuz, 2020). Pressures that organization faces can be contradictory with the core features of the organization. The conflict between demands of institutional environment and organizational internal arrangements and routines may reduce the possibility of organizations adapting to legitimate external expectations (Beck, Walgenbach, 2005). Even the governments formulate policies to support work-life balance, if the implementation is at the discretion of the employer, they may stand business interests over the work-life balance of their employees. Hogart et al., (2001) concluded that employers accepted their responsibility to help employees to balance their work and life (59%); but achieving the organizational goal is stated as the primary responsibility of employers (85%). The business case approach to work life balance is predominantly seen in organizations (Perrigino, Dunford, & Wilson, 2018).

Competitive tactics, type of labor force, demographic profile of the employees, organizational structure have potential to shape the attention of organizations to work family related issues (Milliken, Dutton, & Beyer, 1990). For instance, organizations that pursue low cost strategy, take into consideration the cost and benefit of work-family policies. Or, if the organization operates in a knowledge intensive industry, recruiting and retaining skillful employees in the organization enhances organizational attention to work-family concerns of employees (Milliken, Dutton, & Beyer,1990). On the other hand, the internal demographic profile of the organization may draw attention to work-family concerns of employees. Such as rate of employees with dual-career and child care, and age distribution of the employees are critical to making the work family concerns visible. Open communication channels in the organizational structure informed decision makers about work-family problems of the employees (Milliken, Dutton, & Beyer, 1990).

There are organizations that offer family friendly workplace initiatives more than imposed by laws and regulations. Economic utility, to be attractive for the highly qualified employees (Hogarth et al.,2000); to sustain commitment and motivation of employees (De Cieri, Holmes, Abbott, & Pettit, 2005) can be the reasons for voluntarily provided leave arrangements. On the contrary, some organizations use mechanisms to limit

offered rights to support work-life balance. It is a sign of how important institutional setting is. The institutional setting where the work life quality is embedded may limit a person's ability to ensure welfare and work-life balance (Hobson & Fahlen, 2009). Even there are written policies that allow leaving for some reasons such as maternity or parental leave, in practice these policies are not followed as written (Kirby & Krone, 2002). The negative signals of managers, lack of open support of managers put pressure on employees not to use work-life policies (Raabe & Gessner, 1988; Kirby & Krone, 2002). Emphasizing the final date of leave or role modeling of individuals that work hard can be given as tactics to put pressure on employees (Kirby & Krone, 2002). Employees may feel this pressure implicitly. Managers may use this tactic deliberatively to minimize the number of employees intends to utilize rights and options. For instance, a mother may make use of the unpaid maternity leave for the newborn child. This is the right offered by coercive mechanisms. However, the right to use this option can be paid in the form of an assignment to a lower position, or an assignment to a position incompatible with skills and training after the leave. Individuals who use work-life balance policy may face "extrinsic" (e.g., lower wages and fewer promotions) and "social" (e.g., ostracism or stigmatization) penalties (Perrigino, Dunford, & Wilson, 2018, p.610).

Hobson & Fahlen (2009) mentioned how organizations directing norms toward the way they wanted to be and how these norms are disseminated in the society with these sentences; "*There are subtle ways of enforcing norms around working times and work commitment. Narratives of risk travel through workplaces about persons who have lost a position or experienced discrimination because they are perceived as prioritizing family over job commitment. Norms also travel through networks outside of the workplace among family, friends and in communities, which can lead to a reinforcement of, or challenge to, gendered norms*" (Hobson & Fahlen, 2009, p.36).

Blair-Loy & Wharton (2002) mentioned that social context in the organizations shapes their responses to the institutional environment. Organizations may comply with policies to sustain or gain legitimacy. But, the fate of policies after adoption will be shaped based on the social context in the organizations. Greenhaus & Powell (2003) stated that supervisors and coworkers send signals whether usage of work life policies will be approved or not. If the signals are not supportive of the usage of work-life balance policies, employees are reluctant to ask for work-life balance. Because, asking can be perceived as less committed to the firm and can reduce the possibility of promotion (Blair-Loy, 2003). For instance, employees believe that even their managers confirm their request for flexible working hours, consequences of deviation from the

traditional working hours are plentiful for their career (Brescoll, Glass, & Sedlovskaya, 2013).

Suppressive reactions of organizations against to usage of work-life balance policies are called strategic mechanisms that trigger backlash (Perrigino, Dunford, & Wilson, 2018, p.607). This response is called "window dressing" which refers to "instances where organizations promote work-life balance policies yet find ways to prevent their usage" (Perrigino, Dunford, & Wilson, 2018, p.609). These policies fail to produce significant changes if organizations adopt these policies symbolically (Blair-Loy & Wharton, 2002). According to Westphal & Zajac (1994), controversial and ambiguous policies are generally adopted symbolically. Although employers offer work-family policies, the legitimacy of the work family policies is not as same as the legitimacy of health insurance (Osterman, 1995).

Milliken, Martins, & Morgan (1998) explored why organizations differ in terms of practicing policies about work-family issues. Sectoral differences, interpretation of human resource staff on work-family issues and their impact on organizational performance were found significant. Societal norms that are embedded in society are also influential on organizational responses to work-life balance. For instance, if the societal norms prioritize care responsibilities of women over the employment of women, organizations do not see any inconvenience to offer part-time working time regimes (Plantenga, Schippers, & Siegers, 1999). Similarly, Goodstein (1994) stated that not only social but also economic, political factors influence organizational practices related to work and family issues.

Different factors may trigger suppressive reactions of employers such as "(1) the gender of the employee, (2) the status and authority of the job held by the employee, and (3) the reason or justification given for the request" (Brescoll, Glass, & Sedlovskaya, 2013, p.371). The cost of implementation of work-life balance policies may trigger organizational decision makers to shift away from family supportive practices (Perrigino, Dunford, & Wilson, 2018). For instance, childcare provisions can be one of the antecedents of a decrease in profits and decision makers evaluate this family friendly practice as unnecessary (Perrigino, Dunford, & Wilson, 2018). Another reason for resistance to family friendly practices can be the increased number of cases taken to the court because of limited implementation of work-life balance policies. The possibility of being fined and labeled as "worst companies to work for" because of insufficient organizational support for work-life balance (Perrigino, Dunford, & Wilson, 2018, p.605) triggers implicit suppressive reactions of organizations. Interpretations of environmental demands by decision makers shape the strategic responses of organizations in terms of timing and content of strategic change (Barr,

1998). Milliken, Dutton, & Beyer (1990, p.101) expressed "managerial values, the nature of the organization's workforce, and organizational performance" are likely to shape interpretations of work-family issues.

Organizations may resist these policies not only for prioritizing business interest over work-life balance. They may resist because of the unfair advantages of the work life balance policies provide to some. For instance; these policies may create family friendly backlash among single employees without families (Casper, Weltman, & Kwesiga, 2007). Single employees view policies as inequitable (Flynn, 1996; Kirby & Krone, 2002), and unfair (Parker & Allen, 2001), childless workers may protest family friendly policies (Harris, 1997; DePaulo & Morris, 2005), men who do not use these policies may develop negative attitudes (Casper & Harris, 2008). Backlash is defined by Parker & Allen (2001,p.453-454) as "some employees believe that work/family benefits are inequitable and even discriminatory. . .this resentment among some employees has been referred to as "family-friendly backlash".

Perceived inequity between employees with families and without families can be seen in the form of "pressure of coworkers" on employees who utilize work-family benefits. Fear of coworker reactions may restrain individuals to utilize the work family benefits (Kirby & Krone, 2002, p.66). For instance, coworkers of work life balance policy users may reduce collaboration and communication when individuals use a work life balance policy (Perrigino, Dunford, & Wilson, 2018). Kirby & Krone (2002) mentioned that coworker pressure functions as a control system of the utilization of work-family benefits, especially in the team culture to prevent abusing the work-life policies. Absolutely not only the demographic profile but also a way of implementing work-life balance policies enhances the concerns about the unfairness of work life balance policies (Perrigino, Dunford, & Wilson, 2018).

### Conclusion

The purpose of the study is to understand the intentional reactions of organizations that inhibit the effectiveness of the work-life balance policies, laws and regulations. Even coercive pressures trigger isomorphism among organizations to survive and gain legitimacy, suppressive reactions of organizations may influence the effectiveness of coercive mechanisms.

This study contributes to develop suggestions to improve existing policies and develop control mechanisms on organizations to determine their compliance to the laws and regulations that support work life balance. To reveal the effectiveness of coercive pressure requires taking into consideration not only the government as policy formulator but also the organization as a practitioner of these policies.

Improved work relations, increased motivation, happier employees, lowered labor turnover, increased rate of labor market participation of women are some of the benefits of work-family balance practices (Hogart, Hasluck, Pierre, Winterbotham, & Vivian, 2001). On the other hand, costs of these benefits such as shortages of employees, the workload of managers, and other kinds of business costs should not be ignored (Hogart, Hasluck, Pierre, Winterbotham, & Vivian, 2001). The better formulated policies, the more balanced work and life individuals have. Solving or reducing work and life conflict contributes to enhancement in the social welfare. According to an OECD report, work-life balance policies in the EU context lead to economic efficiency, gender equality, child well-being (OECD, 2007).

Policy implementation and utilization are explained as a process of communication and structuration (Kirby & Krone, 2002). Communication between employee and manager has a significant role to create cultural norms that support the appropriateness to get benefit from the work life policies. On the other hand, the communication process transfers mixed messages to employees that are seen as family friendly but aim to put pressure on employees not to utilize (Kirby & Krone, 2002). Controversial and uncertain policies may transform policy outcomes (Blair-Loy & Wharton, 2002). For instance; employees who see work-life balance policies as unfair and increase the workload of childfree employees may respond with counterproductive work behavior (Beauregard, 2014). Actions and statements of managers must be consistent (Paustian-Underdahl & Halbesleben, 2014).

More flexible and optional work-life policies leave place for organizations and negotiations between employees and organizations (Brandth & Kvande, 2002). The role of the human resource professionals is critical to explain the importance of decisions about work-life balance in a less favorable context. If decision makers are convinced of the importance of the issue, organizations respond more appropriately. Beyond the role of human resource professionals, integration of work-life balance policies to organizational strategy and evaluate work-life balance as part of the strategic human resources management (De Cieri, Holmes, Abbott, & Pettit, 2005) is another suggestion worth to mention.

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# Chapter 10

## BUSINESS INTELLIGENCE TRENDS IN SECTORS:

## A REVIEW ON HEALTH SECTOR

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**Introduction**

In today's competitive environment, having a tool to summarize all the data on one page and using graphs and tables to easily explain the data to relevant stakeholders (e.g. managers and employees) is critical. To acquire these information, firms often use business intelligence (BI). It may expressed as a technology that can use data warehouses, data mining and other statistical methods in an integrated manner and provides reports that are fit for purpose. The appropriateness of using BI has greatly improved, which has led to a new advanced stage of organization. The company who will be able to adapt to changing in business by adapting the BI system to continue and gain a competitive advantage over other organizations will be from the pioneers in the field. In this study, first of all, the concepts of BI and primarily related issues such as data mining, are explained. Within this conceptual framework according to sectors, the findings obtained by the analysis of research articles published in Procedia Computer Science database, are presented.

**1. Literature Background**

In this part, first, the emergence process of the term business intelligence in the literature and widely accepted definitions will be identified. Afterwards, business intelligence tools and implementation will be clarified. Finally, the benefits of using business intelligence in today's businesses will be explained.

**1.1. Definition and Use of Business Intelligence**

Business Intelligence (BI) is a general term coined by Howard Dresner of the Gartner Group in 1989 to describe a set of concepts and methods aimed at improving business decision-making using computerized, fact-based support systems (Rouhani, Asgari, & Mirhosseini, 2012). BI is the process of collecting the right information in the right format at the right time. The results produced by these decision processes have a positive effect on business operations, tactics and strategies in businesses for decision making (Zeng et.al, 2012: 297).

BI systems can be defined as systems that provide structured data that is collected, stored, and updated from a variety of sources. BI is the use of software and services to convert data into actionable data that provides a basis for an organization's strategic and tactical business decisions. BI tools access and analyze datasets and display those analysis results in reports, charts, and diagrams to give users insight into the business situation of their data. This process enables relevant managers to process and analyze changing data and understand the causes which ultimately results in relevant information being used effectively in making the right decision for the company (Pratt & Fruhlinger, 2019).

The requirements of BI can be expressed as follows: It provides the opportunity to take new steps, break the routine of things that have been in the business for a long time, think outside the box as BI creates entirely new perceptions, and administer BI projects contributed with the appropriate support from management. Mainly, using BI has three main objectives (Azeroual & Theel, 2018):

• Improving the basis for decision-making: As decisions are usually made based on the information received; by better preparing the information, the basis for decision-making can be significantly improved.

• Rising the transparency of corporate actions: With the use of BI, employees can take responsibility for their area and understand business decisions.

• Demonstrate the relationships between solitary information: BI solutions are designed to link data from different sources and identify relationships that cannot be obtained from information sources considered individually.

Depends on these goals and the required focus, three approaches of usage BI are used (Rouhani, et. al., 2012):

• A management approach that emphasizes the improvement of decision making.

• A technical approach focused on tools to support processes linked to the intelligence of the management approach.

• Enabling approach by directing on value-added capabilities as information support.

### 1.2. Business Intelligence Tools and Implementation

The components needed in the business intelligence system are classified as online analytical processing (OLAP), data mining, data stores and Extract-Transform-Load (ETL) tools (Olszak & Ziemba, 2003: 855-857). BI applications use data warehouse and OLAP technology. A data warehouse is the technology that stores and manages data. OLAP transforms this data into strategic information. It investigates the correctness of a hypothesis put forward in many ways. At this point, complex calculations, time series and modeling are also included in addition to simple operations to reach data (Reinschmidt & Francoise, 2000). Since 1960s, businesses have had the expectation of preparing data in different parameters for different user groups. For this, OLAP is built. OLAP organizes data by time, category, quantity, etc. It is a system that stores multidimensional information and provides information in accordance with the parameters determined when necessary (Matei, 2010: 91-93).

The first data warehouses were built to take advantage of stored data stacks. Thus, it was ensured that companies were better managed and their planning and control activities were based on reliable data. Then, when resources containing different data were needed to make more comprehensive decisions, the concept of data islands was born (Zeng et.al., 2003). Over time, data warehouse application types have diversified. Therefore, data warehouses played an active role in helping companies reach a flexible and dynamic structure.

The data categories within the data warehouse system are classified as internal data, external data and meta data. Data warehouses use both internal and external resources to extract information from the seemingly useless stack. It translates their language into one that can be understood by the firm (March & Hevner, 2007). Internal data is the data that companies create as a result of their daily operations and transfer them from OLTP systems to the data warehouse. All kinds of data that may be subject to the analytical process regarding the products and services created by the companies, customers or employees can be evaluated within this scope. Also, especially sometimes constraints or parameters have to be taken into account. These external data are of high importance in some sectors. The health sector is one of these sectors. Because it is highly dependent on the environment. In other words, no single institution can create the entire health knowledge base because treatment modalities, local demographic information and general health statistics are also needed (Roddick et.al., 2003).

Data mining, by appropriate computer software, it provides statistical correlation of events/operations that have taken place over time. The information obtained can be qualitative or quantitative. The accumulated data is aggregated to shed light on future predictions. In order to avoid establishing unnecessary data relationships, it would be appropriate to determine the possible relationships between the data by the user (March & Hevner, 2007: 1039).

The ETL tool is required to feed the various databases. ETL tools support the extraction and transformation of data from heterogeneous source systems. Transformation includes the exclusion of syntactic and semantic errors, harmonization of data from disparate sources, and data aggregation and enhancement. To store and manage unstructured data, a content management system (CMS) and document management system (DMS) are placed in one of the BI layers called the data layer (Ouf & Nasr, 2011: 655).

### 1.3. Benefits of Business Intelligence Systems

Business intelligence has impact on the quality of decision making. Wieder and Ossimitz (2015) showed that the quality of BI management

has a direct and/or indirect positive impact on data quality, information quality and the reach of BI solutions, and this effect is translated into an indirect positive impact on the quality of management decision-making. Most organizations equate BI with information dissemination. However, the real value of BI is not just the dissemination of information. BI refers to a management concept and a tool used to help organizations manage and improve business information to make more effective business decisions. BI is the overall concept of tools, technologies and solutions that can help managers understand business conditions. It is an analytical, technical support process that collects and transforms fragmented data of the enterprise and the market into information or knowledge about the organization's goals, opportunities, and positions. The results of the analysis of this data are reports containing valuable and relevant information that is provided to managers, and they also give indications in the decision-making and management processes of the company.

Today, the use and analysis of this data has become one of the latest effective management tools. There are many analytical applications that are increasing day by day that take advantage of BI techniques to better manage business performance. On that basis, as organizations seek to use BI to lead, support decision-making, manage and optimize their business, thus driving business transformation, BI functions will become more common in operations and workplace applications. In this way, companies can finally achieve a financial advantage in the overall cost, gain a competitive advantage, improve employee skills, update and create new job opportunities and many other advantages.

Almost all organizations can benefit from using BI, but there are still some obstacles that provide the right conditions for a successful BI implementation. It is related to corporate culture and the way BI is handled (Azeroual & Theel, 2018). BI systems provide exceptional functionality and efficiency for processing and analyzing large amounts of structured data generated by organizations from various data sources. Unfortunately, these systems are extremely difficult and expensive in terms of the IT infrastructure, technical equipment and personnel who can use them. Therefore, for the effective use of these expensive systems, ongoing support and guidance is required in the development and use of these systems. To continuously improve the effectiveness of BI, it needs to be regularly updated and integrated with the trend data analysis approach. As Kubinaa et.al. (2015) indicated that BI improves efficiency by providing software support embedded system and integration of mobile devices and technology for the processing of various data.

## 2. Method

Environmental, ecological, global and technological changes bring many changes in sectors, especially business process and products/services. Business intelligence technologies are widely used in various industries. The healthcare sector, which includes many areas of expertise, is one of the sectors that is changing. The sector and hospitals have to adapt to business intelligence technologies. The aim of this study is to point out the issues of BI in general and to draw attention to studies investigating business intelligence trends in the healthcare sector between 2016 and 2020.

In the study, a descriptive review method was used in two stages. In the first stage, database, key words and data analyzed method has been decided. The database was consisted of Procedia Computer Science journal's research articles. It was chosen as the journal because it focuses on publishing high-quality conference papers on topics related to computers and technology, and all issues are available online. In the 2016-2020 issues of the journal, the keywords "health" and "business intelligence" were searched together. In the second stage, the research articles that were found in the first stage has been looked into their contents. So, those who directly examined the subject of business intelligence in the field of health were determined.

## 3. Analysis

In this part, first of all, business intelligence applications in various sectors and business types will be determined through the researches in the Procedia Computer Science journal; then, business intelligence applications in the health sector will be identified and explained.

### 3.1. Business Intelligence Applications in Different Sectors and Some Examples

Digitalization and Industry 4.0 is the period in which the internet of things and cyber physical systems are used (Kagermann et.al., 2013). Business intelligence and analytics (BI&A) and big data have become significant in both academic and business communities. BI&A evolution consists of three phases as shown in Table 1.

*Table 1*

*BI&A evolution: Key characteristics and capabilities*

| | *Key Characteristics* | *Gartner BI Platforms Core Capabilities* | *Gartner Hype Cycle* |
|---|---|---|---|
| BI&A 1.0 | *"DBMS-based, structured content* • *RDBMS & data warehousing* • *ETL & OLAP* • *Dashboards & scorecards* • *Data mining & statistical analysis* | • *"Ad hoc query & search- based BI* • *Reporting, dashboards & scorecards* • *OLAP* • *Interactive visualization* • *Predictive modeling & data mining"* | • *"Column-based DBMS* • *In-memory DBMS* • *Real-time decision* • *Data mining workbenches* |
| BI&A 2.0 | *Web-based, unstructured content* • *Information retrieval and extraction* • *Opinion mining* • *Question answering* • *Web analytics and web intelligence* • *Social media analytics* • *Social network analysis* • *Spatial-temporal analysis* | | • *Information semantic services* • *Natural language question answering* • *Content & text analytics* |
| BI&A 3.0 | *Mobile and sensor-based content* • *Location-aware analysis* • *Person-centered analysis* • *Context-relevant analysis* • *Mobile visualization & HCI"* | | Mobile BI" |

Note. From Chen, Chiang, & Storey, 2012, p. 1168.

According to Table 1, with developing technology and capabilities, as Chen et.al. (2012: 1168-1169) pointed out "the important selected examples or studies are e-commerce and market intelligence, e-government and politics, science and technology, smart health and well-being, and security and public safety".

In this study, some articles on business intelligence published in the literature in 2016-2020 were examined. Accoding to this, BI and applications is used in a wide variety of ways, from the marketing and accounting

systems of institutions to their activities in social media. As Dresner said, business intelligence is an important umbrella concept of the period. From logistics to financial and health institutions, small or large businesses are trying to take advantage of BI in various ways. Some examples from the articles are presented below.

**For example, a study with title "Business Intelligence applied in Small Size for Profit Companies" has been done (2018, pp. 45-57) by D'Arconte.** This study made an attempt to find a way to apply BI in small businesses with a focus on two main aspects, the extent of customer profit and the level of customer satisfaction.

The study concluded that most small businesses in particular do not use this type of technology to collect the data required to run their businesses successfully, but they get enough through one accounting tool, the balance sheet, which is incomplete or inadequate. As a negative multiplier factor, studies indicated that specifically for the Italian market, about 60% of companies in 2012 were made up of individuals and about 35% were micro-enterprises with an average of 3.6 employees each; which means that there is no way to access the advanced technologies that are often too expensive for such companies. According to the researchers, after that year and throughout the whole of 2017, there is no evidence of improvement, only worsening due to the ongoing financial crisis around the world and with it the growth of individual and micro-enterprises. Therefore, it can be concluded that only a few large companies have access to advanced BI applications while the vast majority seem to be deprived of them unless there is an easier way to achieve similar applications, even if the results are partial. The researchers believed that these partial results can be obtained by focusing on two main aspects that have a very large impact on financial results, which must be monitored constantly for companies, but unfortunately neglected aspects, which are the level of customer satisfaction and profitability; and to focus on the most profitable customers and not in a way random.

The result of the researchers' interviews with the entrepreneurs was that none of them acted according to these standards. Therefore, the most important conclusion is that the main problem here is not technical issues, but an entrepreneurial culture, which makes companies uninterested in investing in customer relationships and their satisfaction and monitoring profitability, because they tend to ignore existing customers and focus on the search for new customers. The last major conclusion as outlined in the study is that for entrepreneurs. It seems that most entrepreneurs have not received any managerial preparation, that the education system may not fully meet the task of providing students with the proper preparation for entrepreneurship, and that the results of business students from different countries disappointed.

**Adding to this, a study with title "Business Intelligence and Analytics in Small and Medium-sized Enterprises: A Systematic Literature Review" has been done (2017, pp. 194-205) by Llave.** The paper is a review of the literature on BI and Analytics (BI&A) in small and medium-sized enterprises (SMEs). As shown in the study, despite much interest in BI and analytics (BI&A), there is not sufficient studies on BI&A in SMEs. SMEs represent nearly 90 percent of businesses and businesses according to IFC data, so importance must be given to improving the competitive strength of these companies. In this regard, BI&A have been used as a standard term to describe concepts and methods that use information-intensive to improve corporate decision-making.

According to the study, the components of BI&A may contain various techniques and tools. Many SMEs stay out adopting this technology. The mature set of open source BI&A solutions presented in the study offer solutions in most areas of BI&A functionality. So, it has become a strong choice for organizations to meet their business intelligence needs. Embedded with organizations, mobile BI&A has similar functionality to traditional BI as it enables ubiquitous access to services, which is great even though some important aspects require more attention. Cloud BI&A has also been seen as a good low-cost alternative solution that is licensed for SMEs, but due to security and control issues, there is a reluctance for small and medium businesses to enter it.

BI&A applications have penetrated into many industries such as banking. However, there are few studies about how BI&A can be implemented in different industries. Some of these studies provided frameworks, models, theories of BI&A adoption, while others identified the factors and determinants that influence BI&A adoption in SMEs. Many scientific papers discussed the implementation of BI&A from different perspectives, and many frameworks emerged to provide guidance regarding the identification of factors that support the successful implementation of BI&A, taking into account the lack of a clear definition of success. In the literature it is possible to see several studies which regard the multiple benefits of BI however only three studies have discussed it for SMEs.

**Besides, a study with title "Business Intelligence for Designing Restaurant Marketing Strategy: A Case Study" has been done (2019, pp. 615-622) by Halim and Halim.** This study aims to design a marketing strategy for a restaurant using BI. According to the authors of this research, the main problem of this restaurant is that there was no specific marketing strategy, as the promotions used are not targeted and have no effect on sales, as well as the number of menus offered is 106. This situation may cause confusion for the consumer to order food and have a negative impact.

In the study, an application called Power Business Intelligent was used to predict consumption patterns; a web-based program that helps visualize and analyze raw data, making it easier for users of this application to obtain information and make decisions quickly. Through Power BI software, the dashboard has been formed as a tool for restaurant executives to carry out monitoring and decision making. The researchers modeled the consumption pattern using an application of association rules which is a data mining method used to find association rules between a set of items. The application that was used was a market basket analysis, and through it, it was found out which products were purchased at one time.

As a result of data processing, many criteria are obtained when determining association rules; the most important of which are support, trust and leverage. Consumer consumption patterns have been used to design the right marketing strategy using the concept of 4Ps of marketing. According to the research, understanding and using 4P appropriately will be vital factor in achieving successful marketing objectives. Consumption patterns will continue to change over time; so it must be constantly monitored with appropriate tools. According to the researchers, implementing BI with Power Business Intelligent is expected to be a way for restaurants to predict consumption patterns.

**A study with title "Technology Acceptance Model for Business Intelligence Systems: Preliminary Research" has been done (2016, pp. 995-1001) by Bach, Čeljo, & Zoroja.** The aim of this article is to propose a framework for investigating business intelligence implementation (BIS) barriers in companies by extending the established Technology Acceptance Model (TAM) framework. The original model is based on exploring the relationship between perceived usefulness and ease of implementation; intentions to implement and actual system implementation. The proposed standard model for extending the base TAM would be by incorporating latent variables and intermediate variables that represent the company's strategy based on technology and information quality.

The sample size of 100 companies in the United States (one of the most BIS-using countries) would allow to form two layers of company size: 50 large and 50 medium companies. The researcher expects that this proposed model will have contributions such as measuring the current level of BIS use in US companies, and the ability to examine the factors that influence the acceptance of BIS in companies, and these will further enrich the scientific literature in the field of BIS accreditation.

**Adding to this, a study with title "Data Lakes In Business Intelligence: Reporting From The Trenches" has been done (2018, pp. 516-524) by Llave.** According to the research, the term big data was created

to describe the continuous technological change. It has resulted in massive amounts of multi-source, constantly flowing, data in multiple formats. The emergence of this big data provided modern technologies such as data lakes, which represented the main objective of this study in terms of understanding its role in the structure of business intelligence and how it is used in practice by organizations. This technology has enabled organizations to store and process big amounts of structured and unstructured data in local formats. From various industries in Norway, 12 business intelligence experts were interviewed but these interviews did not provide any explicit information about the implementation of this technology.

In the paper, the researchers highlight three uses of data lakes: First, it is seen that data lakes can accommodate any type of data from any source without having to specify data structures or relationships while a relational database cannot do that. So it is better to prefer using data lakes as staging areas for data warehouses. Second, data lakes serve as an experimental platform for analysts who have the ability to understand the content, structure, and data format. Finally, data lakes can be used as direct sources for self-service BI.

The researchers also found that the biggest benefits of the data lake method were in reducing the work of pre-storing data, obtaining more accurate and organized data acquisition, faster access to raw data, and archiving. The advantages allowed companies to transfer data from a variety of sources to get business results quickly. Data lakes pose some challenges like any other technology as these challenges include data stewardship and governance, skills for analytical purposes, data quality, and data retrieval. Data lakes, although a complex solution, develop for both structured and unstructured data storage and analysis techniques; therefore the challenges of implementing a data lake require more attention in the literature.

**A study with title "Challenges and Benefits of Deploying Big Data Analytics in the Cloud for Business Intelligence" has been done (2017, pp.1112-1122) by Balachandran and Prasad.** The purpose of this study is to investigate the effects of cloud computing and big data on business and analyze the benefits and challenges it brings to organizations.

The most important technologies that have entered the mainstream IT industry in recent years are cloud computing and big data analysis. The combination of them will yield powerful results and benefits for organizations. But the problem is that big data analysis requires a lot of computing resources, which makes many small and medium businesses unable to bear the burden of adopting this technology. For this, the benefits and challenges involved in deploying big data analytics through cloud computing will be identified as an alternative.

These benefits include the ability for companies to store and access their data and related services from anywhere at any time, and through these services, they can automate processes anytime and anywhere. Cloud computing can also maintain the competitiveness of companies by providing many advantages (cost-effectiveness, resource pools, on-demand services, rapid flexibility, and easy management). The big data technology provided by cloud computing will enable companies to make proactive, knowledge-based decisions due to their ability to predict future trends and behaviors. Despite all its benefits, there are some challenges and drawbacks, especially with regard to privacy and security.

### 3.2. Business Intelligence Applications in Healthcare Sector with Some Examples

Information technologies should be utilized at a high level in the implementation of operational works in hospitals. Information systems that provide total administrative, medical and financial information in an integrated environment are used in hospitals. These information systems, which are designed to facilitate the management of the administrative and medical business processes of the hospital and to increase the quality of the health services provided, are called Hospital Information Management Systems HIMS (Labio & Garcia-Molina, 1996).

In the study, the two keywords "health" and "business intelligence" were searched for together in studies published in Procedia Computer Science between 2016-2020, and the results were reviewed. The results are shown in Table 2.

**Table 2**

*Articles on business intelligence in the health sector*

| Published Year | According to Keywords Searching | According to Content | Research Article Titles |
|---|---|---|---|
| 2016 | 12 research article<br>2 contents | 6 research article | 1- *"Pervasive business intelligence: A new trend in critical healthcare"* [1]<br>2- *"Towards of a business intelligence platform to Portuguese misericórdias"* [2]<br>3- *"The DAPHNE project"* [3]<br>4- *"Examining older adults' enhanced use of eHealth"* [4]<br>5- *"Efficient heart disease prediction system"* [5]<br>6- *"Using machine learning algorithms for breast cancer risk prediction and diagnosis"* [6] |

| 2017 | 19 research article 2 contents | 5 research article | 1- *"Business intelligence success applied to healthcare information systems"* [7]<br>2- *"Clinical intelligence: A study on corneal transplantation"* [8]<br>3- *"Predicting the need of neonatal resuscitation using data mining"* [9]<br>4- *"On the use of networks in biomedicine"* [10]<br>5- *"Improving organizational decision support: Detection of outliers and sales prediction for a pharmaceutical distribution company"* [11] |
|------|------|------|------|
| 2018 | 14 research article 2 contents | 4 research article | 1- *"Towards a health observatory conceptual model based on the semantic web"* [12]<br>2- *"Improving pervasive decision support system in critical care by using technology acceptance model"* [13]<br>3- *"Scope for the application of blockchain in the public healthcare of the Russian Federation"* [14]<br>4- *"On keyword-based ad-hoc querying of hospital data stored in semistar data ontologies"* [15] |
| 2019 | 11 research article 1 contents | 4 research article | 1- *"Machine learning quorum decider (MLQD) for large scale IoT deployments"* [16]<br>2- *"Clustering and visualization of a high-dimensional diabetes dataset"* [17]<br>3- *"Towards a real-time business processes validation algorithm"* [18]<br>4- *"Design of a SWOT analysis model and its evaluation in diverse digital business ecosystem contexts"* [19] |
| 2020 | 9 research article 1 contents | 5 research article | 1- *"Adaptive business intelligence: A new architectural approach"* [20]<br>2- *"Management of a pandemic based on an openEHR approach"* [21]<br>3- *"How prescriptive analytics influences decision making in precision medicine"* [22]<br>4- *"Meta-heuristic based optimization of WSNs localisation problem- a survey"* [23]<br>5- *"Data life cycle management in big data analytics"* [24] |

24 articles were determined as shown in Table 2. According to their contents, BI technologies are studied in organizations in different countries (e.g. Portugal, Denmark and Russia). BI technologies are used in the detection and prediction of many diseases, such as the heart diseases, cancer, corneal transplantation, and diabetes. Moreover, it is generally used as data store for providing healthcare information. BI applications are used as a way of pharmaceutical distribution and for networks in biomedicine. Also, for decision support, some researches is done with BI models (e.g. Tech-

nology Acceptance Model, SWOT Analysis Model). Besides, BI is studied on pandemic management and data cycle management.

According to Table 2, some researchers emphasize developing an Adaptive Business Intelligence (ABI) architecture that can use predictive technology. Some of them study IS success models and empirically test them on the BI system of Healthcare Information Systems. Some examples are presented below.

**A study with title "Adaptive Business Intelligence: A New Architectural Approach " has been done (2020, pp. 540-545) by Lopes, Guimarães, & Santos.** This study looks at how the amount of data generated daily is organized and used in a hospital environment. The ABI system, according to the study, is an expression used to combine all kinds of predictions into one system to determine possible future scenarios, in addition to being an optimization base that searches for appropriate scenarios with those that were expected according to the constraints in each problem" (Lopes et.al., 2020: 541).

Thus the main purpose of this study is to develop an API architecture that can use predictive technology to support a range of health-related data to have a system that adapts to the current situation, reflects past behavior and suggests a set of future measures to make the organization function properly. According to the researchers, "the result of project offers an innovative architecture, whose inserted technologies allow adopting and integrate future projects, with a clear contribution to the area of Data Science and ABI systems, framed in a clinical and organizational aspect of a Healthcare Entity" (Lopes et.al., 2020: 544-545).

As shown in the study, the Docker concept is presented as an ideal model for a platform which makes the developing process and distributing applications easier. In this way, users will get a platform prepared for the application of smart models in an easy and comfortable way, with appropriate tools for applying these models, in addition to the ability to connect to the necessary data sources through pre-set services.The components of the architecture developed for this platform show the full availability of all software needed to model intelligent systems for predictive purposes or optimizations, as well as the necessary links to obtain the required data that the systems need to perform their task. These systems need complementary functions such as process automation and open up a new perspective to monitor and control the running process. ABI Rest was developed to automate certain operations (Lopes et.al., 2020: 542-543).

**Another study with title "Business Intelligence Success Applied to Healthcare Information Systems" has been done (2017, pp. 483-490) by Gaardboea, Nyvanga, & Sandalgaard.** In this article, the IS success

model of DeLone and McLean was empirically tested on BI of Healthcare Information Systems in 12 public hospitals in Denmark and investigated which factors contribute to the success of BI.

According to the study, the healthcare sector produces a lot of data over many years, which makes the sector suitable for using business intelligence and applying it to Healthcare Information Systems (HIS). There are many different metrics found for evaluating information systems, including De-Lone and McLean's IS Success Model, which consists of six combinations of Information Quality, System Quality, User Satisfaction, Use, Individual Impact and Organisation Impact. Organizational influence was excluded because the purpose of the study was to assess the effects of individual system use (Gaardboea et.al., 2017: 484). With this model, the complexity of using business intelligence in the healthcare environment can be explored.

The study results were found to partially support the model as eight relationships were tested, four of which were significant at $p < 0.001$. Information quality and User Satisfaction are directly proportional to System Quality. User Satisfaction is also proportional to Individual Impact, and System Quality is directly proportional to Use. The findings from this study demonstrate the importance of high System Quality and Information Quality affecting User Satisfaction, which influences the Individual Impact (Gaardboea et.al., 2017: 490).

**Besides, a study with title "Pervasive Business Intelligence: A New Trend in Critical Healthcare " has been done (2016, pp. 362-367) by Pereiraa, Portela, Santosa, Machadoa, & Abelha.** This study aims to provide useful information about the concept Pervasive, the Pervasive BI Systems and their connection to Pervasive Healthcare.

According to the study, obtaining and making available medical information in the field of critical care medicine is of vital importance to the medical professionals in these units, as provision and availability of such medical information would be very useful when decisions need to be made about a patient's condition. The traditional way this information is presented can make it difficult for doctors in intensive health care departments to keep up with a patient's condition.

The research conducted provides useful information about pervasiveness, Pervasive BI Systems and their links to Pervasive Healthcare. According to the research, understanding these concepts may help facilitate the work of intensivists interested in this possibility as it will help them analyze and access data, and will contribute to reducing medical errors and improving the quality and safety of patients by enabling access to data from anywhere at any time, and implementing Pervasive features in critical health systems.

The study also shows that the Pervasive BI application will open up new doors in Intensive Medicine, where various medical devices record and collect the flow of data in real time, and thus there is a need to analyze important clinical data in a short time. There is already an infrastructure in intensive medicine, and users of applications are accustomed to it, and this will facilitate the implementation of BI systems with Pervasive properties.

The researcher gave an example, INTCare, which is a widespread intelligent decision support system developed specifically for critical care medicine, and consists of a group of integrated units that carry out tasks related to providing information necessary for clinic decisions in an automatic, real-time and from anywhere manner. According to the researchers, over time this system will have similar and improved solutions that can handle more variables in critical patient care units.

## 4. Conclusions and Future Work

Business intelligence (BI) is an umbrella term introduced by Dresner at the beginning of 1990s. It has many critical tools such as Online Analytical Processing (OLAP), data mining, data stores and Extract-Transform-Load (ETL). BI includes the process of collecting the right information in the right format at the right time. Adding to this, while making decisions in businesses, the outcomes produced by these decision processes have a positive effect on business operations, tactics and strategies. Therefore, BI technologies are widely used in various industries and sectors to facilitate and improve these decisions. It is a requirement even by small businesses despite its drawbacks such as cost.

The healthcare sector, which includes many areas of work and expertise, is one of them. This sector in particular has to adapt to business intelligence technologies. By enabling access to the correct data in a correct format from anywhere and at any time, it helps reducing the number of medical errors, thus improving the quality and safety of patients. The health sector will already be very excited about this tool, and they will notice the huge difference when using it. The aim of this research is to point out the issues related to BI in sectors in general and to draw attention to studies investigating business intelligence trends in the healthcare sector in 2016-2020.

In the analysis of the studies published in Procedia Computer Science journal between 2016-2020, 24 articles were determined. According to their contents, researchers emphasized the need to develop an ABI architecture that can use predictive technology, and supported IS success models and their empirically testing on the BI system of Healthcare Information Systems. BI technologies have been studied in health organizations and companies in different countries. They are used to predict and diagnose

many diseases, such as the heart problems, cancer, corneal transplantation, and diabetes. Adding to this, it is generally used for the healthcare information and data store. BI applications are also used as a method for pharmaceutical distribution and for networks in biomedicine. Moreover, regarding decision making, some research has been done using models (e.g. Technology Acceptance Model, SWOT Analysis Model). Besides, BI is studied on pandemic management and data cycle management.

In the digital world, the adopting, use and development of BI and applications is clearly inevitable. In both the academic and business communities, and across various sectors, BI and analytics (BI&A) and big data have become more significant. Moreover, it is said that "Health is everything". As long as it is, it is hoped that the use of BI in human health will diversify and become widespread around the world. In this regard, it is believed that its use will be beneficial to counteract new health problems such as the COVID-19 pandemic. The research conducted should be deepened, the group of authors studied in relation to BI trends in the healthcare sector should be expanded, and BI solutions that have already been implemented in the health sector should be sought and recourse to a broader time period.

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# Chapter 11

**BENCHMARKING OF E-COMMENTS ABOUT
5-STAR HOTEL BUSINESSES: TURKEY-GREECE
SAMPLE**

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**INTRODUCTION**

Nowadays the amount of hotel businesses is getting increased because of the developments of tourism sector over the years and thus the competition among hotel businesses are getting increased as well. Hotel businesses should provide customer satisfaction by improving service quality so that they can turn this competition into an advantage today. Service quality measurements and standards should be established to improve the service quality (Min & Min, 1997, p. 587). However, intangible service standards have a heterogeneous form so objective measurement is impossible (Zeithaml et all., 1990). Service quality is defined as satisfaction of customers' expectations or exceed of these expectations (Parasuraman et all., 1985). In other words an hotel businesses even provide high-quality service, the quality which is perceived by customer may be different (Karakaya et all., 2016). For this reason, hotel businesses both should take the comments of customers into consideration and they should also compare their comments with the customers' comments of rival hotel businesses. The businesses can both evaluate their own weak and strong sides and they can also compare themselves with rival hotel businesses. Therefore, the businesses may determine the applications that provide certain superiorities against other businesses. The benchmarking also provides a potential contribution to the institutional success so it has become a popular instrument to provide an institutional improvement (Wang & Huang, 2020, p. 2). The comparative method is a valuable instrument which increases the performance of the businesses (Cusack and Rowan, 2009).

Nations have used comparative method in order to increase the international competitiveness (Mittelstaedt, 1992). The comparative method which is used in many sectors including construction, finance, banking, education has been using for tourism managements in order of, for instance, evaluation of international hotel businesses (Fu et all.,2011, p.2376). The comparative method is also an administrative instrument which is also used to provide rival superiority. The data obtained from world's leading businesses have shown that a management which aims to win the international competition should make benchmarking (Hutton and Zairi, 1995, p. 399). The conducted surveys show the importance of customers' feedbacks and satisfactions. It is also supposed that a successful destination administration and marketing is related to customer's perception because these perceptions have influence on destination choice, product consumption and return decision. In conclusion customer satisfaction regards as one of the measure of performance and as one of the most important sources of competition advantage. The synchronization of production and consumption in tourism sector increases the importance of

customer's satisfaction measurement. As an illustration, it is illogical to ignore customers' feedback in tourism sector. The comparative method is a method which makes possible to determine most effective performance by taking the customers' point of views and experiences into consideration in order to compare them reliably (Kozak, 2002, p. 500-501).

The fields to be compared and partners' determination process should be planned prior to the benchmarking. The data collection step should be then started from defined businesses, destinations and etc. In the next analytic step, weak and strong aspects should be determined by making benchmarking. As a result, actions plans should be determined to improve weak aspect and yielded levels should be evaluated in order to understand whether the process has reached to the aims or not (Martin and Tomas, 2012, p. 103).

On the other hand cultural, economic and geographical differences or environmental differences should be taken into consideration when the comparative study of international destinations is made (Kozak, 2002, p. 501).

In this context this study aims to compare on-line contents by the users of 5-star hotel businesses between Turkey and Greece and Greece destination has been chosen because both countries are rivals in Mediterranean Basin and provided touristic products of these countries are similar. No study which aims to benchmarking of online contents of 5-star hotel businesses in Turkey and Greece has been found in the review of literature.

## METHODOLOGY

### Data Collection

This study aims to compare the contents which were made by the users of 5-star hotel businesses in Turkey and Greece. In this regard, English on-line comments about 5-star hotel businesses in Turkey and Greece that have been created in a voyage web site have been analyzed. 120 5-star hotel businesses in Greece and 116 5-star hotel businesses have been determined resulted from filtration of destination and hotel domains in Turkey and Greece. The population is the comments about 5-star hotel businesses in Turkey and Greece destinations in voyage web site. The whole population has been reached. The reason of Turkey and Greece destination choice is that both countries are rivals in the tourism market of Mediterranean Basin. Since the data downloading is hard, comments about 5-star hotels have been included in this survey. 58,193 comments have been found about 5-star hotel of Turkey whereas 76,647 comments have been found about 5-star hotel of Greece and these online comments have been analyzed. 134,840 online comments of users have been analyzed totally. The online

comments have been obtained on February and March in 2020.

Comments of hotels have been downloaded by a special program which is also used for Web Mining. These data have been transferred to the Excel program and then they have been made ready for text mining. Table 1 shows the sample of data set about Hotel comments.

**Table 1.** *Sample of Data Set about Hotel Comments*

| ID | Hotel Name | Comments |
|----|-----------|----------|
| 1 | A | "I recently visited this little hotel and I couldn't be more pleased with my stay. The hotel itself was beautiful and the staff are so friendly and helpful, especially Salih, who was happy to help with anything we needed including advising us on where to go for trips etc. Thank you for making my stay very pleasant. I will most definitely be back when I next visit Istanbul" |
| 2 | B | "I have been in this hotel for 5 nights and very enjoyed my stay. Hotel located very close to all historical attractions. The staff were excellent.." |
| 3 | C | "Beautiful resort in Santorini just one-minute drive from Oia village. Space and privacy is amazing! Beautiful views of the sunset. MY husband and i really enjoyed our little get away in Santorini while staying at Epitome. Amazing staff, great setting and food. Try Yiannis 's cocktails, he is a star! Would highly recommend it!" |

### Data Pre-Processing

After the comments of hotels have been downloaded, next step has been text mining. Rapid Miner program has been preferred for text mining analysis. Rapid Miner is software with open source, Java language which is easy to use and which is used for academic studies. Hence this program has been chosen. Rapid Miner works by operator functions that are linked with drag and drop method to each other and required parameters may be determined easily by clicking operator functions. Coding knowledge is not required thanks to this property. Many data can be processed and many significant information can be obtained by these data thanks to this program (Çelik, Akçetin, Gök, 2017, p.p. 1-5). Obtained excel file have been transferred to Rapid Miner program. A model has been prepared to separate the words in the comments one by one, to extract word frequencies and for association analysis. Scheme 1 shows the design of the model that has been developed during the data pre-processing step.
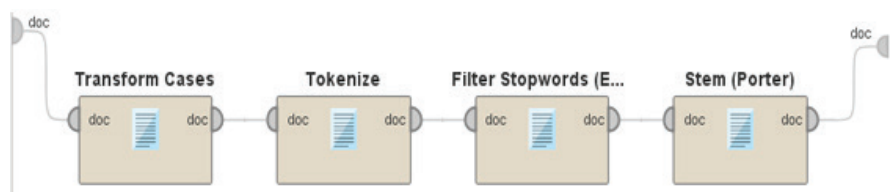
**Scheme 1.** *View of Data Pre-processing Design*

Scheme 1 shows the operator of the model formed in Rapid miner program. These operators work to realize "lower casing", single separation of the words", "filtration of linkers, pronouns, prepositions and similar forms" and "combination of similar words in a unique word stem". Table 2 shows descending sort of word frequencies obtained from comments about 5-star hotels and their rooms in Turkey.

**Table 2.** *Word Frequencies about Comments for 5-star Hotels and their Rooms in Turkey.*

| Comments about hotel businesses | Word frequency | Words about rooms | Word frequency |
|---|---|---|---|
| hotel | 44210.0 | room | 23829.0 |
| reception | 4538.0 | rooms | 18884.0 |
| lobby | 3408.0 | location | 17489.0 |
| concierge | 3235.0 | stay | 17485.0 |
| star | 3226.0 | stayed | 13099.0 |
| terrace | 2082.0 | bathroom | 4065.0 |
| park | 1551.0 | staying | 3133.0 |
| roof | 1535.0 | water | 2864.0 |
| kids | 1429.0 | price | 2340.0 |
| rooftop | 1404.0 | shower | 2266.0 |
| traffic | 1340.0 | bath | 2078.0 |
| design | 1338.0 | beds | 2075.0 |
| atmosphere | 1335.0 | balcony | 1478.0 |
| decorated | 1330.0 | bathrooms | 1132.0 |
| security | 1223.0 | sleep | 985.0 |
| children | 907.0 | towels | 659.0 |
| | | pillows | 645.0 |

When table 2 is examined it is seen that the most common words about hotels are hotel (44 210 comments), reception (4 538 comments), lobby (3408 comments), concierge (3 235 comments) and star (3 226 comments). On the other hand, the rare-used words are; children (907 comments), security (1 223 comments), decorated 1330 comments) and atmosphere (1335 comments). The most common words about rooms are; room and rooms (23 829 and 18 844 comments) then location (17 489), stay and

stayed (17 485 and 13 09 comments) and bathroom (4 065 comments). The rare-used words for rooms are; pillows and towels (645 and 659 comments). Generally, the words of water, price, shower, beds, balcony and sleep have been used for the rooms. Table 3 shows descending sort of word frequencies about food-drink, staff and cities that were obtained from comments of 5-star hotels in Turkey.

**Table 3.** *Word Frequencies about Food-Drink, Staff and Cities obtained from Comments of 5-star Hotels in Turkey.*

| Words about food and drink | Word frequency | Staff | Word frequency | Cities | Word frequency |
|---|---|---|---|---|---|
| breakfast | 20338.0 | staff | 29039.0 | Istanbul | 15947.0 |
| service | 18873.0 | concierge | 3235.0 | city | 7827.0 |
| food | 11814.0 | housekeeping | 1109.0 | Bosporus | 5994.0 |
| restaurant | 9255.0 | personnel | 1148.0 | street | 2588.0 |
| restaurants | 5774.0 | waiter | 616.0 | Turkey | 2578.0 |
| buffet | 4102.0 | personnel | 603.0 | Centrum | 2452.0 |
| dinner | 3219.0 | | | Sultan Ahmet | 1410.0 |
| water | 2864.0 | | | Hagia Sophia | 1206.0 |
| services | 2224.0 | | | İstiklal | 795.0 |
| coffee | 2108.0 | | | İzmir | 737.0 |
| drinks | 1865.0 | | | Topkapi | 719.0 |
| lunch | 960.0 | | | | |
| bars | 899.0 | | | | |
| cafe | 769.0 | | | | |
| fruit | 716.0 | | | | |
| meal | 660.0 | | | | |
| snacks | 659.0 | | | | |
| cake | 620.0 | | | | |

When Table 3 is examined it is seen that the most common words for food and drinks are breakfast (20 338 comments), service (18 873 comments), food (11 814 comments), restaurant and restaurants (9 255 and 5 774 comments) and buffet (4 102 comments) ın the comments. It is also seen that the rare-used words are cake (620 comments), snacks (659 comments), meal (660 comments) and fruit (716 comments). When the words about staff are examined it has been determined that the most common used words are staff (29 039 comments) then concierge (3 235 comments) and housekeeping (1109 comments). Whereas the rare-used words about staff are staff and waiter (603 and 616 comments). When the words about cities are examined it has been seen that İstanbul (15 947 comments) then city and Bosporus (7 827 and 5994 comments) are the most common used words. However, the rare-used words include; Topkapi and İzmir (Smyrna) (719 and 727 comments). The most interesting places include Sultan Ahmet, Hagia Sophia and İstiklal Street. Table 4 shows

descending sort of word frequencies for activities and services' comments of 5-hotels in Turkey.

**Table 4.** *Word Frequencies for Activities and Services' Comments of 5-Star Hotels in Turkey.*

| Activities and services | Word Frequency | Activities and services | Word Frequency |
|---|---|---|---|
| pool | 7738.0 | shops | 1576.0 |
| walk | 5532.0 | travel | 1570.0 |
| business | 4661.0 | visited | 1320.0 |
| walking | 4231.0 | tour | 1259.0 |
| trip | 4209.0 | garden | 1258.0 |
| facilities | 3932.0 | holiday | 1256.0 |
| family | 3573.0 | bazaar | 1190.0 |
| shopping | 3188.0 | beach | 1182.0 |
| taxi | 3156.0 | internet | 1150.0 |
| Wi-Fi | 3142.0 | sauna | 1071.0 |
| airport | 2897.0 | massage | 971.0 |
| metro | 2359.0 | historical | 884.0 |
| mosque | 2251.0 | hammam | 868.0 |
| blue | 2249.0 | fitness | 781.0 |
| swimming | 2051.0 | wedding | 551.0 |

When Table 4 is examined it is seen that the words of pool (7 738 comments), walk (5 532 comments), business (4 661 comments), walking (4 231 comments) and trip (4 209 comments) are most commonly used. While the words of wedding (551 comments), fitness (551 comments), hammam (868 comments) and historical (884 comments) are used rarely. Table 5 shows the descending sort of word frequencies of adjectives in the comments obtained from 5-star hotels in Turkey.

**Table 5.** *Word Frequencies of Adjectives in the Comments Obtained from 5-star Hotels in Turkey.*

| Adjectives | Frequency | Adjectives | Frequency | Adjectives | Frequency | Adjectives | Frequency |
|---|---|---|---|---|---|---|---|
| great | 19210.0 | quiet | 2441.0 | major | 1136.0 | noisy | 683.0 |
| view | 19055.0 | amenities | 2374.0 | incredible | 1113.0 | comfy | 665.0 |
| nice | 15156.0 | enjoy | 2227.0 | pretty | 1109.0 | magnificent | 655.0 |
| helpful | 12632.0 | attentive | 2138.0 | noise | 1104.0 | deluxe | 642.0 |
| friendly | 12087.0 | luxury | 2131.0 | plenty | 1079.0 | interesting | 634.0 |
| clean | 11626.0 | variety | 2077.0 | spectacular | 1076.0 | impeccably | 632.0 |
| excellent | 11390.0 | huge | 2045.0 | liked | 1053.0 | surprised | 621.0 |
| amazing | 9865.0 | happy | 2024.0 | courteous | 1013.0 | cleanliness | 614.0 |
| comfortable | 8561.0 | super | 2013.0 | gorgeous | 995.0 | cheap | 605.0 |
| beautiful | 7462.0 | warm | 1922.0 | sights | 982.0 | brilliant | 604.0 |
| perfect | 6786.0 | pleasant | 1874.0 | smiling | 898.0 | charming | 591.0 |

| wonderful | 5643.0 | hospitality | 1818.0 | quick | 887.0 | surprise | 554.0 |
| spacious | 5006.0 | expensive | 1687.0 | disappointed | 878.0 | incredibly | 553.0 |
| lovely | 4738.0 | fresh | 1681.0 | tasty | 873.0 | | |
| thank | 4639.0 | outstanding | 1639.0 | impressed | 871.0 | | |
| fantastic | 4064.0 | problem | 1603.0 | breathtaking | 866.0 | | |
| quality | 3972.0 | care | 1558.0 | elegant | 856.0 | | |
| modern | 3626.0 | convenient | 1468.0 | comfort | 853.0 | | |
| kind | 3404.0 | fabulous | 1418.0 | pleasure | 825.0 | | |
| professional | 3401.0 | stunning | 1408.0 | decent | 708.0 | | |
| delicious | 3126.0 | relaxing | 1402.0 | reach | 696.0 | | |
| help | 3024.0 | smile | 1300.0 | impressive | 692.0 | | |
| grand | 2494.0 | exceptional | 1236.0 | negative | 690.0 | | |

When Table 5 is examined it is seen that the adjectives of great, view, nice, helpful, friendly, clean, excellent are used commonly. Whereas the adjectives of incredible, surprise, charming, brilliant, cheap, cleanliness, surprised, impeccable are used rarely. Certain negative adjective has also been used. These adjectives include problem (1603 comments), noise (1104 comments), disappointed (878 comments), negative (690 comments) and noisy (683 comments). Table 6 shows the descending sort of word frequencies about hotel and rooms comments that have been obtained from 5-star hotels in Greece.

**Table 6.** *Word Frequencies about Hotel and Rooms Comments Obtained from 5-star Hotels in Greece*

| Comments about hotel businesses | Word frequency | Comments about hotels | Word frequency | Words about rooms | Word frequency |
| --- | --- | --- | --- | --- | --- |
| hotel | 56541.0 | year | 5205.0 | room | 33251.0 |
| stay | 22785.0 | located | 5320.0 | rooms | 23552.0 |
| stayed | 19618.0 | roof | 4473.0 | view | 22042.0 |
| location | 19425.0 | spent | 4436.0 | views | 13030.0 |
| place | 12228.0 | terrace | 3523.0 | balcony | 6272.0 |
| area | 10253.0 | suites | 2888.0 | bathroom | 5458.0 |
| night | 10220.0 | kids | 2567.0 | beds | 4142.0 |
| recommend | 9656.0 | children | 2667.0 | honeymoon | 3301.0 |
| experience | 8025.0 | sunset | 2864.0 | shower | 3338.0 |
| resort | 6240.0 | lobby | 2869.0 | towels | 2508.0 |
| nights | 8369.0 | price | 2752.0 | bedroom | 1478.0 |
| holiday | 6809.0 | garden | 2482.0 | pillows | 668.0 |
| hotels | 7005.0 | concierge | 2111.0 | | |
| week | 6629.0 | vacation | 1791.0 | | |
| reception | 6430.0 | luggage | 1487.0 | | |
| days | 6119.0 | holidays | 1093.0 | | |
| star | 5600.0 | cave | 803.0 | | |
| island | 5715.0 | history | 648.0 | | |

| rooftop | 5647.0 | transportation | 636.0 | | |
| free | 5344.0 | historical | 574.0 | | |
| floor | 5217.0 | baby | 527.0 | | |

When Table 6 is examined that it is seen that the words of hotel (56 541 comments), stay and stayed (22 758 and 19 618 comments), location (19 425 comments), place (12 253 comments) and area (10 253 comments) are used commonly. However, the words of baby (527 comments), historical (574 comments), transportation (636 comments), history (648 comments) and cave (803 comments) are used rarely. When the words about the rooms are examined it is seen that the words of room and rooms (33 251 and 23 552 comments) then view and views (22 042 and 13 030 comments) are used commonly. While the words of pillows (668 comments), bedroom (1478 comments) and towels (2508 comments) are used rarely. Table 7 shows descending sort of word frequencies about food-drink, staff and cities comments that have been obtained from 5-star hotels in Greece.

**Table 7.** *Word Frequencies about Food-Drink, Staff and Cities Comments Obtained from 5-Star Hotels in Greece.*

| Words about food and drink | Word frequency | Staff | Word frequency | Cities | Word frequency |
|---|---|---|---|---|---|
| breakfast | 27682.0 | staff | 43569.0 | Acropolis | 9387.0 |
| service | 24254.0 | team | 3410.0 | Athens | 8649.0 |
| food | 20737.0 | personal | 1401.0 | City | 5031.0 |
| restaurant | 18152.0 | housekeeping | 1137.0 | Greek | 5232.0 |
| restaurants | 9698.0 | waiters | 662.0 | Mykonos | 4303.0 |
| dinner | 6985.0 | receptionist | 618.0 | Thessaloniki | 1208.0 |
| buffet | 5724.0 | | | European | 938.0 |
| water | 4715.0 | | | Katikies | 517.0 |
| drinks | 3800.0 | | | Heraclius | 545.0 |
| drink | 2945.0 | | | | |
| lunch | 2583.0 | | | | |
| coffee | 2324.0 | | | | |
| dining | 2312.0 | | | | |
| bars | 1943.0 | | | | |
| cocktails | 1696.0 | | | | |
| breakfasts | 1619.0 | | | | |
| champagne | 1517.0 | | | | |
| meals | 1517.0 | | | | |
| eggs | 977.0 | | | | |
| eating | 932.0 | | | | |
| cake | 640.0 | | | | |
| snacks | 561.0 | | | | |
| fish | 510.0 | | | | |
| fruits | 540.0 | | | | |

When Table 7 is examined it is seen that the words of breakfast (27 682 comments), service (24 254 comments), food (20 737 comments), restaurant and restaurants (18 152 and 9 698 comments) and dinner (6 982 comments) are used commonly in the comments of food-drink. While the words of fruits (540 comments), fish (510 comments), snacks (561 comments) and cake (640 comments) are used rarely. When words about staff are examined it is seen that the words of staff (43 569 comments) then team (3 410 comments) and personal (1401 comments) are used commonly. However, the words of receptionist and waiters (618 and 662 comments) are used rarely. When words about cities are examined it is seen that the words of Acropolis (9 387 comments) then Athens and city (8 649 and 5031 comments) are used commonly while the words of Heraklion and Katikies (719 and 727 comments) are used rarely. Table 8 shows the descending sort of word frequencies about activities and services comments that have been obtained from 5-star hotels in Greece.

**Table 8.** *Word Frequencies about Activities and Services Comments Obtained from 5-Star Hotels in Greece*

| Words about activities and services | Word frequency |
|---|---|
| pool | 22204.0 |
| beach | 12611.0 |
| walk | 9598.0 |
| visit | 6543.0 |
| trip | 5573.0 |
| Wi-Fi | 5414.0 |
| walking | 5263.0 |
| facilities | 5026.0 |
| airport | 4742.0 |
| pools | 3713.0 |
| swimming | 2679.0 |
| taxi | 2436.0 |
| club | 2033.0 |
| travel | 2138.0 |
| shops | 2113.0 |
| wedding | 1634.0 |
| beaches | 1845.0 |
| shopping | 1881.0 |
| museum | 1653.0 |

| | |
|---|---|
| business | 1412.0 |
| parking | 1061.0 |
| massage | 1052.0 |
| golf | 833.0 |
| internet | 875.0 |
| taverns | 561.0 |

When Table 8 is examined it is seen that the words of pool (22 204 comments), beach (12 611 comments), walk (9 598 comments), visit (6 543 comments) and trip (5 573 comments) are used commonly in activities and services comments. While the words of tavernas (561 comments), internet (875 comments), golf (833 comments) and parking (1061 comments) are used rarely. Table 9 shows the descending sort of word frequencies about adjectives in the comments that have been obtained from 5-star hotels in Greece.

**Table 9.** *Word Frequencies about Adjectives in the Comments Obtained from 5-Star Hotels in Greece.*

| Adjectives | Frequency | Adjectives | Frequency | Adjectives | Frequency | Adjectives | Frequency | Adjectives | Frequency |
|---|---|---|---|---|---|---|---|---|---|
| great | 26009.0 | superb | 3393.0 | perfectly | 1493.0 | paradise | 908.0 | interesting | 697.0 |
| good | 19814.0 | fabulous | 3371.0 | spotless | 1438.0 | smiling | 989.0 | favorite | 687.0 |
| amazing | 16547.0 | warm | 3306.0 | impressed | 1379.0 | spotlessly | 991.0 | various | 688.0 |
| nice | 15235.0 | plenty | 3084.0 | cool | 1342.0 | major | 975.0 | honestly | 666.0 |
| friendly | 18522.0 | incredible | 3059.0 | incredibly | 1330.0 | cleaning | 943.0 | pricey | 670.0 |
| beautiful | 15462.0 | kind | 3045.0 | peaceful | 1360.0 | friendly | 904.0 | unbelievable | 670.0 |
| excellent | 14791.0 | happy | 3008.0 | magnificent | 1312.0 | stylish | 923.0 | genuine | 667.0 |
| clean | 15882.0 | super | 2826.0 | elegant | 1292.0 | crowded | 916.0 | tiny | 617.0 |
| helpful | 15084.0 | thanks | 2728.0 | cleaned | 1288.0 | impressive | 894.0 | terrific | 620.0 |
| lovely | 11894.0 | love | 2622.0 | romantic | 1243.0 | lucky | 892.0 | sweet | 629.0 |
| perfect | 11580.0 | gorgeous | 2693.0 | relaxed | 1243.0 | favorite | 865.0 | famous | 612.0 |
| wonderful | 10797.0 | huge | 2693.0 | safe | 1237.0 | longer | 888.0 | glad | 615.0 |
| comfortable | 10665.0 | spectacular | 2731.0 | impeccably | 1253.0 | surprised | 859.0 | historical | 574.0 |
| fantastic | 8827.0 | expensive | 2671.0 | quick | 1170.0 | decent | 827.0 | nicest | 570.0 |
| spacious | 6279.0 | pleasant | 2574.0 | infinity | 1161.0 | entertainment | 792.0 | exquisite | 567.0 |
| enjoyed | 5493.0 | luxurious | 2553.0 | liked | 1140.0 | cheap | 795.0 | charm | 560.0 |
| loved | 5272.0 | variety | 2509.0 | negative | 1168.0 | comfort | 814.0 | extensive | 534.0 |
| quality | 5179.0 | breathtaking | 2392.0 | comfy | 1165.0 | pleased | 794.0 | friendliness | 536.0 |
| quiet | 5073.0 | problem | 2106.0 | deluxe | 1095.0 | unforgettable | 794.0 | disappointing | 524.0 |
| modern | 5038.0 | relax | 2117.0 | tasty | 1127.0 | delightful | 785.0 | complaint | 531.0 |
| delicious | 4798.0 | busy | 2074.0 | noisy | 1080.0 | sights | 774.0 | larger | 530.0 |
| thank | 4491.0 | beautifully | 1999.0 | charming | 1069.0 | beauty | 761.0 | perfection | 522.0 |
| stunning | 4555.0 | smile | 1870.0 | clear | 1096.0 | magical | 764.0 | generous | 516.0 |
| relaxing | 4534.0 | noise | 1737.0 | pleasure | 1045.0 | varied | 748.0 | cozy | 510.0 |
| luxury | 4276.0 | pretty | 1784.0 | superior | 1012.0 | enjoying | 729.0 | | |
| attentive | 3813.0 | efficient | 1817.0 | immaculate | 1056.0 | calm | 716.0 | | |
| fresh | 3426.0 | grand | 1485.0 | nicely | 1017.0 | positive | 717.0 | | |
| enjoy | 3428.0 | brilliant | 1472.0 | courteous | 1036.0 | relaxation | 720.0 | | |
| help | 3489.0 | helped | 1507.0 | surprised | 996.0 | plentiful | 716.0 | | |

When Table 9 is examined it is seen that the adjectives of great, good, amazing, nice, friendly, beautiful and excellent are used commonly. On the other hand, the adjectives of cozy, generous, perfection, larger, complaint, disappointing, friendliness, extensive are used rarely. When the negative adjectives are examined it is seen that the adjectives of problem (2 106 comments), noise (1 737 comments), negative (1168 comments), crowded (916 comments), disappointed (574 comments), complaint (531 comments) are used commonly.

**Association Analysis:**

Association analysis is a kind of analysis which determined the relationship between the objects in a data set and which explains the relationship of an object with another. The words stems which have been obtained when the word frequency analysis was made have been subjected to the association analysis and the association rules of the words in the comments have been revealed. Therefore, frequencies of the words in the comments about 5-star hotels in Turkey and Greece have been determined with reliance parameters and the visitors' perceptions about hotel image have been established.

The model which was used in the application of association analysis is shown in Scheme 2.
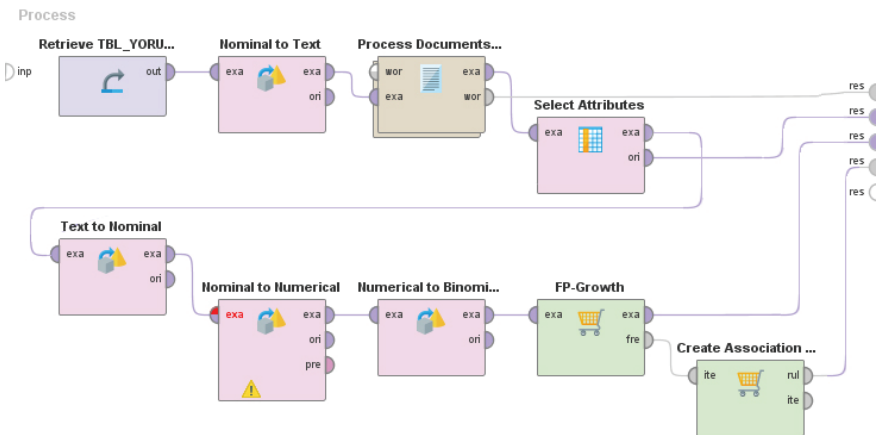


**Scheme 2.** *Research Model*

According to Scheme 2, the frequencies obtained in the Process Documents file have been turned into certain properties by Select Attributes. The presence of a word in a comment should be known in order to extract the association rules of the words. Thus the word matrix has been

formed initially. The word matrix has been formed by passing the 'Text to Nominal, Nominal to Numerical, Numerical to Binominal' steps in the formed attributes. Table 10 shows the sample of word matrix.

*Table 10 Sample of Word Matrix*

| No | Hotel | Breakfast | Location | Restaurant | Room | Pool | Clean | Delicious | Amazing |
|----|-------|-----------|----------|------------|------|------|-------|-----------|---------|
| 1 | False | True | False | True | False | True | True | False | True |
| 2 | True | False | True | False | True | False | False | True | False |
| 3 | True | True | False | True | True | False | True | True | True |
| 4 | True | True | True | True | False | True | False | False | False |
| 5 | False | True | True | False | True | True | True | True | True |

As it is seen in Table 10, the words which are used in the comments get "true" figure and the words which aren't used in the comment get "false" figure. The association rules have been obtained then by subjecting the word matrix obtained to association analysis. As it is seen in Scheme 2, the algorithm which has been used in rule formation is Fp-Growth algorithm. The Fp-Growth algorithm is an algorithm which is used to determine the most frequently used objects in a data set. This algorithm which uses the divide and rule strategy scans the objects in the data set and it forms the rules with data tree by calculating the backup figures (Ikhwan et all., 2018, p.1663). Association analysis benefits from confidence criteria when it forms the rules. In accordance with the established model, the confidence figure has been determined as 0.67. The rules which have been obtained as a result of analysis are presented in this context.

**Association Analysis About 5-Star Hotels in Turkey**

Table 11 shows the words which are used with the word of "hotel".

**Table 11.** *Association Rules about Hotels*

| Words | Result | Figure of Merit |
|-------|--------|-----------------|
| Istanbul, located | hotel | 0.899 |
| good, located | hotel | 0.898 |
| staff, star | hotel | 0.896 |
| room, star | hotel | 0.893 |
| staff, located | hotel | 0.892 |
| room, located | hotel | 0.892 |
| nice, located | hotel | 0.888 |
| located | hotel | 0.884 |
| star | hotel | 0.882 |
| rooms, located | hotel | 0.882 |
| stay, located | hotel | 0.879 |
| stayed, walk | hotel | 0.879 |

| | | |
|---|---|---|
| Istanbul, area | hotel | 0.877 |
| staff, Istanbul, city | hotel | 0.876 |
| stayed, city | hotel | 0.876 |
| clean, city | hotel | 0.876 |
| great, located | hotel | 0.876 |
| breakfast, located | hotel | 0.875 |
| staff, modern | hotel | 0.875 |
| staff, Istanbul, recommend | hotel | 0.875 |

When Table 11 is examined it is seen that the words of "İstanbul", "good", "staff", "nice", "clean", "great", "breakfast", "modern" and "recommend" have been used with the word of "hotel". There are more comments about hotels in Istanbul among the 5-star hotels in Turkey. Therefore, it may be stated that the 5-star hotel in Turkey are "good, nice, clean, great and modern". Since the word of "recommend" is commonly used in the comments about hotels, it may be interpreted that tourist recommend the hotels in their comments. Table 12 shows the words that are used with the word of staff.

**Table 12.** *Association Rules about Staff Word*

| Words | Results | Figure of merit |
|---|---|---|
| rooms, friendly, helpful | staff | 0.879 |
| location, friendly, helpful | staff | 0.873 |
| great, friendly, helpful | staff | 0.861 |
| hotel, room, friendly, helpful | staff | 0.859 |
| stay, friendly, helpful | staff | 0.857 |
| hotel, friendly, helpful | staff | 0.857 |
| hotel, great, location, friendly | staff | 0.856 |
| room, friendly, helpful | staff | 0.855 |
| breakfast, friendly, helpful | staff | 0.853 |
| hotel, breakfast, friendly, helpful | staff | 0.851 |
| friendly, helpful | staff | 0.849 |
| great, location, friendly | staff | 0.842 |
| hotel, location, friendly | staff | 0.839 |
| rooms, location, helpful | staff | 0.838 |
| great, location, helpful | staff | 0.838 |
| rooms, location, friendly | staff | 0.837 |
| hotel, friendly, recommend | staff | 0.836 |
| hotel, helpful, comfortable | staff | 0.835 |
| hotel, great, location, helpful | staff | 0.834 |
| hotel, stayed, friendly | staff | 0.832 |

When Table 12 is examined, it is seen that the words of "rooms, friendly, helpful, location, great, breakfast, recommend, comfortable, stayed" have been used with the word of "staff". It has been determined in the examined comments that staff is "friendly, helpful and great". Table 13 shows the words that are used with the word of room.

**Table 13**. *Association Rules about Room Word*

| Words | Results | Figure of Merit |
|---|---|---|
| breakfast, bathroom | room | 0.765 |
| hotel, bathroom | room | 0.765 |
| good, bathroom | room | 0.764 |
| bathroom | room | 0.764 |
| staff, bathroom | room | 0.751 |
| shower | room | 0.747 |
| hotel, shower | room | 0.742 |
| stayed, floor | room | 0.705 |
| view, floor | room | 0.693 |
| hotel, view, floor | room | 0.691 |
| view, comfortable | room | 0.678 |

When Table 13 is examined, it is seen that the words of "breakfast, bathroom, hotel, good, staff, shower, stayed, floor, view and comfortable" have been used with the word of "room". It has been determined in the examined comments that rooms are "good and comfortable". It may be stated that "bathroom and view" are important for the tourists. Table 14 shows the words that are used with the word of breakfast

**Table 14.** *Association Rules about Breakfast Word*

| Words | Results | Figure of Merit |
|---|---|---|
| hotel, room, buffet | breakfast | 0.870 |
| room, buffet | breakfast | 0.862 |
| hotel, staff, buffet | breakfast | 0.860 |
| rooms, buffet | breakfast | 0.859 |
| great, buffet | breakfast | 0.852 |
| staff, buffet | breakfast | 0.848 |
| hotel, buffet | breakfast | 0.847 |
| buffet | breakfast | 0.827 |
| good, buffet | breakfast | 0.827 |
| hotel, variety | breakfast | 0.765 |
| variety | breakfast | 0.742 |

When Table 14 is examined, it is seen that the words of "hotel, room, buffet, great, staff, good, variety" have been used with the word of "breakfast". It has been determined in the examined comments that breakfast is "good, great and variety". It may be stated that tourist are satisfied with open buffet breakfast.

### Association Rules about 5-Star Hotels in Greece

Table 15 shows the words that have been used with hotel word.

**Table 15.** *Association Rules Table about Hotels*

| Words | Results | Figure of Merit |
|---|---|---|
| boutique | hotel | 0,931 |
| clean, town | hotel | 0,871 |
| view, located | hotel | 0,869 |
| rooms, star | hotel | 0,860 |
| room, star | hotel | 0,862 |
| lovely, town | hotel | 0,860 |
| staff, minutes | hotel | 0,858 |
| beach, town | hotel | 0,858 |
| staff, pool, town | hotel | 0,857 |
| taxi | hotel | 0,854 |
| clean, walk | hotel | 0,854 |
| good, walk | hotel | 0,854 |
| great, city | hotel | 0,854 |
| centrum | hotel | 0,853 |
| beautiful, town | hotel | 0,851 |
| good, town | hotel | 0,851 |
| room, view, Athens | hotel | 0,851 |
| nice, town | hotel | 0,850 |
| pool, town | hotel | 0,849 |
| breakfast, town | hotel | 0,848 |

When Table 15 is examined, it is seen that the words of "boutique, clean, town, view, located, rooms, star, lovely, beach, staff, pool, taxi, good, great, beautiful, Athens, nice, breakfast" have been used with the word of "hotel". It has been determined in the examined comments that the 5-star hotels are "clean, lovely, good, great, beautiful, nice" in Greece. It may be stated that tourists give importance to certain possibilities like "beach and pool". Table 16 shows the words that are used with the word of staff

**Table 16**. *Association Rules Table about Staff of Hotels*

| Words | Results | Figure of Merit |
|---|---|---|
| food, friendly, helpful | staff | 0,923 |
| location, friendly, helpful | staff | 0,908 |
| rooms, friendly, helpful | staff | 0,905 |
| pool, friendly, helpful | staff | 0,902 |
| good, friendly, helpful | staff | 0,902 |
| great, friendly, helpful | staff | 0,895 |
| hotel, great, friendly, helpful | staff | 0,895 |
| stayed, friendly, helpful | staff | 0,893 |
| hotel, breakfast, friendly, helpful | staff | 0,892 |
| breakfast, friendly, helpful | staff | 0,891 |
| friendly, clean, helpful | staff | 0,890 |
| hotel, friendly, helpful | staff | 0,889 |
| friendly, helpful | staff | 0,889 |
| room, friendly, helpful | staff | 0,885 |
| hotel, room, friendly, helpful | staff | 0,884 |
| stay, friendly, helpful | staff | 0.880 |
| room, food, helpful | staff | 0.878 |
| hotel, pool, helpful | staff | 0.878 |
| hotel, food, helpful | staff | 0.878 |
| hotel, helpful, lovely | staff | 0.876 |

When Table 16 is examined, it is seen that the words of "food, friendly, helpful, location, rooms, pool, good, great, hotel, stayed, clean, stay, lovely" have been used with the word of "staff". It has been determined in the examined comments that staff is "friendly, helpful, good, great, clean and lovely". Table 17 shows the words that are used with the word of Breakfast.

**Table 17.** *Association Rules Table about Breakfast Service in Hotels*

| Words | Results | Figure of Merit |
|---|---|---|
| view, buffet | breakfast | 0,870 |
| rooms, buffet | breakfast | 0,831 |
| hotel, room, buffet | breakfast | 0,824 |
| room, buffet | breakfast | 0,820 |
| great, buffet | breakfast | 0,817 |
| hotel, buffet | breakfast | 0,815 |

| hotel, staff, buffet | breakfast | 0,812 |
|---|---|---|
| buffet | breakfast | 0,803 |
| staff, buffet | breakfast | 0,799 |
| pool, buffet | breakfast | 0,792 |
| included | breakfast | 0,769 |
| served | breakfast | 0,704 |

When Table 17 is examined, it is seen that the words of "view, buffet, great, rooms, hotel, staff, pool, included, served" have been used with the word of "breakfast". It has been determined in the examined comments that tourists are satisfied with open buffet breakfast and they have found the breakfast service as amazing. Table 18 shows the words that have been used with the word of room.

*Table 18. Association Rules Table about Rooms*

| Words | Results | Figure of Merit |
|---|---|---|
| view, bathroom | room | 0,818 |
| hotel, bathroom | room | 0,795 |
| bathroom | room | 0,792 |
| hotel, shower | room | 0,788 |
| hotel, view, balcony | room | 0,781 |
| hotel, staff, bathroom | room | 0,778 |
| shower | room | 0,777 |
| staff, bathroom | room | 0,775 |
| breakfast, bathroom | room | 0,774 |
| stayed, balcony | room | 0,763 |
| view, balcony | room | 0,763 |
| hotel, balcony | room | 0,756 |
| hotel, breakfast, balcony | room | 0,753 |
| breakfast, balcony | room | 0,745 |
| balcony | room | 0,741 |
| hotel, staff, balcony | room | 0,739 |
| pool, balcony | room | 0,737 |
| staff, balcony | room | 0,726 |

When Table 18 is examined, it is seen that the words of "view, bathroom, shower, balcony, staff, breakfast, stayed, hotel, pool" have been used with the word of "room". It is interesting to see the words of view, bathroom, balcony and pool about the rooms.

### Benchmarking of Five Star Hotels in Turkey and Greece

### Benchmarking of the Comments about Hotels and Rooms

It is stated that the most commonly used words about 5-star hotels in Turkey are hotel (44 210 comments), reception (4 538 comments), lobby (3408 comments), concierge (3 235 comments) and star (3 226 comments). It is stated that the most commonly used words about 5-star hotels in Greece are hotel (56 541 comments), stay and stayed (22 758 and 19 618 comments), location (19 425 comments), place (12 253 comments) and area (10 253 comments). It may be stated that while the tourists in Turkey make many comments about reception, lobby and concierge, tourists in hotels of Greece make many comments about stay, location and palace. The tourists in the hotels of Turkey make fewer comments about children (907 comments), security (1 223 comments), decorated (1330 comments) and atmosphere (1335 comments). The tourists in the hotels of Greece make fewer comments about baby (527 comments), historical (574 comments), transportation (636 comments), history (648 comments) and cave (803 comments).

It is stated that the most commonly used words about rooms of 5-star hotels in Turkey are room and rooms (23 829 and 18 844 comments) then location (17 489), stay and stayed (17 485 and 13 09 comments) and bathroom (4 065 comments). It is stated that the most commonly used words about rooms of 5-star hotels in Greece are room and rooms (33 251 and 23 552 comments) and then view and views (22 042 and 13 030 comments). The tourists in the hotels of Turkey make fewer comments about pillows and towels (645 and 659 comments). Similarly, the tourists in the hotels of Greece make fewer comments about pillows (668 comments), bedroom (1478 comments) and towels (2508 comments).

### Benchmarking of comments about Food-Drink, Staff and cities

It is stated that the most commonly used words about food and drink service of 5-star hotels in Turkey are breakfast (20 338 comments), service (18 873 comments), food (11 814 comments), restaurant and restaurants (9 255 and 5 774 comments) and buffet (4 102 comments). Indeed, it is stated that the most commonly used words about food and drink service of 5-star hotels in Greece are; breakfast (27 682 comments), service (24 254 comments), food (20 737 comments), restaurant and restaurants (18 152 and 9 698 comments) and dinner (6 982 comments). As a result of this analysis it may be interpreted that breakfast and service subjects are important for the tourists of both countries. The tourists in the hotels of Turkey make fewer comments about cake (620 comments), snacks (659 comments), meal (660 comments) and fruit (716 comments). The tourists in the hotels of Turkey make fewer comments about fruits (540 comments),

fish (510 comments), snack (561 comments) and cake (640 comments). Similar results have been obtained for both countries. The words of Cake, snacks, fruits are used fewer in the comments.

It is stated that the most commonly used words about staff of 5-star hotels in Turkey are staff (29 039 comments) then concierge (3 235 comments) and housekeeping (1109 comments). Whereas the most commonly used words about staff of 5-star hotels in Greece are; staff (43 569 comments) then team (3 410 comments) and personal (1401 comments). While the concierge and housekeeping comments are made for the hotels in Turkey, the more comments about team and staff have been found for the hotels in Greece. It is also seen that the word of waiter (616 comments) is found fewer in the comments of Turkey's hotels. However, the words of receptionist and waiters (618 and 662 comments) are found in the comments of Greece's hotels rarely.

When the comments about cities of 5-star hotels in Turkey is examined it is seen that the words of İstanbul (15 947 comments) then city and Bosporus (7 827 and 5994 comments) are used commonly; whereas the comments about cities of 5-star hotels in Greece is examined it is seen that the word of Acropolis (9 387 comments) is commonly used. The words of Topkapi and İzmir (719 and 727 comments) are used rarely for Turkey; while the words of Heraklion and Katikies (719 and 727 comments) are used rarely for Greece.

### Benchmarking of comments about Activities and Services

It is stated that the most commonly used words about activity and services of 5-star hotels in Turkey are; pool (7 738 comments), walk (5 532 comments), business (4 661 comments), walking (4 231 comments) and trip (4 209 comments). It is also stated that the most commonly used words about activity and services of 5-star hotels in Greece are; pool (22 204 comments), beach (12 611 comments), walk (9 598 comments), visit (6 543 comments) and trip (5 573 comments). It is seen that one of the most important services is pool since the words of pool and walk are commonly used in the comments and walking opportunities have also great importance. It is also seen that the words of wedding (551 comments), fitness (551 comments), hammam (868 comments) and historical (884 comments) are rarely used for the hotels in Turkey. While the words of tavernas (561 comments), internet (875 comments) and golf (833 comments) are rarely used for the hotels in Greece.

### Benchmarking of comments about Adjectives

The adjectives that have been obtained from the comments of 5-star hotels in Turkey are; great, view, nice, helpful, friendly, clean, excellent.

The adjectives that have been obtained from the comments of 5-star hotels in Greece are; great, good, amazing, nice, friendly, beautiful and excellent. The adjectives of incredibly, surprise, charming, brilliant, cheap, cleanliness, surprised, impeccably are rarely used in the comments about hotels in Turkey. In addition, the adjectives of cozy, generous, perfection, larger, complaint, disappointing, friendliness, extensive are rarely used in the comments about hotels in Greece. The negative adjectives show similarity for both countries. The negative adjectives that are used for the hotels in Turkey are; problem (1603 comments), noise (1104 comments), disappointed (878 comments), negative (690 comments) and noisy (683 comments). Whereas the negative adjectives that are used for the hotels in Greece are; problem (1603 comments), noise (1104 comments), disappointed (878 comments), negative (690 comments) and noisy (683 comments). One of the most important problems is the presence of a noisy atmosphere. When the frequencies of negative comments are examined it may be stated that more negative comments have been made for the hotels in Greece.

## CONCLUSION and RECOMMENDATIONS

This study aims to compare the 5-star hotels in Turkey and Greece by the contents that have been formed by users of these hotels. The online comments of these 5-star hotels have been analyzed for this aim and the hotel businesses have been compared.

In accordance with the comments of 5-star hotels in Turkey it may be stated that the reception, lobby and concierge services are important for the consumers. Besides it is seen that the star amounts of the hotels are emphasized in the comments. When it comes to the 5-star hotels in Greece, it is seen that the words of accommodation, location, place and area are important for the consumers. It is understood that the locations of the hotels are important criteria for the consumers. When the user comments of hotels in Turkey are examined it is stated that consumers give less importance to child, safety, decoration and atmosphere. Baby, history, transportation and cave subjects are less important for the hotels in Greece.

As the comments about the rooms are compared, it may be stated that location, accommodation, and bathroom subjects are important for the users of the 5-star hotels in Turkey. It may also be stated that view is important for the users of the 5-star hotels in Greece. The least important subjects are pillows, towels and bedroom for the hotels in both countries.

When the comments about food and drink are compared, it may be stated that breakfast, service, food, restaurant and buffet subjects are important for the users of the 5-star hotels in Turkey. Whereas the subjects of breakfast, service, restaurant and dinner are important for the 5-star

hotels in Greece. It has been concluded that breakfast and service quality are important for the consumers. It is also concluded that the subjects of cake, snacks and fruits services are less important about food-drink services for the consumers of the hotels in both countries.

In accordance with the comments about staff, it is understood that consumers of the 5-star hotels in Turkey give importance to concierge and housekeeping staff and that consumers of the 5-star hotels in Greece give importance to team working. It is also determined that consumers of hotels in Turkey give less importance to waiters while the consumers of hotels in Greece give less importance to receptionist and waiter subjects.

As the comments about cities are compared, it is understood that the users of 5-star hotels in Turkey mention about İstanbul and Bosporus destinations commonly. On the other hand, it is understood that the users of 5-star hotels in Greece mention about Acropolis destinations commonly. Topkapi and İzmir (Smyrna) are mentioned rarely for Turkey while Heraklion and Katikies are mentioned rarely for Greece.

It is also understood that the consumers of the 5-star hotels in Turkey give more importance to pool and walking activities and they give less importance to wedding, fitness and hammam activities when the activity and service comments are examined. When it comes to the 5-star hotels in Greece it may be stated that consumers give more importance to pool, beach and walking activities while they give less importance to tavernas, internet and golf activities.

When adjectives used in comments are examined, it is seen that the users have used great, view, nice, helpful, friendly, clean and excellent for the hotels in Turkey. On the other hand, they have used great, good, amazing, nice, friendly, beautiful and excellent adjectives for the hotels in Greece. It is determined that the users of the hotels in both countries have presented positive opinions.

The adjectives of great, view, nice, helpful, friendly, clean, excellent are seen in the comments about 5-star hotels in Turkey. The adjectives of great, good, amazing, nice, friendly, beautiful and excellent are seen in the comments about 5-star hotels in Greece. In contrary the negative adjectives of noise, disappointed, negative are seen for the hotels in Turkey. In addition, the negative adjectives of problem, noise, negative, crowded, disappointed and complaint are seen for the hotels in Greece. One of the most common complaints about both countries is the noisy atmosphere.

When Turkey is examined in accordance with the users' comments of 5-star hotels, it is seen that user have made more comments about the hotels in Istanbul. It may be stated that Istanbul is a destination that

has an internationally famous good image. It is generally concluded that consumers regard the hotels as good, cozy, clean, amazing and modern. One of the results is that consumers may also recommend the hotels where they stayed. It is concluded from the consumers' comments that rooms of the hotels are good and comfortable. The breakfast service presented has regarded as good, amazing and various and that open buffet breakfast is also good. The staff of the hotels is regarded as friendly, helpful and amazing. It may be concluded that consumers are satisfied with the 5-star hotels in Turkey in general.

When Greece is examined in accordance with the users' comments of 5-star hotels, it is generally concluded that hotels are clean, good, amazing, nice and cozy. It may also be stated that the rooms of the hotels shine out with the views, bathrooms, balconies and pool opportunities. The breakfast service presented has regarded as good, amazing and various and that open buffet breakfast is also good. The staff of the hotels is regarded as friendly, helpful, good, amazing and clean. It may be concluded that consumers are satisfied with the 5-star hotels in Greece in general.

It is thought that both destinations may get rival advantage when they improve their service qualities by considering the negative adjectives mentioned like problem, noise, negative, crowded, disappointed as a result of the study. Besides it is also important to maintain the services with positive comments in the destinations for the competitiveness of the businesses. This study provides two important theoretical contributions. Firstly, data have been obtained and analyzed by the examination of the online comments unlike other studies that have been conducted by questionnaire and interview techniques. Secondly the hotels are compared in accordance with their services of room, food-drink, activity and service.

This study also provides certain contributions to the operators. The rival superiority arguments that may be used by the hotels are revealed by the scientific analysis of online users' comments and by its systematical formation. In addition, the results will contribute to the determination and the improvement of the competition strategies for their status in accordance with the perception of the clients of 5-star hotels in Turkey and Greece.

This study has certain constraints. This study only includes the online comments about 5-star hotels in Greece and Turkey. The hotels with different destinations and classes in the Mediterranean Basin may also be examined. The comments obtained have been chosen in English language. The comments in different languages may be evaluated in the studies in future.

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# Chapter 12

## CERTAIN CORRELATES OF ATTITUDES REGARDING GENDER EQUALITY*

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**Introduction**

Gender is defined as a collection of conceptualizations which based on socially constructed roles, relationships, and norms. Gender related norms could influence and be influenced by the culture which individuals exist in it (World Health Organization [WHO], 2019). Therefore, it implies that "constructions of the gender" could vary from one society to the other in accordance with cultural differences and this definition of gender especially relates it with the learning. Since it is clear that gender is something beyond being women or men biologically, according to World Health Organization (2019), "gender" construction is related with the learning of all norms and actions which are acceptable for men and women, and attitudes towards "gender equality/inequality" as a whole. Males and females learn the norms regarding "how they should interact with people from their own sex and the opposite sex"; "the proper ways of interactions at different settings as home, office and also at myriad of other social settings". The groups or the individuals who do not "fit" these normative constructions of the society they belong, become face to face with discrimination, stigmatization, and even with social rejection or at least fear of rejection (WHO, 2019). Therefore, it can be said that gender and related attitudes as "attitudes towards gender equality/inequality" is learned via fitting already existing normative constructions of the culture and also there are learned information about obvious costs when some member of the society could not fit as they have to.

Since the stereotypes are learned at very young ages via learning/ modelling from others, in the process of time "constructed stereotypes" starts to define the reality. In progress of time the knowledge that handled indirectly via others is perceived as if covering the lack of knowledge and then people no more realize the fact that they have not had enough knowledge to build these stereotypes. As a result, individual's attitudes become rigid. Therefore, stereotypes are accepted as attitudes that are resistant to change since they are based on emotions instead of rational thought and evidence-based knowledge (Kağıtçıbaşı & Cemalcılar, 2016).

Even in different societies there are stereotypes towards males which relate to positive concepts as "fearless" and "strong" and stereotypes regarding female gender which relate to negative concepts as "passive" and "dependent" (Koenig, 2018; Çıtak, 2008). Therefore, despite the fact that construction of the gender and the related norms and attitudes could influence and be influenced by the culture (WHO, 2019), it is possible to point out the existence of similarly negative stereotypes for women globally. Hence, it is also possible to point out the global existence of gender-based bias towards women. Therefore, it is clear that the discrimination against women -which should be accepted as a serious social issue- that based on

these stereotypes favoring men is a global issue.

"Gender inequality attitudes" are accepted as related with disadvantages that experienced by women globally, in countless areas of life as education, job, economy, social life and many others. Beside inequalities regarding job and promotion opportunities, it is also known that sometimes women still could not even get similar payment for similar jobs (European Union Belgian Presidency report, 2010; The Global Gender Gap Report, 2013; Türkiye Nüfus & Sağlık Araştırması [TNSA], 2008; WHO, 1998). Therefore, it could be said that gender inequality attitudes are exist worldwide and they are closely related with and responsible for the disadvantaged position of women globally.

On the other hand, there are some "action plan" reports targeting the reduction of the violence towards women (Türkiye Cumhuriyeti [TC] Aile & Sosyal Politikalar Bakanlığı, Kadının Statüsü Genel Müdürlüğü, 2016). It can be thought that the existence of the mentioned "action plan" reports shows that the violence towards women that based on the gender inequality is still a serious problem to fight with. Despite this observation, in literature it was revealed that the awareness regarding gender inequality is not sufficient as it should be (Yıldırım, Ergüt & Camkıran, 2017).

Either as "identification" conceptualization of Freudian Psychoanalytic Theory or as "reinforcement and arrangement of gender related behaviors by parents" conceptualization of Learning Theory, all psychological theories in fact share a similar claim as "familial transition models". In other words, it can be said that psychological theories tend to explain gender conceptualizations and cognitive constructions of the related behavior styles via "familial transition models" (Rowe, 1994).

Social Cognitive Theory, emphasize the importance of operant conditioning and modelling regarding learning including gender roles and gender equality attitudes (Bandura, 1986; Bandura, 1997; Bussey & Bandura, 1999). According to this, it can be said that the changes in terms of some factors as the parental education and the family income levels could lead changes via changing "the models and settings child interact" and hence could lead changes regarding formation of the future gender equality norms and attitudes of individuals.

In literature in a study that performed via inspection of 82 studies (Kagesten et al., 2016) it was informed that some sociodemographic factors as sex and social class and especially interpersonal relations are mainly affecting the formation of gender stereotypes and gender-based norms of individuals. On the other hand, in various studies it was informed that males have more "traditional" gender related attitudes that favors gender inequality than females (Güzel, 2016; Seçgin & Tural, 2011; Uçar, Derya,

Karaaslan & Tunç, 2017). Besides, family income level and parental education levels were examined in various studies as related variables with "gender equality -or inequality- attitudes" (Arıcı, 2011; Kodan-Çetinkaya, 2013; Uçar et al., 2017; Pınar, Taşkın & Eroğlu, 2008).

When it is thought that the attitudes supporting discrimination and inequality are closely related with social and cultural context, the real impact of gender equality norms could be understood. According to Okumuşoğlu (2016) gender norms are important because of legitimating effect of these norms in terms of every kind of discrimination and inequality -including violence- towards women (Okumuşoğlu, 2016).

On the base of the related literature that was mentioned up to here, it can be said that the "gender norms" are not only a factor that has an important role regarding the emergence of discrimination but these norms are also responsible from the maintenance of discrimination.

In a national report (TC Başbakanlık, Kadının Statüsü Genel Müdürlüğü, 2008) the changeability of gender roles via time and place was emphasized. This points out the dynamic nature of the gender roles. The mentioned dynamic nature of gender roles has important implications regarding intervention plans for better, indiscriminative global culture which is in accordance with basic human rights.

**Aim of the Study**

As known gender related attitudes, especially negative attitudes towards gender equality are linked to disadvantages that experienced by women globally (European Union Belgian Presidency Report, 2010; The Global Gender Gap Report, 2013; Türkiye Nüfus & Sağlık Araştırması [TNSA], 2008; WHO, 1998). Since the level of deprivation in various areas of life which could be caused via gender-based discrimination is dramatic, investigation of factors which could be related with gender equality attitudes and therefore which could be related with the disadvantaged position of women is important.

On the other hand, the dynamic nature of the gender roles and the changeability of these roles via time and place were emphasized (TC Başbakanlık, Kadının Statüsü Genel Müdürlüğü, 2008). Possibility of change is something which helps to have hope regarding reduction or even elimination of disadvantages that experienced by women globally. When this information is taken into consideration, the importance of investigation of university students' attitudes -whose attitudes related with this global issue could have serious impact regarding future of the society since they are the prospective educated adults of the society- became obvious. Therefore, the examination of gender equality attitudes among university

students in relation with certain variables is assessed as necessary regarding intervention plans for more positive attitudes towards gender equality. Investigation of the certain related factors in the mentioned group is also important in terms of potential use of prospective results regarding future scientific research in this area.

Therefore, the aim of this study is the investigation of the relationship of attitudes regarding gender equality with certain factors as sex, economic status and parent education level among university students.

### Method

### Model and Sampling

The model of the presented quantitative study is relational scanning model and conducted sampling method can be explained as convenience sampling and purposive sampling together. For Saumure and Given (2008) convenience sampling is related with aiming to reach to easily accessible participants. On the other hand, according to Miles and Huberman (1994) predetermination of inclusion criteria, in other words "predetermination of the parameters of the study population before data collection can be defined as purposive sampling". In literature a complex criterion is not suggested and "the importance of the simplicity of the predetermined criteria" has been emphasized (Ritchie, Lewis & Elam, 2003). Therefore, predetermined inclusion criteria for the presented study was "being a university student".

### Participants

According to the mentioned predetermined inclusion criteria for this study -which is being a university student- the participants are 200 university students (112 women and 88 men). The age range of the participants was found as 18-29 ($\bar{X}$= 19.51).

The participants who match with the predetermined criteria was reached according to principles of availability (convenience sampling) to provide diversity regarding attended university. All participants enrolled on voluntary basis as its explained to them in the informed consent section of the questionnaire form. Principles of Declaration of Helsinki (World Medical Association [WMA], 2013) including criteria regarding informed voluntary participation, confidentiality, anonymity and all other related principles regarding ethics were followed.

### Data Collection Instruments

Data collected via two self-report instruments. The "Information Form" and the "Gender Equality Scale" which includes two subscales in itself.

### The Gender Equality Scale

The scale was developed by Gözütok, Toraman, and Erdol (2017) to measure attitudes related with "gender equality". The scale has 13 items which could be answered via "5th Likert type rating". According to the factor analysis the scale was informed as having two factors, in other words, two subscales was informed which measures related attitudes as "understanding that considers male as superior (UtCMS)" and "understanding that subjects females to males (UtSFM)". Analysis regarding Cronbach Alpha values were informed as .889, .882 and .701 for Total 13 items of the scale, and for "UtCMS" and "UtSFM" subscales consequently. Higher scores from the total scale and from the subscales was accepted as the indication of more negative attitudes which points out the existence of "gender-based inequality tendencies" (Gözütok et al., 2017). Cronbach Alpha values were also examined in the presented study for the total 13 items scale, "UtCMS" and "UtSFM" subscales and the values were determined as .90, .89 and .77 consequently.

### Information Form

The information as sex, income level and parental education levels of the volunteered participants was collected via this form.

### Results

### T-test Analysis for Gender Groups

In order to see differences between males and females regarding attitudes of "Gender Equality", t-Test analysis was conducted with the "UtCMS" and "UtSFM" subscale mean scores and also with total scale scores of the mentioned scale. The analysis revealed that the male participants (N=88, $\bar{X}$=17.54) differed with higher scores regarding "understanding that considers male as superior" attitudes than females (N=112, $\bar{X}$=12.32), (t=-5.082, p=.00). On the other hand, males ($\bar{X}$=13.35) differed with "higher UtSFM scores" than females ($\bar{X}$=9.87), (t=-5.761, p=.00).

In terms of the "total scale mean scores" males ($\bar{X}$=30.89) also differed significantly from females ($\bar{X}$=22.18), (t=-5.807, p=.00). Since higher scores from this scale was accepted as the indication of more negative attitudes which points out the existence of gender inequality tendencies according to this finding it can be said that the male participants have more gender inequality tendencies.

### Variance Analysis for Income Level Groups

In order to see gender equality attitude differences among groups who informed different economic levels One-Way Analysis of Variance

(ANOVA) and when statistically significant differences were found, Tukey post-hoc tests were employed. Analysis carried out with three groups according to self-reported income levels as moderate, good and very good, since none of the participants of the presented study have reported their income levels as bad.

According to the findings, the participants with different economic levels differed significantly regarding "UtCMS mean scores" (F=3.140, p=.04). Post-hoc tests revealed that the participants who informed their economic level as very good (N=35, $\overline{X}$=11.85) differed with lower scores which means more positive attitudes regarding "UtCMS" from the participants who informed their economic level as good (N=73, $\overline{X}$=15.45).

Variance analysis also revealed statistically significant differences among various self-reported income level groups regarding "UtSFM mean scores" (F=4.086, p=.01). Post-Hocs regarding "UtSFM subscale" mean scores revealed that the participants who informed their economic level as very good (N=35, $\overline{X}$=10) differed with lower scores -which means more positive attitudes- from the participants who informed their economic level as good (N=73, $\overline{X}$=12.46).

According to the whole scale mean scores, variance analysis also pointed out between group differences (F=3.680, p=.02). Post hoc analysis revealed that the participants who informed their economic level as very good (N=35, $\overline{X}$=21.85), differed with significantly lower mean scores from the groups who informed their economic levels as good (N=73, $\overline{X}$=27.91).

**Variance Analysis Regarding Self-Reported Mother's Education Levels**

In order to examine the attitude differences among the different parental education groups variance analysis were conducted regarding participants' self-reported mother's education levels and father's education levels. ANOVA analysis revealed that the "UtCMS mean scores" of the participants differed according to the participants' mother's education level (F=5.227, p=.001). The participants whose mother's education is at university level (N=26, $\overline{X}$=10.50) differed with "lower UtCMS scores" than the participants whose mother's education levels are "could read and write" (N=18, $\overline{X}$=16.72) and "primary school graduate" (N=98, $\overline{X}$=16.35).

In terms of "UtSFM subscale scores" statistically significant differences were also determined among different groups based on mother's education levels of the participants (F=4.986, p=.001). The participants whose mother's education is informed as university graduate (N=26, $\overline{X}$=8.65) differed with "lower UtSFM scores" than the participants whose mother's education levels are informed as primary school graduate (N=98, $\overline{X}$=12.08)

and secondary school graduate (N=26, $\overline{X}$=13.27).

On the other hand, statistically significant differences were found among different mother's education levels in terms of "total gender equality" scale scores, (F=5.113, p=.001). The participants whose mother's education is at "university level" (n=26, $\overline{X}$=19.15) differed with significantly lower mean scores than the participants whose mothers are "primary school graduates" (n= 98, $\overline{X}$=28.43).

In terms of groups that based on father's education level, variance analysis has also been conducted. "UtCMS scores" of participants whose father's has education at "university level" (N=50, $\overline{X}$=11.70) and "high school level" (N=44, $\overline{X}$=11.84) differed significantly from the group of participants whose father education levels are primary school (N=42, $\overline{X}$=315.97) and secondary school (N=54, $\overline{X}$=18.81), (F=9.926, p=.00).

The "UtSFM scores" of the participants also differed significantly among groups based on to self-reported father education levels, (F=13.518, p=.00). The participants whose father's education level was informed as "university" (N=50, $\overline{X}$=8.20), differed with significantly "lower UtSFM means" than the participants whose father's education level was informed as "primary school" (N=42, $\overline{X}$=12.59) "secondary school" (N=54, $\overline{X}$=13.75) and "high school" (N=44, $\overline{X}$=11.18).

Besides, statistically significant differences were found among different father's education levels in terms of "total gender equality scale scores" (F=12.398, p=.00). The participants whose father's education level was informed as "university" ($\overline{X}$=19.90) differed with significantly lower scores than the groups whose father's education level was informed as "primary school" ($\overline{X}$=28.57), and "secondary school" ($\overline{X}$=32.56).

**The Stepwise Regression analysis**

The Stepwise Regression analysis were conducted to examine the predictors of gender equality attitudes. As can be seen in Table 1. the regression analysis revealed that the sex and mother's education variables are the best predictors of gender equality attitudes of the participants. At first the sex variable which explains the %15.5 of the variance of the gender equality attitudes entered to the regression equation. Then mother's education level variable entered to the regression equation and via the mentioned two variables together %23.8 of the variance of gender equality attitudes was explained.

**Table 1. Predictors of the Gender Equality Attitudes According to Stepwise Regression Analysis**

| Predictors | B | Beta | Std Error | F | p |
|---|---|---|---|---|---|
| sex | 8.710 | .393 | 1.446 | 36.261* | .00 |
| mother's education | -2.050 | -.215 | .514 | 30.218* | .00 |

*p< .05; The predictors which entered to the regression equation: Model1: predictor sex R=.393, R²=.155; Model 2= Predictors: sex and mother's education, R=.488, R²=.238

## Discussion and Conclusion

In this study the examination of the relationship of attitudes regarding gender equality with certain variables as sex, economic status and parent education was aimed. Attitudes regarding gender equality -or inequality- was measured via "Gender Equality Scale". Since the "Gender Equality Scale" has two subscales as "understanding that considers male as superior/ (UtCMS)" and "understanding that subjects females to males/ (UtSFM)" analysis were carried out with the mean scores of these two subscales and also with the total scale.

As can be seen from the findings of the study the male participants differed with higher scores than females regarding attitudes related with "understanding that considers male as superior" and "understanding that subjects females to males" and total scale mean scores. Since higher scores from the total scale and the subscales was accepted as the indication of more negative attitudes which points out the existence of gender inequality tendencies, it can be said that the male participants have more gender inequality tendencies than females. In other words, it can be said that the attitudes of female participants are favoring gender equality more than the males. The other studies which inform results revealing male participants's attitudes as more "traditional" than women's attitudes (Aşılı, 2001; Güzel, 2016; Kulik, 1999; Öcal-Yüceol, 2016; Öngen & Aytaç, 2013; Seçgin & Tural, 2011; Vefikuluçay, Zeyneloğlu, Eroğlu & Taşkın, 2007) can be accepted as parallel with the findings of the presented study.

In the related literature masculinity is discussed as "a construction which built around postulations of social power" (Levant & Brook, 1997; Segal, 1998) and as a construction which leads to group-based discriminations (Segal, 1998). Via enforcing masculine worldview and assuring less powerful position of women, 'gender inequality beliefs' has an important role regarding maintenance of patriarchy (O'Neal and Egan, 1993). In the presented study, the male participants' higher scores regarding

attitudes related with "understanding that considers male as superior" and "understanding that subjects females to males" and also for overall "total gender inequality attitudes" could be evaluated in relation with enforcing a worldview that is assuring more powerful and advantaged position for men, for themselves.

Since sexism and gender inequality are important tools regarding maintenance of patriarchy it is clear that why generally men tend to have higher gender inequality attitudes. According to this, it is possible to assess that having traditional attitudes and favoring inequality can be accepted as an indication of having higher tendencies to protect "status quo".

As can be seen from the results of the presented study, attitude differences in terms of gender equality were found among the groups with different parental education levels. The "UtCMS mean scores" of the participants whose mother education level is "university" differed with lower subscale mean scores -which reveals attitudes favoring gender equality more- than the participants whose mother's education levels are "could read and write" and "primary school". The finding complies with the study which informs similarly more positive attitudes for the participants whose mother's education levels are "university" than the participants whose mother's education levels are "primary school" (Arıcı, 2011). In addition, the finding seems parallel with the study (Kodan-Çetinkaya, 2013) which found attitude differences among the groups with different mother education levels and revealed more "gender inequality tendencies" for the participants whose mother's education levels are lower.

The mentioned results of the presented study imply something important; it can be said that future interventions to improve gender-based equality attitudes could be conducted via increasing educational levels of women who will be prospective educated mothers of the future society.

The gender equality attitudes of the groups of participants were also differed in terms of father's education levels. "UtCMS mean scores" of the participants whose father's has education at "university" and "high school levels" differed with significantly lower scores from the participants whose father's education levels are "primary school" and "secondary school". Besides, the participants whose father's education level was informed as "university", differed with significantly lower "UtSFM mean scores" than the participants whose father's education level was informed as "primary", "secondary" and "high school level". Regarding total "gender equality scale" mean scores the participants whose father's education level was informed as "university" differed with significantly lower scores than the groups whose father's education level was informed as "primary" and "secondary school level". In literature the study (Arıcı, 2011) which relates

lower levels of father's education with higher gender inequality attitudes of participants seems parallel with the findings of the presented study.

Additionally, the findings of the presented study -which reveal a relation between gender equality/inequality attitudes and parental education and income level- are in accordance with some other studies (Uçar et al., 2017; Pınar et al., 2008). Therefore, it could also be said that beside attempts to improve education levels of women population overall education level of the society including men beside women should be improved to handle attitudes favoring gender equality. Additionally, as can be seen in the results section, the result that reveals a relation between gender equality attitudes and economic level was also found and it is also has important implications. There are contradictory findings that informed in the literature regarding differences related with economic levels. In a study (Çıtak, 2008), economic level was found as related with gender equality attitudes of the participants, while in another study (Güzel, 2016) no statistically significant relationship was determined between economic level and gender equality attitudes. These mentioned two studies used different data collection tools from each other and from the current study. Hence the mentioned contradictory findings, the differences related with the findings could be explained via usage of different measurement scales. By keeping this in mind, the usage of the different scales together as data collection tools about gender equality attitudes is proposed for future studies to handle more informative data. In order to handle more informative data, inclusion of possible other related variables is also proposed for future studies.

By considering the result that reveals a relation between "gender equality attitudes" and economic level it could be thought that improvement of economic levels of society as a whole might improve other inequalities including gender-based ones.

The handled data of the presented study does not include variables as the birth place of the participants or as the city they lived most. Since these variables could be related with gender equality attitudes of the participants this could be accepted as a limitation of the presented study. Therefore, the future studies that include mentioned variables are proposed. The quota sampling for the other possibly related variables (as economic level, original birth place etc.) which could provide data with equal number of participants for each level is also proposed for future studies to get more informative future results.

The regression analysis of the presented study revealed that the "sex" and the "mother's education variables" are the best predictors of the gender equality attitudes. The % 15.5 of the variance of the gender equality

attitudes was explained by the "sex" variable and when the "mother's education" variable entered into the regression equation as the second predictor of the gender equality/inequality attitudes, the %23.8 of the variance of the mentioned attitudes was explained by these two variables. This finding is parallel with Direk and Irmak's (2017) finding which points out the "sex" and the "mother's education" variables as the best predictors of the attitudes related with gender equality. This is also could be accepted as another finding which underlines the importance of interventions to increasing educational levels of women who will be prospective educated mothers of the future society.

The participants whose informed mother education level is university was determined as having higher tendency towards gender equality in terms of "understanding that considers male as superior". Besides, the finding that reveals "mother's education" variable together with "sex" variable is one of the best predictors of the attitudes related with gender equality, which explains the %17.5 of the variance of the gender equality attitudes are results which emphasize the importance of mother's education in terms of having more tendency towards gender equality attitudes. At the same time determination of the "sex" variable as the best predictor of the variance of the gender equality attitudes is a finding which deserves to contemplate on it.

Arnett (2000) uses "emerging adult" concept to define the age group between 18 to 25 and who's at the transition period from adolescence towards adulthood. "Emerging adult" period for the Turkish culture was determined as 18-26 (Atak, 2011). In the presented study the participants are university students with the age range from 18 to 29 with mean age of 19.51 and a few participants were above 26. When it is considered that 18-26 period could be "emerging adult" period for the Turkish culture (Atak, 2011), future studies with different age groups are proposed.

Also, the cross-sectional design of the study could be accepted as one of the limitations of the presented study. Therefore, in order to handle data regarding future development of the attitudes held at "emerging adult" period, longitudinal future studies are also proposed.

According to psychological theories acquisition of the gender equality/inequality attitudes could be explained via "familial transition models". Either as "identification" conceptualization of Freudian Psychoanalytic Theory or as "formation, reinforcement and arrangement of gender related behaviors by parents" conceptualization of Learning Theory, all psychological theories in fact share a similar claim as "familial transition models". In other words, it can be said that psychological theories explain the gender conceptualizations and the cognitive constructions of the related

attitudes and behavior styles via "familial transition models" (Rowe, 1994). For example, Social Cognitive Theory emphasize the importance of operant conditioning and modelling regarding learning including gender roles and gender equality attitudes (Bandura, 1986; Bandura, 1997; Bussey & Bandura, 1999). When findings and theories are taken into consideration together it became clear that the positive changes in terms of the certain factors as the parental education and the family income levels could lead changes via changing the models and settings that child interacts and hence could lead desired changes regarding formation of the future gender equality norms and attitudes of the individuals. Therefore, it can be said that the findings are in accordance with the propositions, which claim to explain the acquisition of the gender equality attitudes via "familial transition models".

### Conclusion

In literature (Yüksel & Dağ, 2015) attitudes favoring gender equality is informed as related with psychological wellbeing and this link highlights the importance of the issue. There are efforts regarding the improvement of the disadvantaged position of the women and efforts to improve gender equality. Beside reports of all these efforts to promote changes towards the more gender-based equality, also there are reports, studies and data that claims the changeability of the related attitudes (WHO, 1998; WHO, 2019; European Commission, 2019; European Union Belgian Presidency Report, 2010) which promotes hope. Therefore, as a conclusion the findings that reveals certain variables which are related with more positive attitudes of participants regarding gender equality are important in terms of intervention plans to raise more positive attitudes. These findings are also important regarding their potential use for future studies. Future studies with different study groups and with longitudinal designs are offered with the hope that their results would shed light on this complex issue.

As pointed out by O'Neal and Egan (1993) via assuring less powerful position of women 'gender inequality beliefs' has an important role regarding maintenance of patriarchy (O'Neal & Egan, 1993). In the related literature masculinity is accepted not only as "a construction which built around postulations of social power" (Levant & Brook, 1997; Segal, 1990) but also as "a construction which built around group-based discriminations" (Segal, 1990).

The results that reveals higher scores for male participants regarding "gender inequality" could be explained via enforcing a worldview that is assuring more powerful and advantaged position for men. According to this, since "sexism" and "gender inequality" are important tools regarding maintenance of patriarchy it is clear that generally men tend to have gender

inequality attitudes. Therefore, having traditional attitudes can be accepted as an indication of having tendencies to protect status quo.

Despite of the fact that "protecting status quo" might seem as something which protects men at first glance, in fact it is not. There are studies which relates gender equality/inequality attitudes with peer group attitudes (Wade, 1998) and links untraditional gender attitudes to health promoting attitudes and behaviors (Wade, 2008). That implies traditional gender roles could even prevent men to conduct actions to promote their health.

On the other hand, having higher scores in terms of certain variables as income level and education level of parents were found related with "gender equality beliefs". These results arise hope regarding intervention plans. However, it could be said that beside attempts to improve education levels of women population, overall education level of the society including men beside women should be improved to handle attitudes favoring gender equality. At the same time, economical interventions to improve conditions of society as a whole seems necessary for prospective gender equality tendencies which seems related with psychological well-being and even physical health of the individuals and hence well-being of whole societies.

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# Chapter 13

## UNDERSTANDING SUPERYACHTS' SERVICESCAPE: A DIGITAL MARKETING PERSPECTIVE

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**Introduction**

Yachts, particularly high-end superyachts, have a significant commercial value but have received little scholarly attention due to their peculiar characteristics. Unlike cruise ships or hotels, Superyachts have unique qualities and specifications that make them difficult to comprehend. The essence of a cruise ship as a product differs from that of a superyacht in that it is not a personally owned or chartered planned private place for intimate or corporate events, as is the case with a superyacht. A superyacht is a carefully tailored experience that is intended to foster emotional sustainability in the consumer. It is about social connection and immersive service design, not the seamless integration of service by minimizing crew interaction with a limited number of customers (usually up to 12) (McCartan, Thompson, Mori, Brossa, & Verheijden, 2015).

Superyachts promote their high-end features in unconventional ways through digital marketing channels, distinguishing themselves from other service providers such as small yachts, hotels, and cruise ships. When inspecting the high-end yachts web pages, one of the first things that draw the eye is the advertisement and display of the yacht, which emphasizes the ambiance, facilities, and amenities, which may be referred to as the servicescape. The highest-priced 120 high-end superyachts were chosen as the sample, and the web pages of those yachts hosted on the digital yacht charter marketing platform www.charterworld.com were investigated to emphasize the servicescape elements selected to display. The visuals (photos and videos), texts, and the theme was chosen to advertise the boats have all been examined on the web pages. The study focuses on what was chosen to be presented on the digital platform rather than what the boats actually have.

The purpose of this study is to develop a guide to aid in the understanding of superyacht amenities, yacht servicescape as a concept, and how digital media channels are utilized to market superyacht servicescape.

The following sections provide an overview of the yacht charter market and servicescape as a concept. The servicescape of yachts and their facilities were then offered on digital media. Following that, at the end of the study, the conclusion, recommendations, and limitations are presented.

**Yacht Charter Market**

Yacht charter is a service that allows people to rent boats for recreational or leisure activities. In addition to private ownership (by individuals or businesses), yachts can be rented for a limited length of time, most commonly for a week or longer. These boats are available for charter for both business and pleasure, and they provide a seamless luxury

experience with the finest comfort and high standards. Yachts for sailing and fishing are only utilized in a few locations around the world, primarily in Europe.

In addition to providing all the benefits, they also provide an incredible adventure as well as complete relaxation. The original equipment manufacturers are constantly concentrating their efforts on the development of high-speed boats in order to meet the growing demand for marine tourism and water sports activities. Also available are convenient chartered yacht booking options through online platforms and mobile applications provided by the yacht leasing firms. As a result, it is anticipated that the market would rise in popularity in the next years. Yacht charter is usually arranged as a one-week tour offering cooking and housekeeping services to customers mostly in small size yachts. Services that are more luxurious can be provided in bigger size yachts however, they comprise a very niche market segment(Paker & Gök, 2021b).

As superyachts evolve into megayachts we see projects develop which are bespoke floating architecture representing an expression of the personality and aspirations of the owner, as a design client. These design proposals are generally culturally specific in interior theme and with predefined spatial layout and functionality such as: dining room; lounge; cinema; owners suite; guest suite; tender space; beach club; sun deck(McCartan, Thompson, Mori, Brossa, & Verheijden, 2015).

Fortune Business Insights have made an extensive research on global yacht charter market and prepared a report on trends, market segmentation and deeper analysis on size and type of yachts on the charter market. According to the report the global yacht charter market size was USD 6.50 billion in 2019. The global impact of COVID-19 has been unprecedented and staggering, with yacht charter witnessing a *positive demand* shock across all regions amid the pandemic. Based on their analysis, the global market exhibited a growth of 5.0496 in 2020 (fortunebusinessinsights. com, 2020).

Luxury yachts longer than 24 meters in length were referred to as superyachts, while yachts longer than 60 meters were referred to as megayachts, although these classifications are not definitive.

### Servicescape

A servicescape is described as the physical environment of an organization encompassing several different elements such as overall layout, design, and decor. The servicescape also includes atmospherics such as lighting, colors, and music. Servicescapes are important since they influence consumers' cognitive, emotional, and physiological states, as

well as their behaviors. Service organizations, such as yacht operators and agencies, employ elements of the servicescape and atmospherics to motivate consumer satisfaction and repeat purchase behavior. Organizations also use servicescape elements to direct and manage consumer interactions with the organization (e.g. in fast food restaurants) and thereby increase operational efficiencies(Namasivayam & Lin, 2008). The physical environment in service firms is pivotal since services may be produced and consumed simultaneously in a surrounding which acts as a packaging of the service and may represent its only physical evidence(Mari & Poggesi, 2013).

*Atmospherics* and *servicescape* are two interconnected academic streams that help us comprehend the impact of physical environment in marketing literature. The term 'atmospherics' is credited to Kotler (1973– 1974), who defines it as 'the effort to design buying environments to produce in the buyer specific emotional effects that enhance his purchase probability. It is through the senses that we are able to perceive and understand the atmosphere. Therefore, the atmosphere of a particular set of surroundings is described in sensory terms. The main sensory channels for atmosphere are sight, sound, scent, and touch. Kotler argues that the atmosphere can affect purchase behavior since it may directly arouse visceral reactions that can favorably contribute to purchase probability(Mari & Poggesi, 2013).

When it comes to characterizing the effects of servicescapes on humans, a number of different theoretical frameworks have been employed. The field of environmental psychology has a long history of investigation into the relationships that exist between human behavior and the environment in which it happens, with the goal of improving the results that result from such interactions.(Namasivayam & Lin, 2008).

An understudied research area concerns how physical environments can influence customers in certain service industries, especially the sport encounter ('sportscape'), the restaurant encounter ('dinescape') and the bank encounter. The distinctive features and the newness of this cluster lie in the introduction of industry-specific stimuli in the analysis, thus extending the M–R model(Mari & Poggesi, 2013). The M–R model, suggests that pleasure and arousal can be considered explicators of consumers' emotional responses to the physical environment(Robert & John, 1982). As more and more research findings on the services provided by boats accumulate, the concept of a "yachtscape" may begin to take shape.

The super yachts offer immense luxurious services and facilities that even land-based tourism facilities could not provide. There are as many options available on board as any mind can conjure up. As the race of providing the unthinkable advances the providers come up more creative aspects of luxury and amenities to offer to their potential customers.

The top-class superyachts use various digital marketing tools such as social media, agency-provided platforms, lifestyle, sailing, yacht, tourism focused blogs, and websites. This study focuses on *yacht chartering platforms* that have web pages for hundreds of yachts on different classes. Some notable ones who serve globally are:

1- www.charterworld.com

2- www.burgessyachts.com

3- www.yachtcharterfleet.com

There are many more worldwide, local, and regional chartering agencies/companies that may be found using a search engine with keywords like "yacht charter," "weekly yacht," "book a motoryacht," and so on, that host thousands of yachts on their website.

In this study, www.charterworld.com was used to evaluate the advertised/highlighted qualities of the most valuable superyachts. The following are some examples of the aforementioned qualities as screenshots and text::

1- Flying Fox from Lurssen, 136m mega yacht with two helipads – weekly charter price is listed as 3,500,000€

Readable version of the screenshot:

Notable Features of Flying Fox: Huge deck areas, Two helicopter pads, Observation deck Jacuzzi, Swimming pool, Massive watersports & dive centre, Two-tier spa, Sauna, Steam room, Beauty salon, Massage room, Cinema with games consoles and D-box seats, Hospital with decompression chamber, Numerous dining options both inside and out, Lavish interiors with neutral tones, Air conditioning, Wi-Fi



Aside from the facilities under consideration for this study, this pricey yacht has used phrases such as "lavish interiors," which refers to luxurious

but not pompous interior design, "observation deck jacuzzi," which refers to a bubble bath placed on a higher deck with a scenic view, and "cinema," which refers to a facility with consoles and D-box seats, which refers to a motion system integrated in special seats synchronized with the screen. This technology plunges the spectator directly into the film, turning them into part of the action(www.charterworld.com/).

2- Slondange from Lurssen, a 5 deck superyacht with a beach club - weekly charter price is listed as 1,000,000€

Readable version of the screenshot:

Solandge's Notable Features: Fantastic interior spaces, opulent decor and style, Numerous dining areas, great exterior deck areas, very private and vast owner's deck with jacuzzi & dining area , jet-stream swimming pool , onboard Spa with hammam, chromotherapy, sauna and massage room, elevator, dance floor with DJ station in nikki beach-style beach club, fully equipped gymnasium , cinema , great selection of water toys



The placement of the jacuzzi on this superyacht is also highlighted, but this time with a privacy aspect rather than a view of the ocean. When it comes to tourist attractions, chromotherapy is one of the most unique features. *Chromotherapy* is a way of treating sickness that makes use of electromagnetic radiation's visible spectrum (colors) in order to cure the condition. It is a centuries-old notion that has been utilized successfully to treat a variety of disorders over the years. (Azeemi, Raza, & medicine, 2005). Nikki style or Nikki Beach is a concept harder to define. In 1998, entrepreneur Jack Penrod introduced the world to Nikki Beach, the first and original luxury beach club concept that combines the elements of

music, dining, entertainment, fashion, film and art into one ("nikkibeach.com," 2021).

3- Cloudbreak from Abeking & Rasmussen, an expedition yacht - weekly charter price is listed as 750,000€

Readable version of the screenshot:

Notable Features: Global explorer yacht for any cruising conditions, minimalistic interior by the award-winning studio Christian Liaigre ,helipad, spa pool, sauna, beach club, gym, elevator, tender garage, water toys, dedicated itinerary viewing room.



The interior design studio who created the design is emphasized strongly and advertised on front page in this last example. Christian Liaigre is a well known French interior architect who works for high-end super yachts, known for their signature soft white/gray furniture and decoration concepts. Instead of using the terms "garage" or "tender bay" agent has preferred the term "tender garage" to clarify that the garage indicated here is for storing the service boat, not a land vehicle (www.charterworld.com).

### Data collection

Data was gathered from www.charterworld.com, a popular yacht charter digital marketing platform that hosts many yachts, including high-end superyachts, and often updates the list of charter yachts. The reason charterworld was picked over others is that most other platforms do not list the designer/builder on the yacht's page, however Charterworld does.

The list of yachts has been sorted according to price, from highest to lowest, using the *advanced search* tool on the 08.08.2020 and the top 120 yachts have been selected as the sample for this study. Servicescape elements have been collected from pages manually.

**Frequencies**

Due to the wide variety of amenities and facilities, only a subset of the most often listed ones was chosen for frequency analysis. The frequencies of gym/ sports, spa/ sauna/ massage, jacuzzi, cinema, swimming/plunge pool, elevator, helipad, garage/ tender bay, stabilizers, piano, beauty/ hair salon are given in the frequency tables below. The frequencies provided are not the actual data regarding the facilities and amenities available on the yachts; these are the numbers which the yacht company or the agent listed/highlighted on the web page in order to promote the yacht for the intended target market. For example, all 120 of the high-end, top quality yachts studied have four or more decks and it is very likely that, if not all, most of them have elevators installed, but only 49 of them have chosen to list their elevators as one of their facilities to be highlighted on this digital marketing platform.

**Table of frequencies**

|    | Facilities | n | % |
|----|------------|---|---|
| 1  | Gym/ sports | 105 | 16,61% |
| 2  | Spa/ sauna/ massage | 95 | 15,03% |
| 3  | Jacuzzi | 87 | 13,77% |
| 4  | Cinema | 59 | 9,34% |
| 5  | Swimming/plunge pool | 54 | 8,54% |
| 6  | Elevator | 49 | 7,75% |
| 7  | Helipad | 39 | 6,17% |
| 8  | Garage/ tender bay | 38 | 6,01% |
| 9  | Stabilizers | 38 | 6,01% |
| 10 | Piano | 35 | 5,54% |
| 11 | Beauty/ hair salon | 33 | 5,22% |

Out of four yachts did not state *any* of these amenities on their web page and one yacht has listed all 11 of them. The frequencies of number of
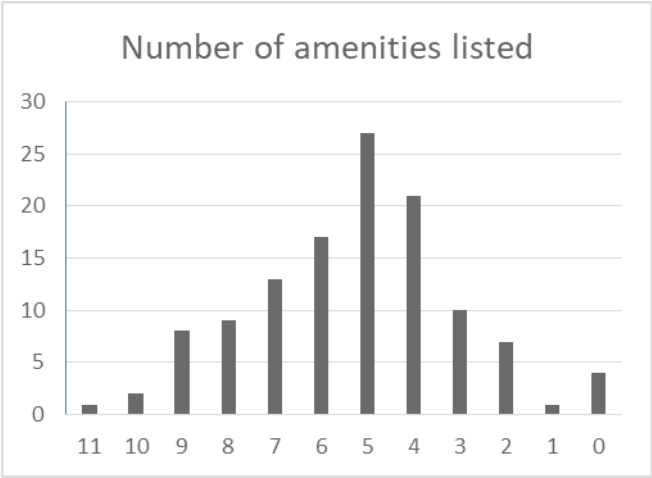
## Number of amenities listed



*Table of frequency per yacht*

| Number of facilities per yacht | n |
|---|---|
| 11 | 1 |
| 10 | 2 |
| 9 | 8 |
| 8 | 9 |
| 7 | 13 |
| 6 | 17 |
| 5 | 27 |
| 4 | 21 |
| 3 | 10 |
| 2 | 7 |
| 1 | 1 |
| 0 | 4 |
| Total | 120 |

- Swimming/Plunge pool

Pools are very common on larger yachts. Some advertise their pools as swimming pools, some use the term *plunge pool*. A plunge pool is a small, typically deep, pool designed for the purposes of wading or lounging in other words, a plunge pool is used to identify a pool that's larger than a spa, but smaller than a swimming pool. (Poolresearch.com, 2021). Pool sizes and depths vary greatly, and some are outfitted with bubbles, streams, heating, cooling, foam cannons, and a variety of other facilities for the enjoyment of the yacht customer/owner.

- Helipad

A helipad is a landing area or platform for helicopters and powered lift

aircraft. Even if the guests the yacht do not require a helicopter, presence of a helipad assures a connection to land in any case of emergency. Helicopters are an integral part of most health care systems in the United States, with an estimated 450,000 helicopter transports per year(Thomas, Cheema, Wedel, & Thomson, 2002). Some super yachts have hangar(s), helicopter(s) on board for any purpose of usage, emergency or otherwise this study focuses only helipads, even if the yacht can not carry her own helicopter.



Superyacht Dilbar – with two helipads

(www.theguardian.com)

•   Garage / tender bay

Even if different facilities on board a yacht can be referred to as "garages," the concept has not yet gained widespread consensus in the world of yachting. Some boats indicate which type of garage they are referring to, while others do not specify.

-   A drive-in tender bay for service boats

-   A space that hold land vehicles like automobiles and motorcycles

-   A small space for water sports equipments such as jet skis, inflatable boats and as well as a  repair shop for all of these

*Tender Bay visuals (yachtinglifestyle365.com)*



*Yacht with an automobi garrage (pinterest.com)*

- Spa/Sauna/Massage - wellness facilities

• Spas cater to the needs of both medical and wellness tourists. The former require treatments for specific medical reasons, whilst the latter seeks to maintain health. (Dimitrovski & Todorović, 2015). According to Stănciulescu, Diaconescu, and Diaconescu (2015), based on collected data, US Midwestern visitors prefer travels with family or spouse, and women are particularly interested in wellness tourism benefits in both Western

Europe and the US Midwest. The wellness centers on superyachts serve as an important and common amenity for intended guests to be hosted. Some yachts use the term *hamam* or *hammam* as well for the similar facilities.



*Massage salon of yacht Slondange*

- Beauty/hair salon

Beauty shop or hair salon usually means a place where hair-dressing service is physical in terms of the servicescape where the service takes place(Hellén & Gummerus, 2013) but in superyachts it refers to crew employed is on board for personal beauty care services. In literature, feminist scholars consider the hair salon to be a component of a wider "women's culture" in which women develop their conceptions of themselves and their bodies, and in which they form relationships and social networks with other women.(Barber & Society, 2008). The shops who served men are called barbershops and referred as a similar but more masculine places where men choose to go to look better. Some men find the salon too femine/ glam (Dean, 2012)and unisex shops are not preferred by all. Superyachts frequently hire crew members to attend to the aesthetic needs of both men and women, and they have a physical location where these needs can be met. These investments are used to advertise the servicescape of the yacht.

- Bubble Bath/ hot tubs / Jacuzzi

Although many people use the term jacuzzi as a common name of bubble bath tubs or hut tubs, Jacuzzi Brands LLC is a global manufacturer and distributor of branded bathtubs, hot tubs, pools, saunas, and, in the past, aircraft. As of September 5, 1978, Jacuzzi is a federally recognized trademark of Jacuzzi Inc., which was formed in 1915 by seven Italian brothers in Northern Italy.(www.jacuzzi.com/). The superyachts utilize their jacuzzis as a part of their leisure activity facilities, occasionally positioning them on a panorama deck or near a bar or beach club.

- Cinema /Theater

The cinema / theater salons on board large ships such as cruise ships,

passenger ships, and military ships are commonplace, but until recently, yachts did not typically offer similar amenities. Superyachts have grown in size, and as a result, open-air movie theaters and movie salons equipped with high-tech audio and visual equipment have become increasingly common on board yachts, as well as being promoted on their digital marketing platforms.



*Yacht indoors cinema (www.yacht-zoo.com, 2021)*

- Elevator

High-end yachts typically have four or more decks (floors) and climbing up and down can be tiresome. Elevators are also a matter of accessibility(Lestari & Wiastuti, 2019). Some customers, such as the elderly, the disabled, and pregnant women, may require assistance in accessing different levels of the yacht. Elevators are frequently emphasized on digital marketing platforms, on visuals or texts. For example Motor Yacht Phoenix 2 used the following sentence to promote her amenities: "Special features of the yacht include a cinema located on the lower deck and a fully equipped Spa deck offering Gymnasium, Hamman, Spa room with massage table and beauty salon. An elevator connects all levels, running from the lower deck up to the bridge deck." As can be seen in the example, elevators are highlighted as a part of the yachts servicescape.

- Piano

One of the two commonalities is that the customer spends some time onboard, and an essential component of this integrated leisure product is live musical performance(Cashman & Hayward, 2013).  A piano is a facility that sometimes the customer who are into making music with or to their accompanied bodies and sometimes a musician who is employed play the piano as the facility listed indicates the presence of the piano, not the pianist. Some yachts use the term *"grand piano"* instead of piano. Motor

Yacht Double Down has even stated the brand of the piano they have on board on visuals (both promotion video and photos) and the texts stressing the "Steinway Grand Piano" as an important aspect of her servicescape.



*Double Down's Steinway Grand Piano*

- Stabilizer

The yachts serve their customers on water as it is meant to be. The rolling and heeling caused by turning and waves can be large enough to affect the ability of ships to perform their missions(Lihua, Peng, Songtao, Ming, & Jia, 2018) and disturb her passengers. On high-end yachts, numerous stabilizer technologies such as gyro stabilizers, quantum zero speed stabilizers, fins and interceptors which are utilized to prevent rolling and healing caused by dynamic forces acting on the boat.

The yachts attempt to avoid high waves and heavy weather as much as possible, but bad weather is unavoidable due to the nature of the seas. Installing a stabilizer on board improves the client experience and makes it a lot easier for the crew in every way, including handling food and beverage services.

- Gym/sports saloon

Customers may wish to maintain their physical fitness and health, and gyms and sports facilities are among the most prevalent of the various health-related services available. As can be seen on the table of frequencies the gym facilities are the most common amenity that has been presented on the digital marketing media

*Gym facility of yacht Slondange*

## Conclusion

Some of the aspects of servicescape of superyachts have been studied and explained in this study. The fact that this study only examined one digital yacht marketing platform (charterworld.com) can be seen as a limitation. The scope of this study may be broadened in the future to include other aspects of these expensive boats that are not considered from the perspective of the servicescape, such as seasonality in pricing, technical aspects of the yacht, the customer profile and point of view of the superyachts, and other aspects of the topic.

The digital marketing approach to high-end yachts almost exclusively focus on the physical aspects of the yachts that offer luxury services. The crew and any form of human factor is neglected completely on the web pages that are aiming to advertise the glory of these super yachts. According to Paker and Gök (2021), the yacht crew is especially vital for managing issues of dissatisfaction and increasing the quality of CCI contact in such a service environment. Pranter and Martin (1991) stated that, it will help to manage customer compatibility if you act as an educator to educate consumers on how to behave in a service environment or reward the most suitable customers.. In addition, the emotional needs of the customers should be taken into account as well as meeting the functional expectations since the service requires a relatively long period of time and physical proximity. Employees must perform sustained emotional labor towards customers in their relationships (Paker & Gök, 2021a; Pranter & Martin, 1991).

The servicescape of superyachts is not portrayed in a particularly

innovative manner, despite the fact that many of them have some highly distinctive characteristics. Instead, most of the boats emphasize elements that are common to all of them on their digital marketing platforms.

Some of the amenities, such as the beach club and the boat garage, still require conceptualization. Even if the same phrases can refer to distinct facilities and have diverse meanings, there is still a need for agreement on nomenclature in this field.

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# Chapter 14

## OUT-OF-SAMPLE COMPARISON OF PORTFOLIO OPTIMIZATION MODELS: APPLICATION TO GLOBAL MULTI-ASSET PORTFOLIOS

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## 1. Introduction

Conventional asset allocation strategies are based on the mean-variance (MV) portfolio optimization model of Markowitz (1952). Using the covariance matrix and historical asset returns, the model provides the optimal portfolio weights while trying to minimize the variance of the portfolio as an objective function. It has later been shown that estimating large empirical covariance matrices can lead to suboptimal solutions, where estimation errors may cancel out the benefits of diversification. Several studies such as Hodges and Brealey (1978), Michaud (1989), Best and Grauer (1991), and Litterman (2003), Campbell and Viceira (2002) and Brandt (2010) draw attention to the main issues on implementation problems of MV approach.

One approach to overcome these shortcomings is applying limitations on the weights. Frost and Savarino (1988), Jagannathan and Ma (2003), Behr, Guettler, and Miebs (2013) imposed portfolio constraints to overwhelm the limitations of MV approach. Another camp is the one that applies Bayesian models for estimating the MV input parameters. Jorion (1985, 1986), Pastor (2000) and Pastor and Stambaugh (2000) applied the shrinkage principle and approaches of Bayes and Stein to and overcome the limitations of MV. They also showed that these principles improve the out-of-sample performance of the model.

Furthermore, studies that rely on estimates that are based on historical data seem to be noisy to be used, especially when risk premia and covariance's vary frequently over time. Change in market conditions makes historical data-driven forecasting a harder task. Risk Parity (RPP) model tries to overcome this issue where allocation of risk is considered rather than allocation of capital. In this approach, risk contribution of all assets is tried to be equalized. Hierarchical Risk Parity (HRP) model takes this approach one step further, where all assets in the portfolio are clustered according to the hierarchical clustering algorithm and weights are calculated using these clusters and inverse volatility approach (Lopez DePrado, 2016).

In this study, out of sample performance of equal weight, mean-variance based models, Bayes-Stein extension, risk parity and hierarchical risk parity models is evaluated and compared in terms of several performance metrics that are widely used by academics and market practitioners.

## 2. Asset Allocation Models Tested

Seven different asset allocation models from different approaches are tested for out-of-sample performance comparison. Table 1 depicts the overview of these asset allocation models and their abbreviations.

*Table 1. Asset allocation models*

| Number | Model | Abbreviation |
|--------|-------|--------------|
| 1 | 1/N with rebalancing | 1/N |
| 2 | Mean-Variance | MV |
| 3 | Minimum Variance | MinVar |
| 4 | Bayes-Stein | BS |
| 5 | Inverse Volatility | IV |
| 6 | Risk Parity Portfolio | RPP |
| 7 | Hierarchical Risk Parity | HRP |

### 2.1. Equal Weight Portfolio

For an equal weight strategy with rebalancing (1/N), N instruments are taken where the portfolio weights are 1/N for each one. At the end of each month, the allocations are recalibrated according to the initial portfolio weights. The aim of this strategy is to gain an equal amount of contribution from each asset.

### 2.2. Mean Variance Optimization

Sample-Based Mean-Variance (MV) is the theory originally developed by Markowitz (1952), where portfolio return, and variance are thought as the most important elements for an optimal portfolio. The mean-variance strategy could be accepted as the building block of Modern Portfolio Theory. The most efficient portfolio could be obtained by a graph of the efficient frontier through a given risk level. Existence of estimation errors and high market liquidity conditions are considered as the most problematic points in the mean-variance model.

Using the covariance matrix and historical asset returns, the model provides the optimal portfolio weights while trying to maximize the expected return and minimize the variance of the portfolio as an objective function.

*Figure 1. Portfolio with maximum efficiency*
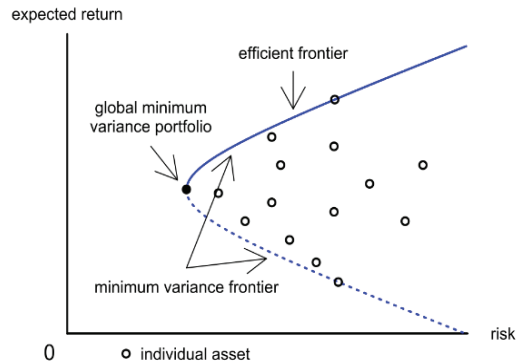


The below formula depicts the objective function for mean-variance optimization:

$$max_w \ U = w'\mu - \delta \ w'\Sigma w$$

where $U$ corresponds to the utility of the investor, $\mu$ is the expected return estimate vector and $\delta$ is the risk aversion coefficient.

The recent version of many studies in the literature to reduce the mentioned shortcomings which is proposed by Tütüncü and Koenig (2004) report that to the contrary presence of estimation errors and transaction costs, this robust strategy provides a worthwhile allocation strategy to conservative investors. DeMiguel, Garllappi and Uppal (2009) states that the mean variance strategies that were applied to different asset sets do not outperform a naïve-diversified(1/N) portfolio in and out-of-sample equity data sets. On the other hand, Kirby and Ostdiek (2012) indicate the problem in DeMiguel et al., embed their mean variance strategy with an insignificant estimation error. They also express that the mean-variance approach significantly outperforms 1/N strategy within transaction costs.

## 2.3. Minimum Variance Portfolio

Using a covariance matrix of historical asset returns, optimal portfolio weights can be calculated by trying to minimize the variance of the portfolio. Markowitz called this portfolio the Minimum Variance Portfolio (MinVar).

$$max_w \ w'\Sigma w$$

This strategy is a limiting case of Mean Variance Portfolio where investors ignore the expected returns, and they only focus on the minimum variance.

### 2.4. Bayes-Stein Model

Markowitz's (1952) model provides the optimal portfolio weights, attempting to minimize the variance of the portfolio as an objective function. Model uses the covariance matrix and historical asset returns as the main input parameters.

On the other hand, recent research showed that uncertainty about the parameter values may lead to suboptimal portfolio decisions. The resulting loss in the investor's utility is a function of the estimator chosen for the expected returns. Thus, it is a problem of simultaneously estimating normal means under a well-specified loss function. In this situation, as Stein (1955) has shown, it is inappropriate to use the classical sample mean.

The intuition behind the Bayes-Stein (BS) approach is to minimize the effect of estimation error by "shrinking" the sample mean to a common value (called the grand mean). Stein (1955)  have shown that these estimators produce a uniformly lower expected loss over repeated samples compared to the sample parameters. Here, the investor updates the expected returns by imposing a predestined assumption. This is the basic definition of a Bayes-Stein estimator. In this study, the grand mean ($\bar{\mu}$) is assumed to be $\hat{\mu}_{min}$ (the mean of the portfolio with minimum variance). Here the expected return has the form,

$$\mu_{BS} = (1 - \phi)\, \hat{\mu} + \phi\hat{\mu}_{min}$$

$$\phi = \frac{N + 2}{(N + 2) + K(\hat{\mu} - \hat{\mu}_{min})^T \Sigma^{-1} (\hat{\mu} - \hat{\mu}_{min})}$$

in which $0 < \phi < 1,$ $\Sigma = \frac{K-1}{K-N-2}\hat{\Sigma}$ and $\hat{\mu}_{min} = \hat{\mu}\,\hat{w}_{min}$

### 2.5. Inverse Volatility Model:

Inverse volatility weighting (IV) is a risk-based asset allocation closely related to risk parity. Sometimes called equal volatility weighting, the inverse volatility method measures risk with volatility and weights assets in inverse proportion to their risk.

In this sense, IV assigns more weight to a less volatile asset, and less weight if it is riskier. Therefore, the approach IV creates a risk homogeneous portfolio where the contribution of the ex-ante (estimated) risk of each

asset to the total risk is equal. It seems to be a very intuitive way to reduce portfolio risk through improved diversification.

Consider two assets with standard deviations $\sigma_i$ and $\sigma_j$. The formula needed to apply the IV approach is then:

$$ W_i = \frac{\frac{1}{\sigma_i}}{\frac{1}{\sigma_i} + \frac{1}{\sigma_j}} $$

There are certain disadvantages to using the inverse volatility approach. In the case of an asset with a relatively unusually low volatility, for instance, IV would assign a very large weight. This would cause a biased weight allocation problem when the volatility levels return to a normal level for that specific asset.

Another problem of IV is that it does not take correlations into consideration. In this case, using another risk-parity approach would be favorable. Therefore, the IV approach is sometimes considered as a naive risk parity.

## 2.6. Risk Parity

The main objective behind Risk Parity Portfolios (RPP) is to define a portfolio allocation such that each asset represents the same amount of risk contribution to the overall portfolio. In terms of framework, this approach mimics the equilibrium with rebalancing portfolio discussed earlier. Risk parity portfolios differ in terms of the distribution principle. Instead of having equal weights, each asset has an equal risk contribution to the overall portfolio via a given risk metric. When this metric is variance, the RPP portfolio conforms to the Markowitz (1952) framework.

As previously stated, the risk/reward metrics must be defined. For the rest of this chapter, risk will be defined as variance and expected return as the reward for an asset. So, for a portfolio with $n$ assets, expected returns $\mu \in R^n$ and the covariance matrix is $\Sigma \in R^{n \times n}$, the reward and risk could be measured respectively. Hence the expected return of portfolio is $\mu_p \in R^{n \times n}$ and the variance is $\sigma_p^2 \in R$ :

$$ \mu_p = \mu^T x, $$

$$ \sigma_p^2 = \mu^T \Sigma x $$

and $x \in R^n$ as decision variable and calculates partial wealth for each covariance matrix $\Sigma \in R^{nxn}$ .

Equal weight portfolio solves this optimal portfolio allocation problem by assigning equal amounts of weight to each asset. The Risk parity portfolio, similar in terms of framework to equal weight portfolio, aims to equate the risk contribution of each asset. Therefore, the amount of risk contributed by each asset can be calculated separately.

The risk parity proposes the problem of asset allocation by appointing wealth to the individual contributions of asset risks are equalized. It can be calculated by Euler decomposition for portfolio risk measurement.

### 2.7. Hierarchical Risk Parity

Hierarchical Risk Parity (HRP) is a state-of-the-art asset allocation model that uses a combination of graph theory and machine learning techniques to adjust for risk. In building this framework, HRP does not use a positive definite return covariance matrix in which all eigenvalues are positive (Lopez de Prado, 2016).

Hierarchical clustering is key to diversifying asset classes in terms of the risk they represent. To achieve this goal, HRP Machine Learning uses algorithms to identify the correlation that lies within different asset clusters. The diversification benefits that these clusters provide are measured through Graph Theory methods. In summary, assets are grouped to provide maximum diversification, with an optimal level of risk and competitive returns outside the sample.

Thus, investments are based on hierarchy, and the lack of hierarchy in traditional quadratic approaches explains the instability: weights can vary in all possible directions.

There are 3 major steps to the Hierarchical Risk Parity Process.

- Hierarchical Tree clustering
- Matrix seriation
- Recursive Bisection

### 1- Hierarchical Tree Clustering:

With the help of Hierarchical Tree classification algorithm, assets are classified into different hierarchical clusters. This tree is constructed according to the asset yields matrix which consists of the data and the instrument count.

The steps of the tree construction are as follows:

*1.* *T x N* asset return matrix and *NxN* correlation matrix are formed.

**2.** The correlation-distance matrix D is converted from correlation matrix:

$$D(i,j) = \sqrt{0.5 \times (1 - p(i,j))}$$

**3.** This step it is obtained another distance matrix $\underline{D}$ :

$$\underline{D}(i,j) = \sqrt{\sum_{k=1}^{N} \Sigma(D(k,i) - D(k,j))}$$

which is calculated by the Euclidean distance formula between all columns that are pairwise.

**4.** Briefly the difference between $\underline{D}$ and D for pair of assets i and j, D(i,j) is the distance between assets thus $\underline{D}$(i,j) indicates the approximation in parity of each asset with the entire portfolio. The lower $\underline{D}$ shows that the higher correlation of assets i and j.

**5.** In an iterative way, set of clusters denoted as $U$ and the clusters calculated as:

$$U[1] = argmin(i,j) \, \underline{D}(i,j)$$

Assets with minimum distance can be combined as pairs.

**6.** In the step that is called linkage clustering, HRP uses a single covariance matrix which means the distance between pairs of clusters is obtained by a single element pair.

**7.** The rows and columns which are correspondent to the new cluster are removed and the distance for an asset i separated from this cluster are calculated by using:

$$\underline{D}(i, U[1]) = min\,(\underline{D}(i,a) \,, \underline{D}(i,b))$$

**8.** In this step it is applying to assets recursive combining and updating distance matrix till the get one last cluster. Briefly it combines d with ((a,b),c,e).

**9.** In the final part the hierarchical clustering could be indicated in the dendrogram graph. An example dendrogram graph for global assets can be found on section 3.

### 2- Matrix Seriation

After the tree structure is formed and the hierarchical clusters are decided upon, a standard matrix seriation algorithm is applied to rearrange the data to show the significance of the clusters in a more apparent way. Matrix seriation is a statistical methodology that seeks the best enumeration order of a set of described objects. The order required may be a characteristic or any sequential structure of the data.

The clusters and hierarchical framework are rearranged according to the covariance matrix of the assets. The newly reformatted covariance matrix puts the similar assets together and different ones far away. This process places the larger covariance near the diagonal line. So that the further away from the diagonal line of the class, the smaller the covariance.

### 3- Recursive Bisection:

As a final step of the hierarchical risk parity algorithm the actual weights of assets are assigned in the portfolio in the recursive bisection part.

1. The weights of the assets are initialized first:

$$W_{i=} = 1, \forall_i = 1,...,N$$

2. As a result of the tree clustering part, one big cluster with sub-branches are obtained which are nested within each other. It is splitting each cluster into two sub-clusters hierarchically. In this step it is applicable for the hierarchical risk parity's quasi diagonalize the covariance matrix and it will be used for recursion.

3. The conversion of hierarchical tree form to binary tree that each cluster has right and left sub-cluster which are v1 and v2 and it is calculating variance:

$$V_{adj} = w \, \Sigma^T V w$$

where,

$$W = \frac{diag\,[V]^{-1}}{trace\,(diag\,[V]^{-1})}$$

In this step, it is used where the inverse-variance allocations are at most optimal level in the diagonal covariance matrix.

4. Factor for weighting is stated on the new covariance matrix:

$$\alpha_1 = 1 - \frac{v1}{v1 + v2} \; ; \; \alpha_2 = 1 - \alpha_1$$

this is based on classical optimization theory that:

$$\min \frac{1}{2} w \Sigma^T w$$

s.t. $e^T w = 1; e = 1^T$

where $\sigma$ corresponds to covariance and $w$ is portfolio weights.

$$w = \frac{\sigma^{-1} e}{e^T \sigma^{-1} e}$$

if $\sigma$ is diagonal,

$$w = \frac{\sigma_{n,n}^{-\frac{1}{2}}}{\Sigma_{i=1}^N \sigma_{i,i}^{-1}}$$

$$w = \frac{1/\sigma_1}{1/\sigma_1 + 1/\sigma_2} \quad \text{ers})$$

5. The left and right sub clusters are updated as:

$$W_1 = \alpha_{1*} W_1$$
$$W_2 = \alpha_{2*} W_2$$

6. Recursively executing these steps until all weights of stocks are assigned.

Individual assets within the cluster compete for allocation with each other instead of the rest of the assets in the portfolio, so it can be said the main benefit of a hierarchical risk parity is weight assignment.

## 3. The Data Set

The data for the empirical analysis is composed of weekly prices on various global asset classes such as Emerging Market (EM) Equities, Developed Market (DM) Equities, EM hard currency bonds, US treasury

bonds, US high yield (HY) corporate bonds, European bonds, gold, and commodities. The dataset is retrieved from Bloomberg terminal. All asset class prices are denominated in US Dollars. The focus is on equities, fixed income, and commodities. The sample period is January 1999 - August 2021. In total, seven different data sets are included. As a data source Bloomberg database is used. The respective securities and the descriptions are listed in the table below.

*Table 2. Global asset classes used*

| Asset Class | Bloomberg Ticker | Description |
|---|---|---|
| EM Bonds | JPEICORE Index | J.P. Morgan EMBI Global Core Index |
| EM Equities | NDUEEGF Index | MSCI Emerging Net Total Return USD Index |
| US Equities | SPXT Index | S&P 500 Total Return Index |
| DM Equities ex US | NDDUEAFE Index | MSCI EAFE Net Total Return USD Index |
| US Treasury Bonds | LUATTRUU Index | Bloomberg US Treasury Index |
| US HY Corp. Bonds | IBOXHY Index | iBoxx US Corporate Bond Index |
| EU Bonds | LBEATREU Index | Bloomberg Euro-Aggregate Bond Index |
| Gold | XAUUSD Curncy | |
| Commodity | BCOM Index | Bloomberg Commodity Index |

Global asset class group which covers the largest possible universe is included in the dataset. Both geographically and in terms of market capitalization, a blend of EM/DM equities and bonds with the addition of a broad commodity index explains a significant portion of the global financial instruments universe.

In Table 3, descriptive statistics of all asset classes are provided. Average annual return is highest for EM bonds and EM equities respectively in the sample period. Gold, US equities and other DM equities follow EM asset classes. Most volatile asset class is EM equities and the least volatile one is US Treasury bonds in the data set. EM hard currency bonds and US Treasury bonds generate the highest Sharpe ratio of 0.97 and 0.96 respectively. The maximum drawdowns (MDD) of asset classes range between 6.65% and 74.67% where 6.65% is for US Treasury bonds and 74.67% is for commodity index.

*Table 3. Descriptive statistics of asset returns (Jan. 1999-Aug. 2021)*

|  | EM Bonds | EM Equities | US Equities | DM Eq. ex US | UST Bonds | US HY Bonds | EU Bonds | Gold | Comm. |
|---|---|---|---|---|---|---|---|---|---|
| Mean Ret. p.a. | 9.14% | 9.06% | 7.90% | 4.84% | 4.23% | 5.39% | 4.17% | 8.45% | 0.95% |
| Std. Dev. p.a. | 9.40% | 21.48% | 17.98% | 18.26% | 4.41% | 8.31% | 10.22% | 16.99% | 15.76% |
| Sharpe p.a. | 0.97 | 0.42 | 0.44 | 0.26 | 0.96 | 0.65 | 0.41 | 0.50 | 0.06 |
| Skewness | -2.12 | -0.40 | -0.62 | -1.04 | -0.30 | -1.72 | -0.11 | 0.13 | -0.69 |
| Kurtosis | 30.51 | 5.55 | 6.23 | 8.76 | 1.41 | 20.58 | 0.92 | 3.25 | 2.89 |
| MDD | 30.62% | 63.46% | 54.71% | 59.27% | 6.65% | 32.63% | 27.49% | 43.84% | 74.67% |
| VaR (95%) | -1.56% | -4.46% | -3.90% | -3.69% | -0.93% | -1.43% | -2.26% | -3.68% | -3.25% |
| Observations | 1182 | 1182 | 1182 | 1182 | 1182 | 1182 | 1182 | 1182 | 1182 |

Table 4 shows pairwise correlation coefficients between all asset classes. Intra-asset correlations are high on the other hand the same cannot be observed for inter asset correlations. For instance, a correlation of 0.82 between EM and DM equities presents a powerful relationship whereas correlation between US Equities with US Treasury bonds is -0.30. This is the most significant negative correlation among all observed pairs. EM hard currency bonds and US high yield corporate bonds have positive correlation coefficient with global equities between 0.48 and 0.62.

*Table 4. Correlation matrix of asset classes (Jan. 1999-Aug. 2021)*

|  | EM Bonds | EM Equities | US Equities | DM Eq. w/o US | UST Bonds | US HY Bonds | EU Bonds | Gold | Comm. |
|---|---|---|---|---|---|---|---|---|---|
| EM Bonds | 1.00 | 0.62 | 0.48 | 0.56 | 0.14 | 0.50 | 0.31 | 0.20 | 0.32 |
| EM Equities | 0.62 | 1.00 | 0.68 | 0.82 | -0.24 | 0.49 | 0.23 | 0.21 | 0.47 |
| US Equities | 0.48 | 0.68 | 1.00 | 0.79 | -0.30 | 0.47 | 0.09 | 0.04 | 0.33 |
| DM Eq. ex US | 0.56 | 0.82 | 0.79 | 1.00 | -0.24 | 0.50 | 0.34 | 0.18 | 0.47 |
| UST Bonds | 0.14 | -0.24 | -0.30 | -0.24 | 1.00 | -0.07 | 0.32 | 0.19 | -0.15 |
| US HY Bonds | 0.50 | 0.49 | 0.47 | 0.50 | -0.07 | 1.00 | 0.18 | 0.10 | 0.31 |
| EU Bonds | 0.31 | 0.23 | 0.09 | 0.34 | 0.32 | 0.18 | 1.00 | 0.43 | 0.30 |
| Gold | 0.20 | 0.21 | 0.04 | 0.18 | 0.19 | 0.10 | 0.43 | 1.00 | 0.40 |
| Comm. | 0.32 | 0.47 | 0.33 | 0.47 | -0.15 | 0.31 | 0.30 | 0.40 | 1.00 |

Figure 2 shows the clustering dendrogram for global assets. Global equities are grouped in the one cluster, EM bonds and US HY corporate bonds form another cluster. US Treasury bonds are in another leaf of the dendrogram which is the most diversifier asset class among all.

*Figure 2. Dendrogram for global asset classes*
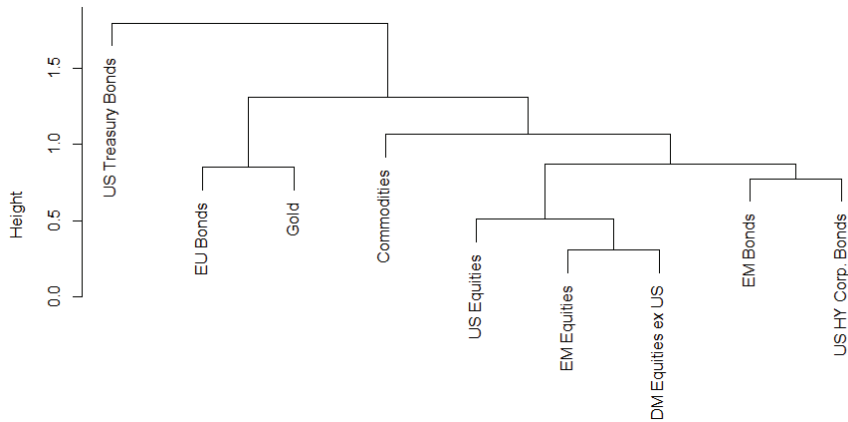


## 4. Model Estimation and Results

### 4.1. Methodology

Like DeMiguel, Garlappi, and Uppal (2009) and Daskalaki and Skiadopoulos (2011), a rolling sampling approach is used for the tests. At each month, next month's portfolio weights are computed using a 1 year rolling window for each of the asset allocation models. Rolling window approach is used instead of expanding window. The reason for this choice is dynamic behavior of this framework. Expanding window approach loses its adaptive power as the window gets larger.

### 4.2. Model Results

All seven different asset allocation models are applied on the same dataset to get the performance metrics. As seen on Table 5, these metrics showed significant variation within each other, especially with respect to 1/N which can be seen as the naive benchmark allocation strategy.

Regarding mean returns, Mean-Variance and Bayes-Stein strategies lead all the others. Whereas MinVar and HRP strategies are listed amongst the last. On the other hand, looking at the standard deviation stats, these two strategies HRP and MinVar generate the minimum numbers. When it comes to Sharpe ratio, which is an overall strategy performance metric, Bayes-Stein strategy ranked higher than the rest. Separating itself from the group, Bayes-Stein reported a 0.673 Sharpe ratio which is significantly better than other strategies. As expected, Minimum Variance and HRP strategies produce Maximum Drawdown (MDD) statistics around 15%, outperforming others where benchmark 1/N strategy has the highest MDD of 32.81%.

*Table 5. Performance metrics of asset allocation models for the period 1999-2021*

|  | 1/N | MV | MinVar | BS | IV | RPP | HRP |
|---|---|---|---|---|---|---|---|
| Mean Return p.a. | 6.34 | **6.81** | 4.70 | **6.69** | 5.80 | 5.34 | 4.73 |
| Std. Dev. p.a. | **9.24** | 8.03 | **4.54** | 6.96 | 6.56 | 5.37 | **4.69** |
| Sharpe Ratio p.a. | 0.470 | 0.598 | 0.601 | **0.673** | 0.581 | **0.626** | 0.589 |
| Sortino Ratio | 0.097 | 0.117 | 0.114 | 0.131 | 0.113 | 0.121 | 0.110 |
| Omega | 1.331 | 1.451 | 1.562 | 1.534 | 1.444 | 1.501 | 1.536 |
| Skewness | -1.060 | -1.695 | -2.162 | -1.579 | -1.707 | -1.740 | -2.535 |
| Kurtosis | 9.079 | 17.128 | 28.981 | 18.604 | 16.597 | 16.823 | 27.690 |
| MDD | **32.81** | 31.49 | **14.40** | 27.32 | 24.41 | 19.71 | **15.38** |
| Downside Dev. | 0.93 | 0.83 | 0.47 | 0.71 | 0.67 | 0.55 | 0.49 |
| VaR (95%) | -1.75 | -1.45 | -0.80 | -1.23 | -1.21 | -0.96 | -0.79 |

As can be depicted from Figure 4, all portfolio strategies differ in asset allocation weights through time. Each different strategy distributes wealth according to different priorities or investment horizons. Mean-Variance and Bayes Stein asset allocation models show similarities in terms of weight reallocation frequency. Whereas HRP, RPP and Inverse Volatility strategies take more time to redistribute the weights. This change in frequency leads to higher or lower return and volatility results.

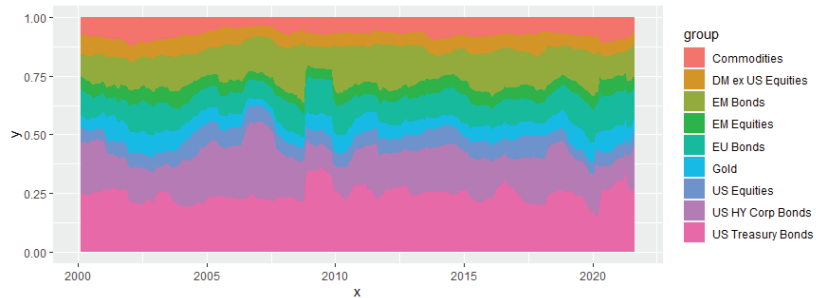**Figure 4. Portfolio weights of selected asset allocation models**
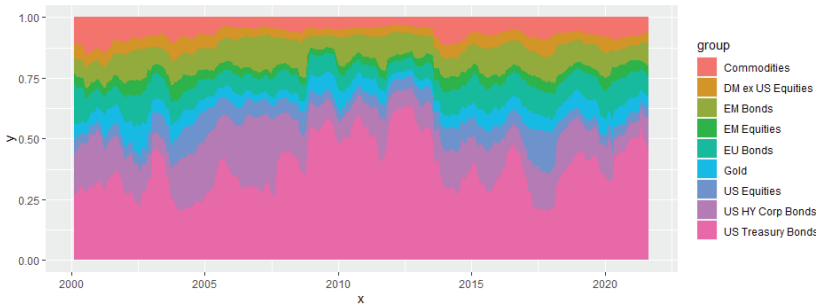


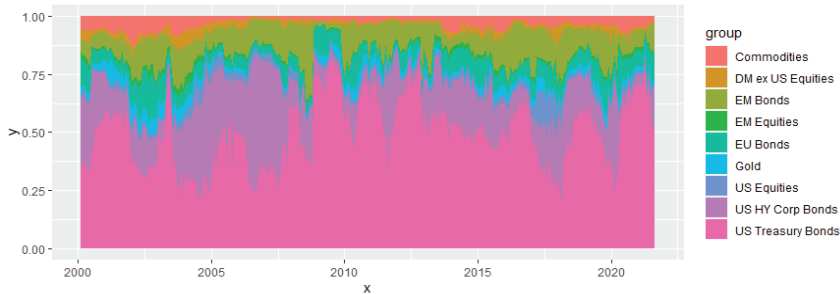*Mean Var. Portfolio Weights*
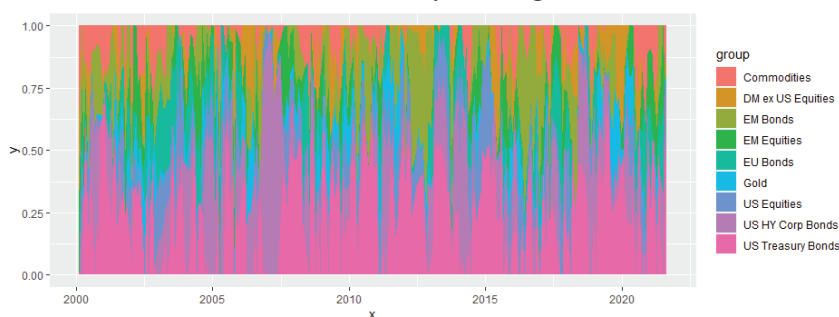
## Bayes-Stein Portfolio Weights
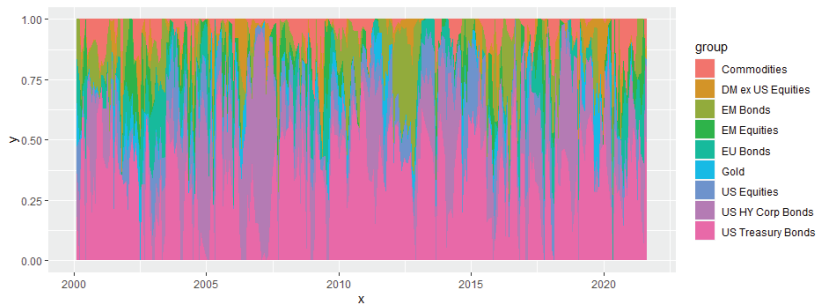


## Inverse Vol. Portfolio Weights



## Risk Parity Portfolio Weights



## HRP Portfolio Weights

As Figure 5 suggests, traditional asset allocation approaches such as MV or 1/N tend to result in high drawdowns due to their less agile structures. On the other hand, HRP and RPP tend to dodge these situations due to their more adaptive frameworks.

*Figure 5.  Maximum drawdown of selected asset allocation models*
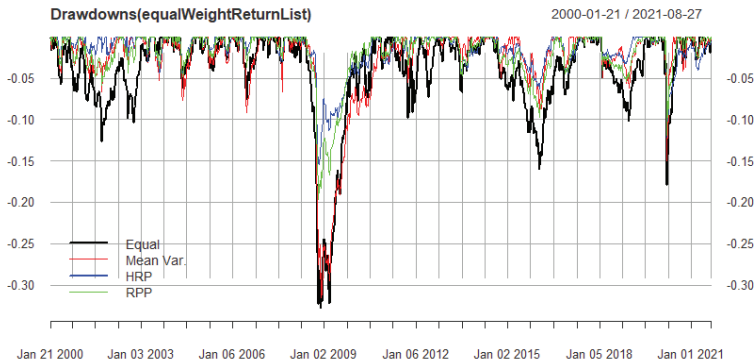


## 5.  Conclusion

Classical mean-variance based allocation methods are compared with Bayesian, risk parity and hierarchical risk parity approaches for global multi-asset portfolios. Rolling window estimation methodology is used for the period from January 1999 to August 2021. Empirical evidence shows that, Bayes-Stein and Mean Variance models are superior to other ones in terms of average return and Sharpe ratio. On the other hand, RPP and HRP models generate the lowest maximum drawdown and historical value at risk.

Even though, a change in data period and/or asset universe might lead to changes in results, the main characteristics such as lower volatility or higher Sharpe ratios are preserved.

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