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İÇİNDEKİLER

Chapter 1

REFLECTION OF THE MEDICAL PRACTICES IN THE PRE-ISLAMIC TURKISH STATES OF CENTRAL ASIA TO TODAY'S MEDICAL SCIENCES

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1. Introduction

The Turks, who gave direction to world history and had an important place, came to the stage of history about four thousand years ago. They have engaged in political, social and economic activities in Asia, Europe and Africa. They considered the land they have as a homeland and made it flourishing. The oldest known homeland of Turks is Central Asia. Central Asia is the region of southern Siberia, East and West Turkestan, south of Tanrı Mountains and north of the Cungarya steppes.The Turks gathered in this region, organized and established great states. Later they had to migrate from Central Asia for many reasons. As a result of these migrations, they managed to establish new civilizations by spreading all over the world. Before accepting Islam, the Turks continued to live as nomadic until the formation of the Uighur State (745-840). However, they adopted a sedentary life during the Uighurs and left both architectural and written works (Ağaldağ,1997:2).

Before the Turks accepted Islam, they believed in Shamanism, a form of belief, as well as the tengri (Gök Tanrı) belief. Shamanism is not the specific name of a particular religion, but the name of a belief system. According to the general opinion, the pre-Islamic religions of Turks are accepted to be quite close to monotheism. The belief of tengri is very close to Islam (Kafesoglu, 1977: 251). Shaman (Kam), who was considered to be a religious functionary according to the belief of shamanism, would raise his soul to the heavens or go underground in his trance state, which means the transition from one world to another by his own methods.During this trance, the shamanic cleric used to communicate with the dead, demons and gins by taking the souls under authority. Thanks to this trance state, he would reach to God and heal those who became ill or whose souls were stolen (Kafesoglu, 1977: 252). Over time, the shamans in the ancient Turks were replaced by the herbalists (Otacı) who knew medicine, were educated and applied treatment methods in scientific ways.

2. Medical science in pre-Islamic Turks

It is very difficult to talk about a scientific medicine in the Turkic communities living in the steppe culture in the Central Asia during the time until the Uighurs were established (Ülken, 1959: 12). The Old Turks, who are living in harmony with nature and soil, have tried to solve their health problems with folk medicine, where their religious beliefs (naturalism, cult of ancestors and tengri belief and shamanism) are dominant. The Turks interacted with many different cultures and civilizations in this vast geography they dominated and as a result of this mutual exchange, they had a very rich accumulation. Undoubtedly, the influence of Buddhism and Mazdeism is one of the factors affecting the basis of medicine in ancient Turks (Hüsrev Hatemi, 2001:11).

This belief system, which was seen in pre-Islamic Turks, was replaced by medicine after a certain period of time, and clergy replaced physicians. We learn that shamans continue their effects in medicine until the emergence of physicians with modern medical understanding called otacı, emçi or atasagun. While the old Turks accepted the honor of dying in the war, they were ashamed to die of the disease (Stanislas, 1877: 27). Therefore, when they became ill, they made very limited treatment interventions. For example, when a person became ill in the Hun state of Central Asia, it was first cauterized with musk grass. Sometimes a stone was heated and put on the patient, the fire was burned on the soil, and after heating the soil thoroughly, the patient was left on this warm soil and the patient was tried to be treated.In some cases, the blood vessels on the aching ground were drawn with a sharp instrument and blood was drawn. After the completion of these procedures, the healing of heaven, earth, mountain and river spirits were expected. However, they did not have a regular medication for certain diseases (Ögel,1981:311).

3. Treatment Methods Applied in Pre-Islamic Turks

If we classify pre-Islamic Central Asian Turkish medicine according to the applied treatment methods and purposes, we can group it in two groups. The first of these is the medical understanding of Kam (shaman) and baksı, who are practicing the magical treatment methods of Shamanism under the influence of the religion they believe in (Bayat, 2010: 203)the second was Otaçı, emçi and atasagun, which use drugs and other material treatment methods, representing the material medical understanding of the period (Buluç, 1971:321).

In ancient Turks, witch doctors (shamans) were replaced by the type of physician who knew medicine, was educated and applied treatment methods in scientific ways. These physicians are called otacılar (Herbalists) (Altintas, 1986: 85). The word Otacı was derived of “otamak” and “ot” (herb) words which means to treat and herb (plant-medicine) (Kaşgarlı Mahmud, 2007: 363). In Old Turkish, it means grass, plant, self-growing herb, medicine and poison. Otacı (Herbalist) is a Turkish word which is derived by bringing to the root of the verb otamak (making medicine) with the annex of profession notification (c-ci) and it is used in the meaning of physician.Otacılar (Herbalists) were educated with good training and received great respect from patients with their correct treatments. (Kaşgarlı Mahmud, 2007: 363)Otacılar (Herbalists) have been very important for people because they treat all diseases and pains (Yusuf Has Hacip, 1988: 315). When Turks became ill, they applied to the physicians and had their diseases treated with medicine (Yusuf Has Hacip, 1988: 315). The doctor who makes medicine against diseases in ancient Turks is called “emçi”. “Em” means medication, so the person making the drug is called an “Emçi”

(Kaşgarlı Mahmud, 2007: 363).In addition to the "emçi" and "otacı" who are doctors, it is necessary to mention physicians called "Atasagun" who have a very respectable place in the old Turks, especially in the Turkestan region. (Kaşgarlı Mahmud, 2007:255).

4. Spiritual-Mystic Treatment Methods

Pre-Islamic Turks believed that Shamanism, which they considered as a belief, lived in a manner typical of the Steppe culture, in particular that health and disease were due to the balance between good and evil spirits in nature. The ancient Turks established the relationship between souls and people through shamans (Kams) with special abilities. The main tasks of the shamanic clergy, who have an important place in society, are to cure diseases caused by loss of soul or the stealing of the human soul by evil spirits. In addition, they had duties such as accompanying the souls of the dead to their journey to the afterlife.For therapeutic rituals intended for the prevention of illnesses, Kam used his special abilities, which he believed were given to him by God, by performing a ritual in front of the patient who was laid near the fire with a drum, which they believed to be magical, with a set of symbolic figures (Bayat, 2010: 204). As a matter of fact, I think it would be correct to say that these two treatment methods still exist among the people of the old Turks. The best example of this situation is that among today's people, there are many people who have never applied to modern medicine before, or who expect hope from masters, fortune tellers or healers in order to cure their illnesses, which cannot be cured in modern medicine (Pirverdioğlu,1999:293).

5. Material-Medical Treatment Methods

The doctors called "Otacı" and "emçi" in ancient Turks, unlike the clergy, these doctors tried to treat their patients by using scientific medicine methods of the period they were in with the drugs they obtained from plants and animals (Bayat, 2010: 204). The method of treating patients with plants, emerged in the late period among the Turks, they are due to the lack of written documents belonging to the periods before the Uighurs (Bayat, 2010: 204). We can talk about the existence of an advanced medical culture of Uighurs in Central Asia. Uighurs engaged in agricultural activities as a result of their resident life and felt the need to trade the goods they produced. As a result of their commercial activities with neighboring countries, they have mutually interacted with neighboring countries.Thanks to this commercial shopping, they obtained medicines by using a number of medical supplies and made medicines and managed to treat many diseases with the help of these medications (Ünver, 1940: 6). In the works describing the Uighur period, an advanced folk medicine emerges. According to this, it can be stated that medical education was performed according to the tradition of master-apprentice in accordance with the tradition of that period. And it

can be said that these doctors make a variety of medicines using bile, urine, various animal meats such as bird meat and snakeskin, and using herbal ingredients such as onions, garlic, radishes and various herbs. Uighurs who managed to sweeten these medicines by thickening them with honey, applied substances such as ammonia and moldy cheese to the wounds and sought ways for healing (Sertkaya, 1997:351).

An analogue of this treatment method is currently performed with penicillin. They are the oldest antibiotics used in medicine. Penicillin obtained from mold fungushttp://www.uralakbulut.com.tr/wpcontent/uploads/2009/pdf.Erişimtarihi25Mayıs2019). Due to their bactericidal activity,due to the good pharmacokinetic properties which is distributed whole body and their low toxicity penicillin is also widely used in the treatment of many infections today due to its low cost and effective results in bacterial infections. (Öncül, 2002:24).

6. The Reflections of Methods Applied to Major Diseases in Pre-Islamic Turks on Today's Medicine

Because the old Turks believed in life after death due to their religious beliefs they thought that human beings did not die when their biological existence came to an end and were immortal. In the ancient Turks, one of the three or seven souls believed to exist in man remained in the grave with the death of the person, others believed that they had gone to heaven and earth. If things go wrong and disorient him or eat him a bad spirit (kara körmös - Black Soul), he would wander around the world and cause people to get sick (Rahman, 1996: 70). The lack of free spirit, which they called the "kut" (blessing) in the Yakut Turks, was considered to be a cause of illness.In mental and mental illnesses, kut was flew, or kut was expressed as output. The treatment of the disease would be with the lead casting called kut kuyuv (putting kut). It is also known that ancient Turks poured lead in order to remove some diseases (İnan, 1952: 20). Today, this practice is still continuing in Anatolia and Asia. It is also seen that some methods applied by shamans are compatible with today's rational medicine. For example, it is quite interesting that the shaman (Kam) treats the sick person by using incense as antiseptic, such as antiseptic or datura stramonium, such as sprinkling of cold water on the face of the sick, aloes wood , juniper, or devastating apple (Terzioğlu,1997:361).It has been determined that juniper tree molasses obtained by traditional methods in Anatolia (Anamur region) has antioxidant properties (free radical scavenging activity - EC50 0.967 µg / mL) (Alçay, 2018: 47). Again juniper tree essential oil and its components are used as antimicrobial agents in clinical microbiology and pharmaceutical preparations (Alçay, 2018: 48). It was found to have antifungal properties (Pepeljnjak ve ark.,2005:419). Diuretic (terpinen-4-ol) has antirheumatic properties (Leung and Foster, 1996). Juniper

essential oil is widely used in dermatological creams and ointments for health problems such as eczema, psoriasis, hair loss, aging spots, dandruff (Achour et al, 2011). Juniper tar is also used as a documented treatment against chronic skin problems such as psoriasis (Shocket et al., 1990: 243), eczema and seborrhea (Alçay, 2018:49).

In pre-Islamic Turks, children were believed to be born with good spirits, and some of these spirits were believed to be in the placenta of the newborn. This is why this good spirit, which protects pregnant women, is identified with the placenta andword of " Umay" has become the word that expresses the placenta in old Turkish. For this reason, it is believed that if the placenta of the newborn is discarded or left out in the open, the child will be ill so it is buried in places with cult characteristics such as tree bottom (Hassan, 1985: 59). Even today, it is similar to the fact that the umbilical cord of a newborn child is buried in a tree or ground.In some of the old Uyghur texts, it was thought that gin (alku yel igig) was hit as the cause of abdominal distension caused by gas (Yusuf Has Hacip, 1988: 325). In ancient Turkish medicine, it is observed that the quarantine method is applied to protect against some diseases (Terzioğlu, 1984: 17). According to the Turks, the evil spirits entering the body are believed not only to be in the body of the patient, but also in healthy people, and because each disease is considered infectious, the treatment of the patient is made in special tents. In order to determine these tents, they erected a spear in the tent and did not allow anyone to enter the patient's tent, even though their relatives so the shaman treats the disease himself alone. (Terzioğlu, 1984:21). If the patient dies, they have burned the patient together with the items used by the sick person in daily life. (Audio, 1975: 121). This treatment method in pre-Islamic Turks is performed in intensive care units of today's medicine. Intensive care units are clinics for the treatment of patients in need of intensive care due to severe dysfunction in one or more organs or organ systems, equipped with advanced technology devices, which are privileged in terms of location and patient care, and where 24-hour vital indicators are monitored and treated.The standards of intensive care units should not be directly related to the general areas of use of patients, visitors and hospital staff. Apart from the intensive care personnel, the entrances and exits are kept under control. (Republic of Turkey Ministry of Health General Directorate of Treatment Services, Standards of Intensive Care Units, Circular dated 03/04/20008 and numbered 11395 -2008/25) In addition, in order to make the intensive care units distinguishable, regulations regarding isolation measures have been made in the isolation of infectious diseases in the Hospital Service Quality Standards published by the Ministry of Health Performance Management Quality Improvement Department.In ancient Turks, as a spear was erected in the tent to identify the patient tent, in the infected or colonized patients, descriptive figures

determined by the ministry showing the isolation method used are used. In line with the decision of the Infection Control Committee, the name and method of application of the isolation method, the images used for the descriptive figures, as well as the standard materials available.These figures were determined as yellow leaf used in respiratory isolation, blue flower in droplet isolation and red star in contact isolation. There are also meanings imposed on the figures. For the yellow leaf, the trees are the lungs of nature and the leaves are the lungs of the trees. Yellow leaf starting with the initial letter "s" of respiration (Solunum - Turkish).For the blue flower, the middle point was used to represent the patient and the leaves around him were used to represent the droplets. The red star represents the five corners of the star and the five fingers of the hand. The color red is used as a link between the drawback of contact with fire and the drawback of contact with the patient. (SSI-Hospital, Version-5; Revision Republic of Turkey Ministry of Health, Turkey General Directorate of Health Services, Department of Quality and Accreditation in Health, E-mail: skskalite @ gmail.com, Web: www.kalite.saglik.gov.tr)

DESCRIPTION FIGURES

	**Four Leaf Clover (Fall Risk)** • Symbolizes luck. • Represents that falls should not be left to chance
	Yellow Leaf (Respiratory Isolation) • Trees are the lungs of nature and leaves are the lungs of trees. • A yellow leaf starting with the letter "s" which is the first letter of "solunum (respiratory) is used.
	**Blue Flower (Droplet Isolation)** • The middle point represents the patient. The leaves around it were used to represent the droplets.
	**Red Star (Contact Isolation)** • The five corners of the star represent five fingers of the hand. • The red color is based on the bond between the drawback of fire contact and the drawback of contact with the patient.

(SKS-Hospital (Version-5; Revision-01) 1. Revision - 2. Release: Ankara, Mart 2016 ISBN: 978-975-590-558-7General Directorate of Health Services Department of Quality and Accreditation in Health).

In pre-Islamic Turkish states, there are some material and spiritual elements that are considered sacred. This understanding of holiness dates back to ancient times in ancient Turks. Since the ancient Turks could not understand the natural phenomena they faced, they created legends about them and perceived the world in a mystical way and placed these legends on all the elements that make up the universe. One of these elements is colors and trees. In ancient Turks, trees have symbolic meanings in connection with their religious beliefs. Tree represents belief in ancient Turks. Water is one of the lower arms of the faith. Tree culture has an important place in Turks.Both the growth of the tree, the trunk, branches and leaves have left deep traces in the spirit of the Turkish nation. Because of this reason

The Turks consider the tree as a means of eternity trust and protection and continue to use the tree culture in some way until today and use it symbolically in many areas of civilization as mentioned above. As in other societies, traditions in Turkish societies are a kind of way of living as well as being a bridge established from the past to the future. In ancient Turks, colors have different meanings just like in contemporary Turkish societies.For example, the red color indicates the alarm in communication between individuals and communities. Blue is generally known as the color of eternity and peace, since it is known as the color of sky and water. Therefore, it is used as a calming color in terms of sensitivity, peace and loyalty (Mazlum, 2011: 132). Generally speaking, the yellow color evokes emotions such as brightness, joy, excitement, ambition, freedom, open-mindedness, inspiration and wisdom (Andrews, 1995: 33). Green color is perceived as a protective color in Turkish mythology and is one of the colors that play a very important role in the life of Turks. It is the expression of life, youth and vitality. From ancient Turks to present, these colors continue to function in many areas, especially in medicine. In addition, there were compatible relations between the shaman and the patient in the ancient Turks. We understand that pre-Islamic Central Asian Turkish medicine has developed considerably from the Uighurs period with the Turks' resident life with the Uighurs.

7. Diseases Detected by Pre-Islamic Turkish States

We learn the most important information about medicine in pre-Islamic Turks from the Uighur medical texts which are the only written sources of this period. These texts constitute a medical book by being classified according to their subjects in approximately forty-five Uighur medical literature. In these texts, many diseases can be defined and treatment methods and drugs can be determined. In the later periods, thanks to the trade with the neighboring countries, the Turks had a mutual interaction in the field of medicine as well as in all other fields and advanced the science of medicine. We have already mentioned that there have been

significant developments in pre-Islamic Turks in the field of medicine since the Uighurs.In this period, one of the most important issues that attract attention is the scientific medicine rather than magic in Turkish medicine. Beginning from this period, the ancient Turks became independent science by developing or improving their understanding of medicine according to their customs, traditions, ethics and nature, their climate. (Şevki, 1991: 25). The ancient Turks believed that the body should be in balance according to four basic substances in order to be healthy and according to this idea, they tried to shape the science of medicine (Şevki, 1991:25). Disruption of this balance for any reason occurs as a so-called disease. The treatment is the work of balancing the deficient and the excess within the body by means of various drugs or different methods and re-establishing the disrupted balance. Since the germs are not known in the old medicine, all diseases are explained by the deterioration of the balance in the body. According to the advanced understanding of medicine in the ancient Turks, the pain in the human body arises from the disruption of this balance. In the treatment of diseases, bleeding is done to protect against bad fluids and discharge is done to get rid of excess liquid (Önler,1988:159). They accepted that all diseases were due to wind and cold (Uzel, 2000:12).

In some diseases

The current medical approaches for the accumulation of fluids in the body include the discharge of these fluids, as well as the biochemical and microbiological, pathological analysis under laboratory conditions. In various infectious diseases, culture antibiograms are made to prove the presence of microorganisms in body fluids and to detect and treat sensitive antibiotics. In patients who develop renal failure, harmful substances (urea, creatinine, electrolytes) and excess fluid accumulated in the blood cannot be removed from the body is discharged by hemodialysis or peritoneal dialysis.In order to eliminate the deficiencies and deficiencies in blood loss or the production of blood cells due to various reasons in the body, blood transfusion should be performed and the missing vitamins and minerals should be replaced. In newborn units, especially in the presence of severe hyperbilirubinemia (jaundice) and acute bilirubin encephalopathy (bilirubin affecting the central nervous system), heart failure, anemia, complete blood exchange or partial blood exchange are performed. (Turkish Neonatalgia Society Blood Products Transfusion Guide, 2016: 21)

The diseases that the pre-Islamic Turks detected according to the Uighur tablets are as follows. Headache, hair dandruff, almost all eye diseases, ear and nose diseases, oral diseases, dental diseases, neck diseases, voice loss, respiratory, chest and heart diseases, side pains, general body aches, bladder diseases, cramp, fever, foot diseases, skin diseases, joint dislocations and sprains, mental diseases, gynecological diseases, genital

diseases and impotence diseases (Bayat, 1999: 36). Also in the Uighur texts, prescriptions for these diseases are written, in particular 88 kinds of pharmaceutical preparations against 29 diseases.Ancient Turks have applied both magical and rational treatment methods against these diseases. According to Uighur tabletsIt is seen that most of the magical processes are done by using material tools, vegetable and animal, mineral materials and some inanimate objects.Purpose of use of animal pills including wolf bone, edema, tongue, antlers and animal urine are considered to be magical because they are the cult animals of ancient times (Süveren-Üzel,1988:132).

Today, insulin which were used for a period to reduce blood sugar for diabetic patients, were obtained from pigs and cattle. Recently, insulin production is produced under laboratory conditions with recombinant (biosynthetic) DNA technology. Since biosynthetic human insulin is structurally identical to the insulin produced by our body, the body's response to this insulin is less visible and is used safely in treatment (https://www.turkdiab.org/diyabet-hakkinda-hersey.asp_lang=TR&id=52. Accessed May 5,2019)

8. Conclusion

As in every society, traditions in Turkish societies are a bridge established from the past to the future.The beliefs adopted by the societies then affect their beliefs and form a form of living.The Turks spread to great geographies and established great states.In doing so, they have adopted some of them by interacting with many communities and entering into neighboring relationships with them, meeting different beliefs.Since pre-Islamic Turks believe that hidden forces and souls are in every living and inanimate object,medicine was initially applied by spiritual mystical treatment methods under the influence of religious beliefs, and later by material medical methods as "otacı" (Herbalist) and "emçi" (Doctor). The ancient Turks also exchanged trade with other states that ruled Central Asia and influenced each other in almost every field.This interaction was undoubtedly realized in medicine. In ancient Turks, medicine emerged in this way and formed the basis of today's medicine. In this study, we tried to reveal the reflections of medicine in ancient Turks to today's medicine.

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Chapter 2

THE INTERMEDIARY ROLE OF ORGANIZATIONAL CYNICISM IN THE EFFECT OF TOXIC LEADERSHIP ON TURNOVER INTENTION

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1. INTRODUCTION

Leadership has undoubtedly been one of the most studied topics in business. Different theories have been developed in the field of leadership and researches (Kellerman, 2004; Saqib and Arif, 2017; Fitzgibbons, 2018; Yalçınsoy and Işık, 2018) have been carried out in order to determine how a perfect leader must be. In these approaches, it is considered that the leaders will always produce positive results because the leader is always associated with positive characteristics. For this reason, it hasn't been taken into account that leaders could lead to bad results, harm the organization and its employees, and reduce their motivation and performance (Shaw et al., 2011: 576; Ordu & Çetinkaya, 2018; 16; Çelebi et al., 2015: 250). However, some researchers believed that it was important to examine the negative aspects of leadership, and as a result, negative leadership types emerged (Dobbs, 2014: 14). Toxic leadership is one of these negative leadership types.

The concept of turnover is employee's voluntarily leaving his/her organization/job. However, the turnover intention occurs as a result of a process that has already begun. The most important part of this process is that the employee intends to leave his/her organization (Yalçınsoy & Işık, 2018:1018). Turnover intention (Yalçınsoy & Işık, 2018; Hossain et al., 2017) is an important issue for all organizations, no matter whatever work they do. This is because while leaving sometimes has positive consequences, it often has negative consequences for organizations and others that haven't left the organization. The most important and concrete result of turnover is the costs it imposes on the organization. Finding a new employee and replacing the employee who has left the job, the costs incurred for the training and orientation of the new employee, the job losses incurred at that time, and the extra time and effort spent to compensate for these losses are some examples of these costs. For example, according to the 'Organizational Science' magazine, it would cost the company from $ 3,500 to $ 25,000 when a worker who earns $ 8 an hour in a retail store leaves the job (smallbusiness.chron.com).

There are some individual and organizational factors that can lead to the development of this intention in individuals. In terms of organizations, the organizational factors causing turnover intention are considered as important problems to be solved. As these factors may cause individuals to maintain negative attitudes and behaviors towards the organization. These negative attitudes and behaviors developed by the individual against the organization are called cynicism (Polat & Meydan, 2010: 146). Factors such as improperly managed change processes, low organizational performance, ease of dismissal and excessive workload lead to cynicism. Cynicism results in poor performance, demoralization, absenteeism, labor turnover and job dissatisfaction (Kutaniş & Çetinel, 2010: 189).

Today, it's expected from managers to lead their organizations instead of using their "official authority". Therefore, it is important to conduct such studies (Telli et al., 2012; 148). Different studies have been conducted on toxic leadership in the field of business. However, there is not enough research on the intermediary role of cynicism in the effect of toxic leadership on turnover intention. Therefore, it has been decided to conduct a research on this subject.

In this context, for research; in the first part of the article, the concepts of toxic leadership, turnover intention and cynicism have been discussed theoretically. In the following sections, the analysis process of the research has been explained respectively and the article has been completed with the conclusion and suggestions section.

2. LITERATURE REVIEW

2.1. Toxic Leadership

Toxic leadership is the type of leadership in which the leader influences his/her followers for his/her selfish and personal ambition and interest, disrupts the climate and health of the organization, and in the long run, leads to negative outcomes for those in the organization and organization itself (Doğan & Baloğlu, 2009: 670). The toxic leader can perform toxic behaviors, sometimes by scolding his/her subordinates, sometimes by putting too much work on his/her subordinates and sometimes by suggesting that personal interests be sacrificed for organizational goals (Matos et al., 2018: 503).

Schmidt is one of the leading contributors to the literature on toxic leadership. Schmidt (2008) briefly describes toxic leaders as narcissists who act in unpredictable behavior with an abusive and authoritarian control, and managers who only consider their own interests According to Schmidt (2008), the sub-dimensions of toxic leadership are as follows: Abusive supervision (abusive leaders), authoritarian leadership (authoritarian leaders), narcissism (narcissist leaders), unpredictability (unpredictable leaders) and self-promotion (self-promoting leaders).

When the applied studies (Kellerman, 2004; Saqib & Arif, 2017; Fitzgibbons, 2018; Yalçınsoy & Işık, 2018) are examined, it is seen that toxic leadership has a negative impact on organizational climate and performance, has a relationship with turnover intention and that it disrupts organizational health. In this sense, toxic leadership has other different consequences. However, due to the scope of this study, no further details are given.

2.2. Turnover Intention

Turnover is the employee's voluntarily or involuntary leaving the institution. However, turnover is not a sudden result; moreover it is a result

of a process that has already begun. The most important part of this process is that the employee intends to quit the job (Yalçınsoy & Işık, 2018: 1018). While voluntary turnover is with the consent of the employee; involuntary turnover occurs as a result of pressure or coercion of the management.

Factors causing turnover intention can be varied. Some of those are factors such as leadership and management style, perception of organizational justice, organizational commitment, job satisfaction, wages, employee benefits and job performance. Besides, self-development and the search for new opportunities and organizational climate are also considered as factors affecting turnover intention (Hossain et al., 2017: 105).

2.3. Organizational Cynicism

The origin of cynicism dates back to the 5th century BC. Individuals involved in cynicism behaviors are called cynics. In essence, cynical individuals disregard the rules adopted by civilization and society and underestimate these rules and consequently exhibit aggressive attitudes (Ağaoğulları, 1989: 125). Today, however, cynics are more skeptical, pessimistic and do not believe in organizational goals.

Organizational cynicism, which has a close meaning with concepts such as skepticism, skepticism, insecurity and pessimism (Özler et al., 2010: 48), expresses negative attitudes of employees towards their institutions. Organizational cynicism is defined as "employee's having negative feelings towards the organization he/she works for and reflects this attitude in a critical manner with his/her behaviors" (Abraham, 2000: 269) and as "beliefs of employees that the principles of equality, honesty and sincerity are sacrificed to the interests of the organization and that the organization is morally weak" (Berneth et al., 2007: 311).

It has been determined that there are many factors that cause cynical behavior in organizations. The main factors are as follows; lack of honesty (Johnson & Oleary-Kelly, 2003: 629), obsessive-compulsive behavior disorders, negative emotionality (Özgener et al., 2008: 56), mismanaged change efforts, excessive stress and role burden, personal and failure to meet organizational expectations, inadequate social support, insufficient promotion, organizational conflicts and complexity, ineffectiveness in decision-making, communication problems, psychological contract violations and termination of employment (Reichers et al., 1997; Wanous et al., 1994). Organizational cynicism results in poor performance, demoralization, absenteeism, labor turnover and job dissatisfaction (Kutaniş and Çetinel, 2010: 189). Organizational cynicism consists of three dimensions: cognitive, affective and behavioral dimensions.

3. METHOD and FINDINGS

3.1. Assumptions of the Research

- The participants represent the main mass.
- The participants answered the questionnaire sincerely.
- The most appropriate statistical methods have been selected in order to reach the results of the research.
- The measurement programs used in the research are valid and reliable.

3.2. Limitations of the Research

- The research is limited in terms of subject and application. At the same time, it has certain limitations in terms of time, cost and facilities.
- The scope of the research in terms of subject is to investigate the intermediary role of organizational cynicism in the effect of toxic leadership on job intention.
- In terms of application, the research includes public employees.
- The aim of the research is not to generalize the results.
- In the process of conducting the survey questionnaire, a mass of more than 1000 people has been reached, but only 415 of survey questionnaires have returned.
- Therefore, the research only reflects the evaluations of those who could have participated in the survey. It does not reflect the evaluation of those who couldn't have participated.
- This research reflects the evaluation of the datas obtained as a result of this research by the researcher. It does not reflect the views of the respondents.

3.3. The method of the Research

In the research, questionnaire forms have been used as datas collection tool. The target group to which the surveys have been applied is public personnel operating in all sectors. The study population has been selected as whole Turkey. While distributing datas collection tools, random sampling method has been used. SPSS 21, Excel 2016 and AMOS 24 programs have been used to analyze the datas obtained from the questionnaires.

Within the scope of the research, the questionnaire forms created digitally have been distributed via the internet and 415 questionnaires returned. Since 17 of these questionnaires contained incorrect / missing datas; 25 of them have been defined as extreme values since Mahalanobis distance is less than 0,01 and they have been left out of evaluation. It is

concluded that the remaining 373 questionnaires represent the universe of the research (373>245) (Yazıcıoğlu ve Erdoğan, 2004: 50).

The questionnaire that forms the basis of the research consists of four parts. In the first section, questions containing demographic information of the participants; in the second section, a toxic leadership scale consisting of 5 dimensions - 15 questions developed by Schmidt in 2008 and adapted to Turkish by Çelebi et al. (2015); in the third section organizational cynicism scale consisting of 3 dimensions - 13 questions developed by Brandes et al. (1999) and adapted to Turkish by Karacaoğlu and İnce (2012); in the fourth section, the turnover intention scale consisting of one dimension - 3 questions, created by Cammann et al. (1979) has been used.

While developing the hypotheses of the research, it has been inspired by Yalçınsoy and Işık's (2018) study titled "A Research on the Relationship between Toxic Leadership and Organizational Commitment and the Turnover intention". The hypotheses of the research are as follows:

- H_1: Toxic leadership positively effects on turnover intention.
- H_2: Organizational cynicism has an intermediary role in the effect of toxic leadership on turnover intention.
- H_3: There is a relationship between the self-promotion and turnover intention.
- H_4: There is a relationship between the abusive supervision and turnover intention.
- H_5: There is a relationship between the unpredictable leadership and turnover intention.
- H_6: There is a relationship between narcissistic leadership and turnover intention.
- H_7: There is a relationship between the authoritarian leadership and turnover intention.

The model established according to the hypotheses of the research is shown in Figure 1.

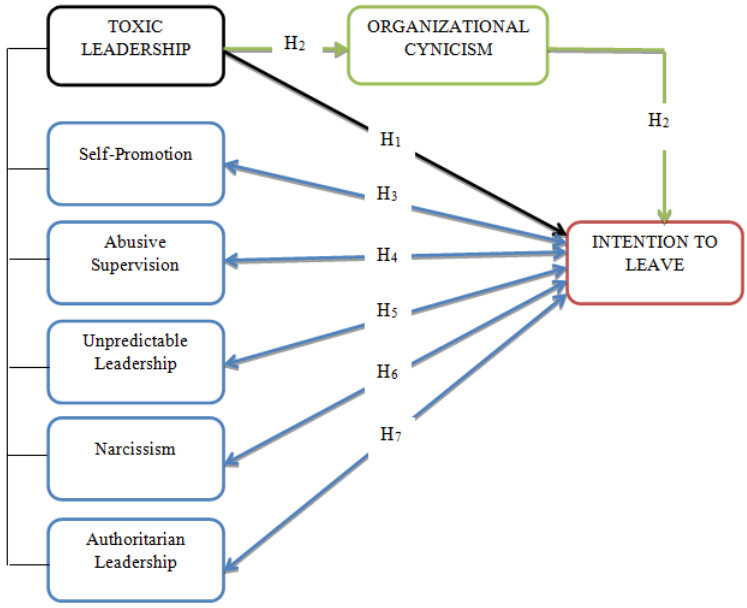

Figure 1. *The Model of the Research on the Intermediary Role of Organizational Cynicism in the Effect of Toxic Leadership on the Turnover Intention*

3.4. Demographic Variables

Information about the participants' gender, marital status, age, education, working time with the current supervisor and the sector at which they work is shown in Table 1.

Table 1.

Demographic Variables

Gender	**No.**	**Percent**	**Marital Status**	**No.**	**Percent**
Woman	149	39,9	Married	272	72,9
Man	224	60,1	Single	101	27,1
Age	**No.**	**Percent**	**Education**	**No.**	**Percent**
Between 18-30	83	22,3	Primary	1	0,3
Between 31-43	203	54,4	Secondary	18	4,8
Between 44-56	81	21,7	Undergraduate	229	61,4
57 and over	6	1,6	Graduate	125	33,5
Working Time With The Current Supervisor	**No.**	**Percent**	**Sector**	**No.**	**Percent**
Between 0-8 years	327	87,7	Informatics	7	1,9
Between 9-17 years	31	8,3	Education	150	40,2
Between 18-26 years	8	2,1	Security	21	5,6
Between 27 years	7	1,9	Health	87	23,3
			Transportation	27	7,2
			Others	81	21,8

According to the informations in Table 1, 149 (39.9%) of 373 participants are female and 224 (60.1%) are male; 272 (72.9%) are married, 101 (27.1%) are single; 83 (22.3%) between 18-30, 203 (54.4%) between 31-43, 81 (21.7%) between 44-56, 6 (1.6%) at the age of 57 and over; 1 (0.3%) of primary education, 18 (4.8%) of secondary education, 229 (61.4%) of undergraduate education, 125 (33.5%) of graduate education; 327 (87.7%) between 0-8 years, 31 (8.3%) between 9-17 years, 8 (2.1%) between 18-26 years, 7 (% 1.9) have a working period of 27 years and over with their current supervisor; 7 (1.9%) informatics, 150 (40.2%) education, 21 (5.6%) security, 87 (23.3%) health, 27 (7%) 2) 81 of them work in transportation (21.8%) in other sectors.

3.5. Reliability and Normality Analysis

According to the datas obtained in the study, the reliability of the dimensions and scales have been calculated by using Cronbach Alpha coefficient. While interpreting Cronbach Alpha values (Özdamar, 1999: 500); $0.00<\alpha<0.40$ not reliable, $0.41<\alpha<0.60$ low reliable, $0.61<\alpha<0.80$ moderately reliable, $0.81<\alpha<1.00$ high reliable criteria have been used.

Statements have primarily been reviewed for the accuracy of the reliability analysis. The second item of the turnover intention scale has been reversed in order to ensure the integrity of the meaning. The first questions of the narcissistic leader and authoritarian leader dimensions, which reduced the reliability values in the scales, have been removed by looking at the "Cronbach Alfa if the item is deleted" values. Thus, reliability values have been improved (While establishing a structural regression model, it is expected that the items that make up the dimensions must be at least three. Therefore, the structural regression model has been established without removing the items with low reliability, and the significance (p) values of the related items have been examined. These values haven't been accepted as meaningful ($p>0.05$). So the relevant items have been removed from the dimensions in this part of the analysis). Table 2 shows the reliability values of the scales and dimensions, means, item numbers and standard deviations.

Table 2.

Reliability, Average and Standard Deviation Values of Scales / Dimensions

Scale/Dimension	Average	Item No.	Standard Deviation	Cronbach Alfa
Toxic Leadership	**3,034**	**15**	**0,945**	**0,935**
Self-Promoting Leader	3,137	3	1,176	0,753
Abusive Leader	2,609	3	1,197	0,820
Unpredictable Leader	2,990	3	1,259	0,835
Narcissist Leader	3,336	3	0,999	0,850
Authoritarian Leader	3,095	3	0,973	0,767
Organizational Cynicism	**2,927**	**13**	**1,099**	**0,953**
Cognitive	3,238	5	1,154	0,918
Affective	2,613	4	1,410	0,975
Behavioral	2,852	4	1,144	0,874
Turnover Intention	**2,585**	**3**	**1,176**	**0,751**

According to the datas in Table 2, the toxic leadership scale has 0.935, the organizational cynicism scale has 0.953 and the turnover intention scale has 0.775 reliability values. Reliability values of the sub-dimensions of toxic leadership are between 0,753 and 0,850; the reliability values of the sub-dimensions of organizational cynicism vary between 0.874 and 0.975. According to the datas obtained, when all Cronbach Alpha values are above 0,70 which is accepted as reliable.

Before starting the analysis of the datas, the normality of the distribution has been examined to determine which analysis methods to use. For normality test, kurtosis and skewness values of the datas have been examined and it has been found out that all values are within ± 2 range. According to Trochim and Donnelly (2001), the kurtosis and skewness values being between ± 2 indicate that the distribution is normal.

3.6. Structural Equation Model

Before constructing the structural regression model, explanatory factor analysis (EFA) and confirmatory factor analysis (CFA) have been performed on the datas. EFA is a type of analysis that brings together a large number of interrelated variables, resulting in fewer and conceptually related new variables (Büyüköztürk, 2002: 472).

Within the scope of EFA, basic components analysis has been performed on toxic leadership and organizational cynicism scales and Promax has been chosen as the transformation method. As a result of the

EFA, items with a factor load below 0.40 have been distributed to more than one factor and items that showed contradictory characteristics (the difference between the two variables>0.10) have been excluded from the analysis. The sample competence test (Kaiser Meyer Olkin - KMO) results have been analyzed at the level of significance of p<0.001 and the suitability of the dimensions / scales for sampling and factor analysis has been tested. EFA values related to toxic leadership are shown in Table 3.

Table 3.

Toxic Leadership EFA Table

	Components		
	1	2	3
Self-Promoting 3	,931		
Self-Promoting 1	,763		
Self-Promoting 2	,694		
Kötü davranan 2		1,000	
Abusive Supervision 3		,771	
Abusive Supervision 1		,505	
Narcissist 2			,938
Narcissist 3			,921
KMO		0,886	
p		0,000	
R^2		%75,315	

According to the findings, the total variance explanation rate of the scale is 75.315%. The results of the sample proficiency test (Kaiser Meyer Olkin - KMO) of the datas have been measured as 0.887 at p<0.001 significance level. According to the mentioned values, it is accepted that the research is suitable for factor analysis. As a result of EFA, the toxic leadership scale is three-dimensional. These are as follows; self-promoting leader, abusive leader and narcissist leader dimensions. Since the unpredictable leader and the authoritarian leader are not in any dimension from the sub-dimensions of toxic leadership, “There is a relationship between the unpredictable leadership and turnover intention” (H_5) and “There is a relationship between the authoritarian leadership and turnover intention” (H_7) hypotheses have been rejected. Other multidimensional scale of the study, EFA values related to toxic leadership are shown in Table 4.

Table 4.

Organizational Cynicism EFA Table

	Component		
	1	2	3
Cognitive 5	,899		
Cognitive 4	,861		
Cognitive 2	,822		
Cognitive 1	,822		
Cognitive 3	,807		
Affective 3		,968	
Affective 4		,956	
Affective 2		,940	
Affective 1		,881	
Behavioral 3			,989
Behavioral 4			,883
KMO		0,919	
p		0,000	
R^2		%84,526	

As a result of EFA, the total variance explanation rate of the scale has been measured as 84.526%. The sample proficiency test (Kaiser Meyer Olkin - KMO) results of the datas have been measured as 0.919 at $p<0.001$ significance level. According to the mentioned values, it is accepted that the research is suitable for factor analysis. As a result of the EFA, the organizational cynicism scale has been three-dimensional as it is in its original form. These; are cognitive, affective and behavioral dimensions. Since the scale of turnover intention is one-dimensional, EFA hasn't been applied to the scale in question.

Following EFA, the research has continued with CFA in order to test pre-determined conceptual datas. In the literature, CFA is defined as testing the compatibility of conceptual relationships between previously identified latent and observed variables in the literature (Anderson and Gerbing, 1984). The structural regression model created within the scope of CFA is shown in Figure 2.

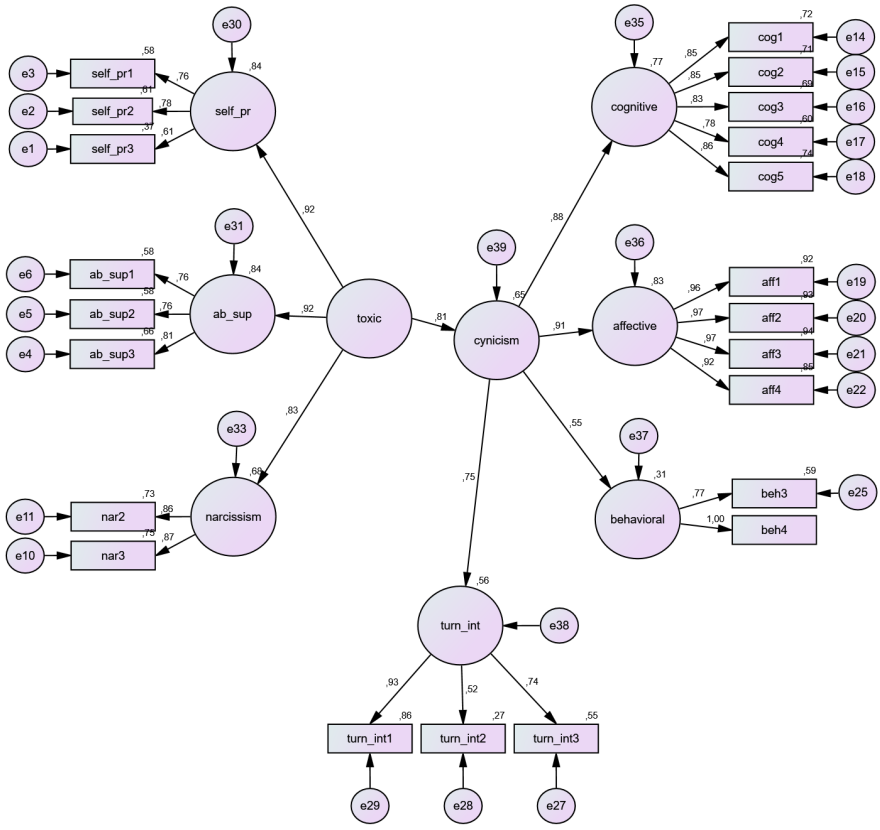

Figure 2. *Structural Regression Model for the İntermediary Role of Organizational Cynicism in the Effect of Toxic Leadership on the Turnover Intention*

According to the size structures obtained from EFA, the structural regression model has been drawn and the significance (p) values of the model have been examined. In this context, p values are insignificant in the effect of toxic leadership on the turnover intention (toxic) and in the error term of the behavioral dimension (beh4) of organizational cynicism ($p<0.05$). Therefore, these values have been excluded from the analysis and the analysis has been repeated. According to the results obtained, "Toxic leadership positively effects on the turnover intention" hypothesis (H_1) has been rejected. Goodness of fit values of the research are shown in Table 5.

Table 5.

Goodness of Fit Values

Fit Measurements	Good fit Values	Acceptable Fit Values	Values Obtained from the Study
CMIN/DF	CMIN/DF<3,00	CMIN/DF<5,00	2,173
RMSEA	RMSEA<0,050	0,050<RMSEA<0,080	0,056
GFI	0,95<GFI<1,00	0,90<GFI<0,95	0,900
CFI	0,95<NFI<1,00	0,90<NFI<0,95	0,965
IFI	0,95<CFI<1,00	0,90<CFI<0,95	0,965
SRMR	0<SRMR<0,05	0,05<SRMR<0,10	0,048

According to the goodness of fit values in Table 5, all of the goodness of fit values obtained from the structural regression model are in the acceptable / good fit ranges. According to these results, there is no need to add covariance between error terms. Fit values has been accepted as being reliable enough. So, the regression weights significance (p) values have been examined and all ($p < 0.001$) have been found to be significant. Then, standardized regression weights have been examined to interpret the effects between variables. Table 6 shows the standardized regression weights and the variance values explained for the scale / dimensions.

Table 6.

Standardized Regression Weights (λ) and Explained Variance (R^2) Values

R^2	Variance		Variance	λ	Variance		Variance	λ
0,653	**Cynicism**	<---	Toxic	,808	Nar2_1	<---	Narcissist	,856
0,844	**Self-Promoting**	<---	Toxic	,919	Cog1_1	<---	Cognitive	,849
0,837	**Abusive**	<---	Toxic	,915	Cog2_1	<---	Cognitive	,845
0,683	**Narcissist**	<---	Toxic	,826	Cog3_1	<---	Cognitive	,833
0,775	**Cognitive**	<---	Cynicism	,880	Cogl4_1	<---	Cognitive	,778
0,826	**Affective**	<---	Cynicism	,909	Cog5_1	<---	Cognitive	,861
0,308	**Behavioral**	<---	Cynicism	,555	Aff1_1	<---	Affective	,957
0,565	**Turnover Intention**	<---	Cynicism	,751	Aff2_1	<---	Affective	,966
	Self-promoting3_1	<---	Self-promoting	,609	Aff3_1	<---	Affective	,968
	Self-promoting3_1	<---	Self-promoting	,778	Aff4_1	<---	Affective	,922

R^2	Variance		Variance	λ	Variance		Variance	λ
	Self-promoting31_1	<---	Self-promoting	,762	Beh3_1	<---	Behavioral	,768
	Abusive3_1	<---	Abusive	,813	Beh4_1	<---	Behavioral	1,000
	Abusive2_1	<---	Abusive	,765	TI3_1	<---	Turnover Intention	,741
	Abusive1_1	<---	Abusive	,759	TI2_1	<---	Turnover Intention	,523
	Narcissist3_1	<---	Narcissist	,865	TI1_1	<---	Turnover Intention	,926

According to the datas in Table 6, all effects created by latent and observed variables are positive and strong. In addition, the explained variance values are quite high except for the behavioral dimension (31%). This means that the model's ability to represent the real universe is quite high.

In the study, standardized direct and indirect effects have been examined to analyze the intermediary effect. According to the results of the analysis, the indirect effect of the toxic leadership scale on the turnover intention scale is 0.607. In other words, the direct effect of organizational cynicism on the turnover intention is 0,751. However, the indirect impact of organizational cynicism on the impact of toxic leadership on the turnover intention is 0.607. According to these results, the hypothesis (H_2) that "Organizational cynicism has an intermediary role in the effect of toxic leadership on turnover intention" has been accepted.

Within the scope of validity analysis of the datas, Average Variance Explained (AVE) and Combined Reliability (CR) values have been calculated. AVE defines the average variance that the latent structure can explain in variables that are observed to be theoretically related. CR shows the power of representation of the latent variable by the observed variables that make up it. AVE values must be 0.50 and above to ensure convergent validity; CR values must be 0,70 and above (Yaşlıoğlu, 2017). For divergent validity, the correlation values of the dimensions must be smaller than the square root of AVE values (Fornell & Larcker, 1981). If the convergent validity condition is provided, it is accepted that the items in the dimensions adequately and consistently explain the dimensions to which they belong. If the divergent validity condition is met, it is determined that the dimensions are separate structures. Correlations, CR, AVE, √AVE, mean and standard deviation values are shown in Table 7.

Table 7.

Correlations, CR, AVE, √AVE, Mean And Standard Deviation Values

AVE	CR		TL	SPL	AL	NL	AL	COG	AFF	BEH	TI
0,788	0,918	TL	**0,888***								
0,520	0,760	SPL	0,831	**0,721***							
0,607	0,823	AL	0,879	0,676	**0,779***						
0,740	0,851	NL	0,827	0,618	0,639	**0,860***					
0,636	0,834	OC	0,705	0,615	0,614	0,570	**0,797***				
0,695	0,919	COG	0,687	0,605	0,575	0,569	0,909	**0,834***			
0,909	0,976	AFF	0,653	0,549	0,602	0,517	0,917	0,756	**0,953***		
0,795	0,884	BEH	0,377	0,342	0,296	0,309	0,675	0,491	0,459	**0,892***	
0,560	0,784	TI	0,539	0,440	0,516	0,420	0,651	0,548	0,683	0,330	**0,748***
Average			2,974	3,137	2,609	3,176	2,934	3,238	2,613	2,952	2,585
Standard Deviation			0,945	1,177	1,197	1,307	1,100	1,155	1,410	1,277	1,177

TL: Toxic Leadership; SPL: Self-Promoting Leader; AL: Abusive Leader; NL: Narcissist Leader; OC: Organizational Cynicism; COG.: Cognitive; AFF: Affective; BEH: Behavioral; TI: Turnover Intention

All correlation values in the table are significant at $p<0.01$ level. Diagonal values are the square root of the AVE values of the size/scales.

According to the datas in Table 7, the correlations between independent and dependent variables vary between 0.297 and 0.917. According to the table in which all values are meaningful ($p<0.01$), "There is a relationship between the self-promotion and turnover intention" (H_3), "There is a relationship between the abusive supervision and turnover intention" (H_4) and "There is a relationship between narcissistic leadership and turnover intention" (H_6) hypotheses have been accepted. In addition, according to Table 7, AVE values are above 0.50 and CR values are over 0.70. Accordingly, the condition of convergent validity has been met in the research. The requirement that the correlation values between the independent and dependent variables are smaller than the √AVE values (values in the diagonal) have been achieved to a great extent. Accordingly, it has been accepted in the research that the divergent validity condition has also been met.

After all the analyzes have had been made, the hypotheses established at the beginning of the research have been evaluated. Acceptance or rejection status of the hypotheses is shown in Table 8.

Table 8.

Hypothesis Results

Hypothesis	Explanation	Acceptance
H_1	Toxic leadership positively effects on turnover intention.	Rejected
H_2	Organizational cynicism has an intermediary role in the effect of toxic leadership on turnover intention.	Accepted
H_3	There is a relationship between the self-promotion and turnover intention.	Accepted
H_4	There is a relationship between the abusive supervision and turnover intention.	Accepted
H_5	There is a relationship between the unpredictable leadership and turnover intention.	Rejected
H_6	There is a relationship between narcissistic leadership and turnover intention.	Accepted
H_7	There is a relationship between the authoritarian leadership and turnover intention.	Rejected

4. CONCLUSION AND SUGGESTIONS

In this study, a research has been conducted on the ıntermediary role of organizational cynicism in the effect of toxic leadership on turnover intention. In the literature review, many research results have been reached about the negative effects of toxic leadership on the organization. For example Steele (2011) states that toxic leadership has negative effects on employees such as loss of confidence, inefficiency, disconnection, organizational commitment, and increased turnover (Yalçınsoy and Işık, 2018: 1023).

While four of the seven hypotheses, having been developed to achieve results in the research have been accepted, three of them have been rejected. Accept/reject explanations of these hypotheses are listed below.

The first hypothesis, “Toxic leadership positively effects on turnover intention” has been rejected. There are similar studies in the related literature. For example, in a study, it has been found that three out of four sub-dimensions of toxic leadership negatively affect turnover intention (Yalçınsoy & Işık, 2018: 1024). Differently, Akça’s (2017: 294) study has found a positive and significant relationship between toxic leadership and turnover intention.

The second hypothesis, "Organizational cynicism has an intermediary role in the effect of toxic leadership on turnover intention" has been accepted. There are some studies in the literature review on the effect of "toxic leadership on turnover intention" and "effect of toxic leadership on organizational cynicism". However, no research has been found on the ıntermediary role of organizational cynicism in the effect of toxic leadership on turnover intention. Therefore, this result can be considered as a new finding. As a result, it can be stated that the result of the fact that the toxic hypothesis does not have a significant effect on turnover intention in the first hypothesis is manifested in the employees who are exposed to organizational cynicism, that is, they have negative feelings towards the organization they work for. However, in some studies, there are also studies showing strong positive relationships between toxic leadership and organizational cynicism (İnce, 2018: 243-248).

The third hypothesis, "There is a relationship between the self-promotion and turnover intention" has been accepted. In the research carried out by Schmidt (2008: 77), this attitude of self-advertising leaders who stand out in positive results has been found to be related with turnover intention.

The fourth hypothesis, "There is a relationship between the abusive supervision and turnover intention" has been accepted. As similar, Schmidt (2008: 77) and many other researcher assume that there is a positive relation between "abusive leadership behaviors and turnover intention" (Schyns & Schilling, 2013; Tepper, 2007; Pradhan & Jena, 2017: 833; Lavoie-Tremblay et al., 2016:589).

The fifth hypothesis, "There is a relationship between the unpredictable leadership and turnover intention" has been rejected. The hypothesis has rejected because the unpredictable leadership from the sub-dimensions of toxic leadership hasn't have had sufficient effect on turnover intention. Although this is not an expected result, it has been determined that there are opposite results in the literature. For example, in the research conducted by Schmidt, he's found that unpredictable leadership is the strongest one among the leadership dimensions (2008: 19). In a study done by Maxwell, it's stated that the human resources manager may have difficulty in controlling or managing the situation since the toxic leader will act unpredictably (2015: 150).

The sixth hypothesis, "There is a relationship between narcissistic leadership and turnover intention" has been accepted. A research supporting this result has been conducted by Weaver and Yancey (2010: 113). In the study, from five types of dark leadership comparisons related to dark leadership, narcissistic leadership has been found to be the strongest type of leadership associated with turnover intention.

The seventh hypothesis, "There is a relationship between the authoritarian leadership and turnover intention" has been rejected. However, the results of some studies show that turnover and absenteeism are higher in organizations led by autocratic leaders than in other organizations. (Cherry, 2006: 5).

As a result, it can be said that toxic leadership behaviors generally increase turnover intention. However, contrary to the results in the literature, the positive effect of toxic leadership and unpredictable leadership and authoritarian leadership on turnover intention has not been determined in this study. Hypotheses have been accepted by determining the positive relationship between the role of organizational cynicism and self-promoting and narcissistic leadership from the sub-dimensions of toxic leadership in the effect of toxic leadership on turnover intention.

In this context, it is considered that it will be beneficial for institutions to provide leadership and communication training to their managers in order to raise awareness in leadership methods (Weaver and Yancey, 2010: 115). Leaders who exhibit toxic behaviors through superiors within the organization and appropriate control mechanisms can remove such toxic behaviors (Yalçınsoy & Işık, 2015: 1024; Wilson-Starks, 2003: 4).

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Chapter 3

PINTER'S *THE CARETAKER* AND COMMON STREAKS BINDING *THE CARETAKER* AND *THE DUMB WAITER*

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The Caretaker

Play

Harold Pinter's *The Caretaker*, set in a house – that is presumably small – in West London, depicts three characters – Davies, Aston, and Mick. Aston, who is the elder brother of Mick and shares the house with him, one day, brings a tramp called Davies, who is a homeless old man down-at-heels wandering around and occasionally being employed at trivial jobs, to his house. He tells Davies that he can stay with them until he finds a proper place to dwell in. Namely, Aston states Davies that he can be hosted in their house. As can be expected, Davies accepts this fabulous and humane offer of Aston and begins to reside in the house. Throughout Act-I Aston and Davies chat. Davies narrates Aston his "story" – his life style, things he does, his concerns and complaints. Frequently the subject of their conversation swerves into seemingly trivial topics such as the household, the stove, Davies' shoes, etc. which indeed conceal quite a profound symbolic meaning as a whole since they can be considered to be tokens pinpointing the pettiness of human nature ensnared in the dull routine of daily life. As can be inferred from Davies' speech, he suffers from lack of respect he has been exposed to due to his low economic and social status. Besides, Davies' speech occasionally assumes a tone in which the reflections of his racist attitudes can be sensed particularly on account of his hostile approach to black people. Davies' speech is occasionally featured by a lack of coherence tangible in the subject of his statements as he frequently switches from one topic to another one which is not related to the previous one at all. One of the most remarkable statements Davies renders concerning himself in his conversation with Aston pretty evidently communicates the lack of joy and pervading sense of desolation torturing him:

"I never had a dream in my life." (Act-I)

In this statement Davies actually points out a reality regarding himself as he notes that he has not seen a dream while slumbering hitherto in his life. However, interpreted in a metaphorical sense and assessed in relation to the miserable way of life Davies leads, the absence of dreams in Davies' speech can be traced back to the lack of hope in his life. Next day, towards the end of Act-I, Aston departs from the house temporarily and leaves Davies alone in the house. After Aston leaves the house, Mick – Aston's brother – enters the house silently. As soon as his eye catches the sight of Davies, he mistakes him for a burglar, an intruder, or a trespasser and therefore attacks him. They get involved in a skirmish as Act-I ends.

In Act-II, Mick and Davies begin to get to know each other. Mick reveals Davies that he is Aston's brother and in return Davies informs Mick

as to why he stays in their house as he explains Mick that Aston has brought him to the house. Mick shares his plans about the interior decoration of the house with Davies. Meanwhile, he complains Davies about his brother and speaks ill of him as he accuses Aston of being a lazy "slow-worker" who is reluctant to work wholeheartedly. Act-II turns out to be the part in which Davies is thoroughly integrated into the daily house life as Aston and Mick respectively offer Davies a permanent 'occupation' as the caretaker of the house which can pave the way for him to turn out to be a permanent dweller of the house. Relatedly, Davies begins to assume a more dominant, self-assertive attitude in the house as he can express his wishes and complaints freelier. Towards the end of Act-II, Davies even dares quarrel with Aston over the open window which disturbs Davies as it permits rain and the cold weather to penetrate into the room. The climax of Act-II comes out at its close, following the quarrel between Aston and Davies. In his long monologue highlighted by a grave notion and accompanied by the gradually dimming spotlights, Aston divulges the terrible misery in his past in a brooding tone. Aston mentions that he has previously been taken to an asylum on account of hallucinations blurring his mind and marring his consciousness. Then he begins to narrate the period of treatment he has experienced in that asylum which he describes like a nightmare. Aston complains about the treatment doctors have exerted on him to cure him of his mental illness. Finally, Aston notes that the treatment he has received in the asylum has resulted in his disposition's being transformed into that of an introvert as can be discerned in his following statement:

"... Anyway, I feel much better now. But, I don't talk to people now. I steer clear of places like that café. I never go into them now. I don't talk to anyone...like that." (Act-II)

In the beginning of Act-III, the manipulative, foxy, disloyal, and arguably malevolent twist haunting Davies' personality can readily be observed as he complains to Mick about Aston and furthermore dares indicate Mick to dismiss Aston from the house:

"... You can't live in the same room with someone who... who don't have any conversation with you."

Pause.

"I just can't get the hang of him."

Pause.

"You and me, we could get this place going." (Act-III)

However, the flow of the play gradually evolves into a disaster for Davies as he loses the approval and tolerance of both Aston and Mick. Aston blames Davies for snoring, groaning, and making noise while

sleeping. Moreover, he insults Davies as he accuses him of stinking. On the other hand, Davies' relationship with Mick deteriorates, as well, since Mick does not approve of Davies anymore. He accuses Davies of causing trouble since his arrival in the house. Namely, Davies' attitude begins to get on Mick's nerves, as well. Besides, fairly remarkably, Mick flings a bizarre and bewildering accusation at Davies as he implicitly blames him for pretending to be an interior decorator. Mick states that he has shared his plans regarding the interior decoration of the house with Davies as he has supposed that Davies is an interior decorator. Eventually, as a consequence of these accusations, Aston and Mick indicate Davies that he will no longer be put up with and therefore he must leave the house. As the play ends, Pinter dedicates the last speech to Davies who is portrayed trapped and 'half-maimed' in an utterly perplexed state, grasped by the terror of being dismissed, voicing his disappointment in a daze. Almost stammering, Davies begs their pardon desperately as the curtain falls:

"Listen... if I... got down... if I was to... get my papers... would you... would you let... would you... if I got down... and got my..."

Long silence.

Curtain.

Characters

Davies

Davies is depicted as an old, impoverished tramp. He is a homeless and broken man, deprived of a warm domestic life – here it should be noted that family life does not refer to marriage but rather a decent urban existence. Namely, he is plunged deep in poverty and misery. He has no definite place to dwell in. He wanders around and gets employed at temporary jobs that can sustain him for a brief period of time. In concordance with his economic state and social status, as can easily be derived from frequent grammatical mistakes he makes while speaking, it can be concluded that he is not properly educated.

As an aged and broken man, he suffers from lack of respect. He is concerned about being treated disrespectfully. Presumably, as a reaction to the deficiency of esteem he is tormented by tangible manifestations of a racist attitude can be witnessed in some of his statements – displaying black people or the Scotchman – in which he assumes a hostile attitude towards minorities.

As portrayed in *The Caretaker*, Davies talks about daily and disputably trivial topics for an unnecessarily prolonged period of time as he trundles out some of his sentences and thus perpetuates his speech. Occasionally lack of consistency – i.e. coherency – characterizes his statements as he almost abruptly switches from one topic to another one. Another feature

which can be detected in Davies' remarks can be wrapped up as that while talking he frequently pauses and then resumes which is acknowledged as one of the most notable, peculiar characteristics of Pinteresque plays.

In addition, as can easily be inferred from his remark regarding the absence of dreams in his sleep, he can be adjudged to be an absolutely dejected man without hope, stripped of the slightest trace of an optimistic expectation as to his future.

No matter how strong a sense of *pathos* – pity and sorrow – Davies' background, his life, and his continuing misery at the end of the play arouse among the audience and readers, the 'dark' side of his nature can be discerned in the play, as well. His personality is underlined by a foxy, disloyal, manipulative, and ostensible 'sub-nature'. The clearest example shedding light upon this gloomy aspect of Davies' disposition can be witnessed in his relationship with Mick and his sinister behaviour towards Aston. He pretends to get on well with Mick as he considers Mick the more dominant one of the two brothers. Thus, he assumes an ostensibly friendly attitude towards Mick in a way as to ingratiate himself with him. Moreover, as can be viewed in the beginning of Act-III, he subtly enumerates Mick his complaints about Aston and thus intends to manipulate Mick to dismiss Aston from the house. His disloyal and hostile attitude towards Aston portrayed in this example can be regarded as a piece of evidence illustrating disloyalty and – even worse – seeds of innate malevolence lurking in his disposition. Displaying such an ungrateful attitude towards a person – Aston – who has done a number of great favours to him – Davies – demonstrates the tendency towards betrayal and unscrupulous nature underlining Davies' character. Another incident exemplifying the disloyal attitude of Davies towards Aston can be observed in Act-III: Aston fetches Davies a pair of shoes which Davies yearns for. However, in stead of thanking Aston heartily and expressing his satisfaction, Davies does not exhibit any trace of content and on the contrary reveals his discontent with the pretext that the colour of laces which is brown does not fit the colour of shoes which is black.

Aston

Aston is Mick's elder brother. He is mostly characterized by an arguably benevolent disposition as he is portrayed as a helpful and considerate character. Four major praiseworthy deeds illuminating his altruistic inclination can be enumerated as in the following:

1-) He brings Davies to his house and hosts him.

2-) He gives money to Davies.

3-) He offers Davies a job as a caretaker in their house in a way as to enable him to stay with them permanently, free from hardships of the macrocosm.

4-) He brings Davies a pair of shoes that he eagerly hankers after.

Apart from these, Aston – mainly due to his experience in the asylum – is depicted as an introverted and recluse character, mostly shunning the company of others. Namely, his miserable experience in the asylum seems to have made a considerable influence on his personality. That he tries to build a shed for himself in the garden can be traced back to his urge to remain detached from other people as a shed embodies connotations like will to escape, isolation, secrecy, sequesteredness etc.

Another remarkable aspect of Aston's personality that displays a partial similarity with Osborne's Jimmy Porter in *Look Back in Anger* and Orwell's George Bowling in *Coming Up For Air* consists in that Aston also "comes up for air" in the restricted way of life swaddling and smothering him. His urge for opening the window of the room – even at nights – metaphorically indicates that he is depressed by the way of life he is ensnared in. Presumably, related to this *angry-young-man* characteristic featuring his personality, he feels free to articulate his complaints honestly in a straightforward manner as can be observed in his attitude when he accuses Davies of grumbling while sleeping and stinking. Even though that he expresses his complaints regarding Davies in such a straightforward and disputably offensive manner can be claimed to hurt Davies' feelings, his honesty still deserves praise. As an – at least to a certain extent – *angry young man*, he cannot help acting in an unaffected manner, even at the expense of hurting one's feelings.

Mick

Mick is Aston's younger brother. In comparison with his brother, Mick is apparently the extroverted one. He can be described as an active, lively, brisk, and self-confident character. In proportion to his being more of an extrovert rather than an introvert, he is obviously more talkative than Aston. In contradiction with the depiction of Davies and Aston as characters hoarding a miserable background, there is no remarkable hint or convincing implication demonstrating any manifestation of a considerable misery in Mick's past. By and large he draws the image of a happy-go-lucky type that appears not to be hampered by serious concerns regarding his existence. Therefore, he can be labelled as the 'luckiest' and the most unconcerned of three characters delineated in the play.

Major Themes of the Play

Misery of Human Beings

Thematically, Pinter's *The Caretaker* seems to be focused on the theme of misery of human beings as portrayed and exemplified in the depiction of two major characters in the play – Davies and Aston. As for Davies, his low

social status as an old, impoverished and broken man without a stable home poses as the main source of his misery. Besides, that at the end of the play he is required to leave the house can be appraised as a sign manifesting that he will continue trailing his misery on his back. On the other hand, Aston's experience in the asylum and this experience's profound impact on his present disposition as a mostly introverted and partially sombre character brooding over his concerns – as reflected in his long monologue at the end of Act-II – illuminates the misery he suffers from.

Pettiness of Human Nature

The theme of pettiness of human nature which is closely related to the theme of misery of human beings pervades the play, as well. As can be witnessed at first glance, in *The Caretaker* the subject of conversations is usually featured by seemingly trivial topics such as shoes, mending the stove, trousers, etc. The triviality of conversation topics, ruminated over in a deeper understanding, points out the fragility of human existence as the characters are depicted as ones obsessed with trivial objects or concerns. This preoccupation with triviality can be regarded as a reflection of the abject state human being is entrapped in. Amazingly, the theme of 'triviality' prevailing in *The Caretaker* is quite evocative of the theme of human nature's pettiness 'explored' in Jonathan Swift's *Gulliver's Travels*. As can be remembered, in Gulliver's maiden voyage to the land of *Lilliputians* – i.e. dwarves – , the physical inferiority of people can be asserted to indicate the pettiness as well as the degeneration of human nature – particularly in ethical terms. Besides, as an even more explicit example, in Gulliver's third voyage to the land of *Laputa*, Laputan scientists are engaged with irrational and therefore trivial activities such as extracting sunlight from cucumbers. Both of these examples borrowed from Swift's *Gulliver's Travels* and exhibiting the trivial occupations of human beings bear parallelism with the theme of pettiness of human nature portrayed in *The Caretaker*.

Lack of Communication

As is the case for *The Dumb* Waiter, lack of communication is another notable theme highlighting *The Caretaker*. As can be inferred from dialogues, characters occasionally do not pay enough attention to what the other character says. Therefore, incoherency in some dialogues can be witnessed as characters switch from one subject to another – most blatantly in case of Davies. Furthermore, the repetition of same statements at least a few times blinks at the deficiency of a healthy mutual communication. The frequent employment of "Eh" which is an exclamation word used to indicate the speaker to repeat her/his statement looms as a noteworthy detail signalling the absence of proper communication. In a profounder sense, lack of communication can convincingly be reckoned as a manifestation of individuals' alienation from each other in the rapidly transforming world

of the 20th century where human being's estrangement from oneself and others is ubiquitous.

Type of the Play

In terms of dramatical type, Pinter's *The Caretaker* can be defined as Dark Comedy and even partially Drama of Menace as comic and seemingly trivial elements are intertwined with tragic – miserable and serious – motifs, ideas, and contemplations in an admirable manner. Besides, *The Caretaker* exemplifies one of the distinguishing characteristics of Absurd Drama since in the play characters meet in a small room and the action randomly unfolds. Furthermore, even though *The Caretaker* bears similarity with Kitchen-Sink Drama in terms of its setting – a small enclosed space – , it largely differs from that type of drama as no contemporary social or political issue is straightforwardly adressed in the play in spite of the prevailing notion of criticism inveighing against the indifference of the society intuited in the play. Unlike his contemporaries championing social realism in their plays like Osborne and Wesker, "Pinter, like many French dramatists, is concerned with 'interior drives and spiritual insights', a kind of interior realism" (Schroll 22).

Pinter's Style

Pinter's *The Caretaker* embodies Pinteresque characteristics impeccably as the play is written in easily comprehensible and fluent everyday language. Just as Hamlet murmurs as he exhales his last breath that "The rest is silence", in Pinter's *The Caretaker* "silence"s and "pause"s, which are frequently employed, are embedded with enigmatic connotations awaiting the audience's interpretation. Another striking detail as to Pinter's use of language in the play is the frequent intervals or interruptions within the speeches of characters. While speaking, characters occasionally cease for a few seconds and then they resume their lines. Apart from these, through the characters' frequent use of the expression "Eh", Pinter subtly transmits the feebleness, if not total lack, of communication haunting the play.

The Caretaker is composed of three acts at about the same length without any scenes within the acts. In this respect, each act – more or less – functions as a single scene. The absence of the change of scenes in *The Caretaker* can be deemed as one of the contributions of Pinter to Modern Drama in terms of stage style particularly when taken into consideration in comparison with the plays of Restoration Comedy of Manners written by playwrights such as Congreve, Behn etc.

Pinter deals with the controversy between microcosm and macrocosm in *The Caretaker* laudably as the whole action takes place in a small room of a house which is almost completely insulated from external effects.

This sterile atmosphere closely fits the model of microcosm that outlines the play. In the play Pinter subtly achieves reflecting the outer world – macrocosm – as a threatening place. That Mick who comes from outside attacks Davies; that Davies complains about the open window as it lets disapproving external effects such as rain and cold weather rush into the room; and that Aston means to build a shed for himself in the garden can be conceived of as occasions hinting at the outside world's potential dangers. Evidently characters prefer microcosm to macrocosm since although they sometimes seem to be wishing to tread out into the macrocosmical sphere these wishes are never fulfilled.

Additionally, that the play – at least the macrocosm – is set in London and Pinter occasionally – through the statements of his characters – mentions the names of certain districts in London or its environs such as Fulham, Watford etc. can be asserted to be indications revealing his preference to refer to certain personal details in *The Caretaker* as he is a genuine Londoner.

Last but not least, almost indisputably, the greatest innovation that Pinter has brought to Modern Drama is his masterful command of human psychology not only through the articulate words constituting the 'concrete' facade of the conversations but also by means of pauses and silences embedded with enigmatic implications to reflect upon. In this respect, he differs from both Restoration playwrights such as Congreve, Behn etc. and Early Modern Drama playwrights like Wilde, Shaw, Coward etc. in whose works such a keen interest in the mute depths of individual's psyche are hardly to be plumbed.

The Caretaker and *The Dumb Waiter*: Ties

In Pinter's both plays what at first glance strikes the audience is the small number of characters. Moreover, there are no female characters in either play. The absence of female characters creates – in a sense – a sterile atmosphere to examine the relationships of presumably heterosexual men isolated from the 'interference' of love and sex – which emerges as an almost indispensable outcome of heterosexually-conditioned relationships in the majority of literary works.

In both plays the distinction between microcosm and macrocosm is boldly accentuated by Pinter as the characters are portrayed in a small, enclosed, detached, and depressing setting where their connections with the outer world – macrocosm – are almost completely cut off. In a way as if to enhance and emphasize the distinction between tiny microcosm and vast macrocosm, Pinter chooses great urban centres as the macrocosms in each play. In *The Caretaker* London plays the role of macrocosm, whereas, in *The Dumb Waiter* this role is assigned to Birmingham. In each play intimidating microcosm is depicted as a small room functioning as an

immense vacuum muffling external influences and hindering characters from maintaining contact with the outer world – i.e. macrocosm. In *Kindlers Neues Literatur Lexikon* this *claustrophobic* setting as an appertaining characteristic engendering menace in Pinter's plays is stressed as a fomenter of tension in *The Caretaker*: "Durch den Zusammenstoss dreier Charaktere in einem geschlossenen Raum wird die für Pinter typische bedrohliche Atmosphaere geschaffen" (Band 13, 292). (eng. Through the encounter of three characters in an enclosed space, menacing atmosphere peculiar to Pinter is achieved.) Sense of detachment or imprisonment communicated through the depiction of room as a vacuum-like setting in each play serves as a predominant metaphor implying 20th century human being's alienation from or revulsion against her/his environment: "One of the central metaphors in Pinter is *the room*. The room is suggestive of the encapsulated environment of modern man, but may also suggest something of his regressive aversion to the hostile world outside" (Hollis 19).

In both plays at least one of the characters – namely Davies and Gus – displays an urge to reach some destination in the macrocosm beyond the confines of the microcosm they are 'encircled' by on all sides. For instance; in *The Caretaker* Davies intends – although it is hard to be sure about his sincerity – to go to Sidcup in order to take back his papers – i.e. identity documents. However, he is never able to attain his objective. Likewise, in *The Dumb Waiter* Gus offers Ben to go and watch Aston Villa's match at the stadium. Ben declines his offer by claiming that Aston Villa plays an away-match at the weekend. Thus, Gus, like Davies, cannot realise his aim to go and watch Aston Villa's match which can be perceived as a representation of his failure to establish contact with the macrocosm.

Conversations which usually revolve around seemingly trivial topics characterize both plays on the surface. Nevertheless, these apparently ordinary topics highlighting conversations indeed palpably contribute to the elaboration of an existentialist connotation subtly communicated in both plays. Namely, characters' obsession with seemingly inconsequential matters or trifling objects can indeed be positted to illustrate the pettiness of abject human condition.

It can be asserted that Pinter likes reflecting – or at least hinting at – certain personal details in both plays. For instance; in *The Caretaker* Davies' mentioning certain districts of London or its environs such as Fulham, Watford etc. can be traced back to Pinter's being a Londoner. Likewise, in *The Dumb Waiter*, references made to cricket and football can be regarded as a manifestation of Pinter's keen interest in sports as distinctly illustrated in his holding a post as the chairman of Gaieties Cricket Club.

Common themes pervade the plays. In each play Pinter dexterously handles the themes involving the misery of human beings, lack or fragility

of communication, and pettiness of human nature. Malevolently-disposed nature of human beings, hardships that the human being is condemned to suffer from, futile struggle and 'scuffle' striving for power in the Lilliputian world of humankind emerge as the essential concerns of Pinter in each play. Subsequently, both plays revolve around a vicious cycle that offers no tengible sense of bliss or contentment to the characters. The existence of a dull vicious cycle is more palpably conveyed in *The Dumb Waiter* in a manner pretty reminiscent of the way Beckett's absurd existentialist play *Waiting for Godot* is concluded. Just as Vladimir and Estragon gaze at each other motionlessly in a futile attempt to leave the spot they have been occupying since the beginning of the play, Ben and Gus stand aghast at each other without daring move a muscle in a semi-petrified state at the end of the play. This existentialist concern, even if unintentionally, prevailing in *The Dumb Waiter* exhibits an evident thematic parallelism with absurd, *avant-garde* theatre thriving in the continental Europe of that period – roughly corresponding to the 1950s – and represented most remarkably by playwrights like Beckett, Ionesco and apotheosized by renowned *Waiting for Godot* as is also noted by Patrick Gibbs: "Patrick Gibbs of the *Daily Telegraph*, for example, considered the plays similar in theme to *Waiting for Godot*: They showed a preoccupation with death and the purposelessness of life" (Schroll 16). In *The Norton Anthology of English Literature* influence of the Absurd Drama most prominently pioneered by Beckett and Ionesco on Pinter's early works involving *The Caretaker* and *The Dumb Waiter* is emphasised, as well: "Pinter's early work shows the influence of the *theater of the absurd*, especially of Samuel Beckett and the French playwright Eugene Ionesco" (Volume-2, 2594).

Silences and pauses which are inevitably subject to various interpretations and enigmatic connotations prevail in both plays. Particularly, in *The Caretaker* those silences and pauses assume a considerable role as dominant motifs of the play since they pinpoint the predominance of inadequate communication between the characters. Nonetheless, attainment of proper(!) communication does not provide characters with true comfort, either. "The play shows that 'the failure of communication is often deadening, . . ., but the success of communication is nearly always fatal'" (Schroll 19). Even though Pinter seems to be pestered with critics' seeking for or postulating deep enigmatic elucidations for underlying essential meaning of those silences and pauses as he complains about in an interview with a critic called Judith Crist by contending that " 'It's a little fatiguing when people talk about my damn pauses. ... It becomes metaphysical. Actually, I write the pause because people are going to stop talking at this point'" (Hollis 112), it is hard to abstain from ascribing mystifying accounts to them – i.e. silences and pauses. Silences and pauses frequently employed in both plays – particularly in *The Dumb*

Waiter – intensify the irritating tension gnawing at characters and emitting a tangible notion of insecurity and ambiguity. Sense of insecurity and ambiguity suffusing the play is further escalated by baffling movements of certain objects as well as queer sounds uttered as a consequence of these movements like the flushing toilet, ascent-descent of a platform nicknamed as *the dumb waiter*, an envelope thrust under the door etc. "What happens creates an atmosphere of suspicion and fear. Therefore ambiguities and contradictions are understandable, for people evade issues and refuse to reveal themselves" (Dukore 27).

Astonishingly, in both plays characters – Aston and Gus – complain about unpleasant smells. In *The Caretaker* Aston blames Davies for "stinking", whereas, in *The Dumb Waiter* Gus complains about his bed's "ponging". These subtle references to "unpleasant smells" can be conceived of as a manifestation of "filthy", degenerated, and savage human nature in a way as to reverberate Gulliver's final voyage to the land of Houyhnhnms, where 'noble and rational' horses rule "filthy" and violent "human beings" who are portrayed as though they were beasts. This striking similarity between Pinter's plays and Swift's masterpiece *Gulliver's Travels* can be deemed as quite noteworthy since thematically both writers – Swift and Pinter – draw the audience's attention to the innately crooked and unscrupulous nature of humankind.

In terms of symbolical role that can be attached to characters, there exists a presumable similarity between plays. In this regard, it can be propounded that Ben, who is associated with 'the mind' – i.e. rationality – in *The Dumb Waiter*, arguably roughly corresponds to Mick in *The Caretaker*, whereas, Gus identified with 'the body' – i.e. emotionality – tends to act as a counterpart for Aston despite his inquisitiveness' contradicting the essentially introverted disposition of Aston. In addition to characterization, types of the plays proffer parallelism as both plays can by and large be categorised as drama of menace or even dark comedy. As a more encompassing term to designate the type of both plays, they can be reckoned as works of the Theatre of the Absurd or Avant-Garde Drama. Furthermore, as is the case for *The Caretaker*, *The Dumb Waiter* concentrates on the elaboration of interior realism rather than social realism observed in the plays of contemporary British playwrights like Osborne and Wesker. Accordingly, rather than focusing on social criticism with a political concern exploring injustice and moral corruption pervading the society, these two plays are preoccupied with human psychology as well as existentialist anxieties bothering and depressing the individual.

Last but not least, as a final remark, both *The Caretaker* and *The Dumb Waiter*, as plays imbued with unmistakably existentialist undertones, explore the question of God; namely God's role and its treatment of human

beings as well as human beings' attitude towards God. As Harold Clurman suggests, in *The Caretaker* characters can be designated in accordance with "Devil-Christ-Man pattern". "Mick is 'a kind of godhead-angel and devil in one', Aston is 'a sort of Christ figure', and Davies, trying to 'prove who he *really* is', can 'stand for mankind itself'" (Schroll 28). At the end of the play, Davies representing humankind is jettisoned by both godly figures: "The final verdict of *The Caretaker* . . . is that Davies must be disposed of" (Schroll 28). That is to say; at the end of the play god-figures retract their favour from the 'fallen' human being and do not bestow upon her/him comfort as they condemn her/him to languish in her/his contemptible state 'reeking to heaven'. Likewise, as is the case for Beckett's *Waiting for Godot*, in *The Dumb Waiter* the invisible god figure arguably symbolised by Wilson – the unseen mysterious boss of hired killers Ben and Gus – does not offer any comfort, either. The ascending and descending platform – namely 'the dumb waiter' -, functioning as a means of mute communication(!) constantly demanding humankind represented by Ben and Gus to supply it – God – with food which can be asseverated to be a kind of sacrificial practice "to appease" the wrath of "an unseen master", can be regarded as a device of an austere, indifferent, and invisible god figure. "In this play the gods may not kill men for sport, but they torment men and might make one kill the other" (Dukore 38). Accordingly, to put in a nutshell; it can be contended that in both plays the audience is confronted with an uncaring and even vicious god image deriving pleasure from the abject subservience of humankind. Just as gods do not offer any consolation to human beings in Norse mythology, godly figures represented in both plays are not indicative of maintaining any comfort or care for humankind at all. On the contrary, they appear to enjoy tormenting miserable human beings.

Concludingly, as is endeavoured to be expatiated on and demonstrated here through a detailed scrutiny of *The Caretaker* and its comparison with *The Dumb Waiter*, it can convincingly be argued that Nobel-awarded playwright Harold Pinter's plays *The Caretaker* and *The Dumb Waiter* exhibit considerable similarities in terms of themes, concerns, characterization, type, literary style, perception regarding the concept of god as well as humankind's position in relation to that assumable source of divine authority, and the underlying state of mind – inevitably nodding at the contemporary existentialist philosophy prevalent in their time of creation – highlighting both plays.

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Chapter 4

PORTFOLIO OPTIMIZATION BY K-NEAREST NEIGHBOR ENTROPY ESTIMATION

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1. Introduction

Since the introduction of the mean-variance portfolio optimization model (Markowitz, 1952), many researchers have addressed the shortcomings of the model and proposed different methods and models to overcome these shortcomings. The very early critics of the model targeted the assumption of normality of asset returns, e.g., (Stein, 1956), pointing out that the assets returns are not normally distributed; hence the model would not be optimal. Markowitz's model utilizes the past asset data for the solution of optimization problems. Many different alternative models, which are based on mean and variance estimators, have been proposed since the sample mean and sample variance data are considered biased. One may refer to Kolm, Tütüncü and Fabozzi (2013) for a through consideration.

Philippatos and Wilson (1972) were the first researchers who proposed the deployment of entropy for portfolio optimization. They used Shannon's entropy in the objective function for the optimization. Since then many researchers proposed models employing various entropy measures (Zhou, Cai, Tong, 2013). This study also proposes an entropy based portfolio optimization model, which uses a multi-dimensional entropy estimation, which addresses the most criticized shortcoming of the mean-variance portfolios, namely assumption of all asset returns are normally distributed. The method is based on the k-nearest neighbor entropy estimation, which was first proposed by Kozachenko and Leonenko (1987) and later extended by Leonenko, Pronzato, and Savani (2008). Although the utilization of the method is new in the field of finance, it has been deployed in various fields of research so far, such as 3-D object and shape retrieval (Escolano, Lozano, Bonev, & Suau, 2010), feature selection in pattern recognition (Bonev, Escolano, Giorgi, & Biasotti, 2010; Bonev, Escolano, Giorgi, & Biasotti, 2013), machine learning (Póczos, Xiong, & Schneider, 2011), statistics (Runge, 2018) and hydrology (Zeng, Wu, Wang, Zhu, & Long, 2016).

The k-nearest neighbor entropy estimation of asset returns is used in the objective function for the optimization of portfolio weights. The portfolio optimization method is applied to two different data sets to evaluate its performance. The first data set are twelve Dow Jones indices and 15 equities, which are involved in Istanbul Stock Exchange (ISE) 30 index. The data for both markets are tested for normality and the results show clearly that the asset returns are not normal. The comparison tests are conducted for different periods of times in order to demonstrate the validity of the method for both short and long term portfolio optimization. A rolling windows approach is used for performance measurements. In and out-of sample Sharp ratios and turnover values are calculated for different param-

eters of k-nearest neighbor entropy estimation portfolio and the results of the method are then compared to those of classical mean-variance, minimum-variance, Bayes-Stein Shrinkage portfolio optimization methods.

2. K-nearest neighbor entropy estimator

Since k-nearest neighbor estimator of entropy is defined for any distribution, it is also a proper tool to deploy for portfolio optimization, which has suffered from the distribution assumptions of asset returns. The estimator is based on the estimation of the following integral for an unknown distribution f in $\mathbb{R}^{\mathbf{m}}$

$$I_q = \mathbb{E}\{f^{q-1}(X)\} = \int_{\mathbb{R}^m} f^q(x)\,dx \quad , \qquad for \;\; q > 0 \;\; and \;\; q \neq 1. \tag{1}$$

The parameter q, which reflects the effect of the distribution to the estimator, can be tuned to have better out-of-sample portfolio performances. For the estimation of the above integral, conditional moments of nearest-neighbor distances are calculated. Nearest-neighbor distances are defined as the Euclidean distances between two points x, y in $\mathbb{R}^m$, which are given as

$$d(x,y) = \sqrt{(x_1 - y_1)^2 + (x_2 - y_2)^2 + \ldots\ldots + (x_m - y_m)^2} \tag{2}$$

$$d(x,y) = \sqrt{\sum_{i=1}^{m} (x_i - y_i)^2}. \tag{3}$$

For $N-1$ distances, $d(X_i, X_j)$, $i \neq j$, the following order statistics

$$d_{1,N-1}^{(i)} \leq d_{2,N-1}^{(i)} \leq \ldots\ldots \leq d_{N-1,N-1}^{(i)} \tag{4}$$

are obtained from a sample $X_1, X_2, \ldots\ldots\ldots, X_N$, $d_{1,N-1}^{(i)}$ being the nearest distance from the point X_i to the point X_j and the $d_{k,N-1}^{(i)}$ being the kth nearest distance from the point X_i to point X_j in the sample.

The k-nearest estimator is given as

$$\hat{I}_{N,k,q} = \frac{1}{N} \sum_{i=1}^{N} \left[(N-1) C_k \, V_m \, (d_{k,N-1}^{(i)})^m \right]^{1-q} \tag{5}$$

where $V_m = \pi^{m/2} / \Gamma(m/2+1)$ is the volume of the unit ball $\mathcal{B}(0,1)$ in $\mathbb{R}^m$ and

$$C_k = \left[\frac{\Gamma(k)}{\Gamma(k+1-q)}\right]^{1/1-q}. \qquad (6)$$

$d_{k,N-1}^{(i)}$, in equation (10), is the kth nearest-neighbor Euclidean distance from the sample $\mathbf{X}_i$ to any other sample $\mathbf{X}_j$ with $i \neq j$ in a sample size of N with vector size of m.

Rényi (1961) and Tsallis (1988) entropies in $\mathbb{R}^{\mathbf{m}}$ can also be defined in terms of the integral in equation (1) as

$$H_q^R = \frac{1}{1-q} \log \int_{\mathbb{R}^m} f^q(x)\, dx \quad , \qquad for \quad q \neq 1, \qquad (7)$$

$$H_q^T = \frac{\int_{\mathbb{R}^m} f^q(x)\, dx - 1}{1-q} \quad , \qquad for \quad q \neq 1 \qquad (8)$$

respectively. So in terms of I_q Rényi and Tsallis entropies can be written as follows

$$H_q^R = \frac{\log I_q}{1-q} \qquad for \quad q \neq 1, \qquad (9)$$

$$H_q^T = \frac{I_q - 1}{1-q} \qquad for \quad q \neq 1 \qquad (10)$$

respectively (Nielsen & Nock, 2011). Hence the optimization with respect to the estimator I_q would be equivalent to optimizing with respect to Rényi or Tsallis entropy estimators. Therefore k-nearest neighbor entropy estimator I_q will be utilized to construct an optimized portfolio, which is called k-nearest neighbor entropy estimated (KnnEE) portfolio throughout this chapter, by minimizing the entropy estimator of the portfolio returns. Return of a portfolio is given by

$$R_p = \sum_{i=1}^{N} \pi_i\, R_i \qquad (11)$$

with $\sum_{i=1}^{N} \pi_i = 1$ where π_i is the weight and the R_i is the return of each asset in the portfolio. Then, the portfolio optimization problem can be written as

$$\min_{\pi_i} \hat{I}_{N,k,q}(R_p) = \min_{\pi_i} \hat{I}_{N,k,q}\left(\sum_{i=1}^{N} \pi_i \, R_i\right) \tag{12}$$

subject to the conditions $\sum_{i=1}^{N} \pi_i = 1$ and $\pi_i \geq 0$, the latter indicating the short selling constraint. Replacing $\hat{I}_{N,k,q}$ from equation (5) into (12), the optimization problem can written explicitly as

$$\pi^*_{q,k} = \min_{\pi_i} \left[\frac{1}{N}\sum_{i=1}^{N} \left[(N-1)C_k \, V_m \left((\pi_i R_i)_{k,N-1}\right)^m\right]^{1-q}\right] \tag{13}$$

where $V_m = \pi^{m/2}/\Gamma(m/2+1)$ is the volume of the unit ball $\mathcal{B}(0,1)$ in $\mathbb{R}^m$ and C_k is defined as in equation (6). In equation (13), N and m correspond to number of returns and number of assets in portfolios respectively.

3. Comparison Analysis and Results

The portfolio optimization method (KnnEE) will be applied to two different data sets to evaluate its performance. The first data set is composed of twelve Dow Jones indices including utilities, telecom, industrials, healthcare, financials, consumer goods, consumer services, basic materials, oil & gas, technology, real estate and media sectors (www.investing.com/indices). The data consist of monthly US dollar returns of these twelve indices between July 2002 and July 2019, which include 205 observations. The second data set is formed with 15 equities, which are involved in Istanbul Stock Exchange (ISE) 30 index (www.investing.com/indices). The data from ISE also range from July 2002 to July 2019 with 205 monthly returns. The average returns and the average variance of these two datasets are given in Table 1 and Table 2 for the entire observation period.

Shapiro-Wilk normality test values and corresponding p-values for all indices and equities are listed in these tables. P-values, which are very close to zero, indicate that the returns are clearly not normal. This is also an entitlement for the research of portfolio optimization methods other than the MV, which assumes returns as normally distributed. Then for comparison, the same data sets are used for constructing portfolios with MV, MinVar, BSS portfolio optimization methods and Naïve portfolio.

Table 1. Summary statistics of twelve Dow Jones indices between July 2002 and July 2019

	Return	Variance	Shapiro-Wilk	p
Utilities (DJUSUT)	0.004584	0.001577	0.92339	7.493e-09
Telecommunication (DJUSTL)	0.001975	0.002574	0.9501	1.477e-06
Industrials (DJUSIN)	0.006438	0.002608	0.94214	2.651e-07
Healthcare (DJUSHC)	0.006611	0.001421	0.96799	0.0001303
Financials (DJUSFN)	0.002373	0.003289	0.90251	2.533e-10
Consumer Goods (DJUSNC)	0.004971	0.001224	0.9582	9.956e-06
Consumer Services (DJUSCY)	0.007275	0.002	0.9709	0.0002994
Basic Materials (DJUSBM)	0.004089	0.004168	0.9485	1.032e-06
Oil & Gas (DJUSEN)	0.008618	0.003284	0.97203	0.0004177
Technology (DJUSTC)	0.003472	0.003925	0.85977	8.664e-13
Real estate (DJUSRE)	0.003808	0.003695	0.97745	0.002225
Media (DJUSME)	0.006584	0.002946	0.96658	8.817e-05

Table 2. Summary statistics of 15 equities of ISE-30 index between July 2002 and July 2019

	Return	Variance	Shapiro-Wilk	p
AKBNK	0.00895	0.014499	0.98926	0.1281
ARCLK	0.008383	0.015023	0.97321	0.0005953
ASELS	0.023327	0.02116	0.91765	2.803e-09
DOHOL	0.003918	0.017996	0.97942	0.004226
EREGL	0.016723	0.013581	0.99055	0.2001
FROTO	0.013775	0.009999	0.97816	0.002798
GARAN	0.015057	0.014379	0.99196	0.3198
KRDM	0.021152	0.036944	0.77827	2.531e-16
PETKM	0.010245	0.025564	0.84665	1.927e-13
SAHOL	0.007724	0.01329	0.97972	0.004659
SISE	0.016231	0.013194	0.98875	0.1069
TCELL	0.011316	0.009343	0.9928	0.4154
THYAO	0.048107	0.242943	0.19856	2.2e-16
TUPRS	0.014975	0.009566	0.98981	0.1552
YKBNK	0.009515	0.030637	0.9611	2.061e-05

3.1 Comparison Methodology and Performance Measures

The comparison methodology is based upon a rolling windows approach, which is frequently used in portfolio performance measurements (Bera & Park, 2008). Three different estimation (in-sample) periods (T_{es}) with 120, 60 and 30 months of data beginning from July 2002 are considered and the optimal weights are calculated by using MATLAB-fmincon function for KnnEE portfolio and four other optimization methods. Then, these weights are used to construct portfolios and the out-of-sample performances of these portfolios are measured for the following evaluation period of six months $(T_{ev} = 6)$. Then by shifting the window a month

each time $T - T_{es} - T_{ev} + 1 = 80$ estimation and evaluation periods are obtained for $T_{es} = 120$, with $T = 205$. Similarly 140 and 170 estimation and evaluation periods for $T_{es} = 60$ and $T_{es} = 30$ are taken respectively. Then for the two data sets the following measures are calculated for the performance comparison of KnnEE against the methods mentioned above.

First the mean out-of-sample Sharp ratios for each portfolio optimization method are calculated. The out-of-sample Sharp ratio, which is the most widely used portfolio performance measure, is also the key performance indicator of the study. The mean out-of-sample Sharp ratio is defined as follows

$$SR_{out} = \frac{\mu_{out}}{\sigma_{out}} \tag{14}$$

where μ_{out} and σ_{out} are the mean of portfolio returns and their standard deviation corresponding to evaluation periods $[1\ ,\ T - T_{es} - T_{ev} + 1]$, obtained by using weights optimized in estimation periods (120, 60 and 30 months). In other words, μ_{out} are the average of portfolio returns divided by their standard deviation for $T - T_{es} - T_{ev} + 1$ periods of six months.

Then, in-sample Sharp ratios for each method are computed in two different ways. First, to be able to see the estimation errors, the portfolios are optimized for evaluation periods (6 months) and in-sample Sharp ratios are calculated similar to as the out-of-sample ratios, as

$$SR_{in1} = \frac{\mu_{in1}}{\sigma_{in1}} \tag{15}$$

where μ_{in1} and σ_{in1} are the mean of portfolio returns and their standard deviation obtained by using the optimized weights in evaluation periods. This enables the comparison of in and out-of-sample Sharp ratios for the same periods, namely 6 months evaluation periods.

As tuning of KnnEE portfolios according to parameters $\mathbf{q}$ and $\mathbf{k}$ is sought, another in-sample Sharp ratio is required, which is calculated through the optimization in estimation periods. This second in-sample Sharp ratio is defined similarly to the first one as

$$SR_{in2} = \frac{\mu_{in2}}{\sigma_{in2}} \tag{16}$$

where μ_{in2} and σ_{in2} are the mean of portfolio returns and their standard deviation corresponding to estimation periods (120, 60 and 30 months).

For the evaluation of transaction costs required for portfolio rebalancing for every optimization method, turnover of portfolios are also calculated similar to DeMiguel, Garlappi, and Uppal (2009) as

$$Turnover = \frac{1}{T - T_{es} - T_{ev} + 1} \sum_{t=1}^{T-T_{es}-T_{ev}+1} \sum_{i=1}^{n} |\pi_{i,t+1} - \pi_{i,t}| \qquad (17)$$

where $\pi_{i,t}$ and $\pi_{i,t+1}$ are the weights of each asset before and after rebalancing and n is the number of assets in portfolios.

As a last measure to assess the diversification of portfolios for each optimization method, Shannon Entropy is deployed (Shannon, 1948), which is defined as

$$H^S = -\sum_{i=1}^{n} \pi_i \ ln \ \pi_i \qquad (18)$$

where π_i represents the weights of each asset in the portfolios after the optimization for each methodology and n is the number of assets in portfolios. H^S assumes values between 0, when the portfolio consists of a single asset, and $ln \ n$, when it is maximally diversified, meaning that all the assets in the portfolio have equal weights. Hence a greater value for H^S indicates a better diversification.

3.2 Results

In this section, the compared results of KnnEE portfolio are tabulated against the MV, MinVar, BSS and Naïve portfolios for the data sets of Dow Jones and ISE-30. The results are given for three estimation periods with $T_{es} = 30$, $T_{es} = 60$, $T_{es} = 120$. In Table 3, out-of-sample Sharp ratio SR_{out}, in sample Sharp ratios SR_{in1}, SR_{in2}, Shannon entropy H^S and turnover values for KnnEE portfolio and the others are given for Dow Jones data and $T_{es} = 120$. The values for the KnnEE portfolio are the ones where values of SR_{in2} are higher which correspond to $q = 0.8$, and thus they yield higher values of SR_{out}. This demonstrates that Sharp ratio SR_{in2} can be employed to choose the optimal q value for the KnnEE portfolio. As stated, Sharp ratios SR_{in1} are listed to demonstrate the estimation errors between in- and out-of-sample results. Sharp ratio SR_{in1} value for BSS methodology is not computed since asset numbers are greater than the sample size $T_{ev} = 6$, which gives rise to almost singular matrices and thus inaccurate results for the calculation of covariance matrix. Sharp ratio SR_{in1} values for KnnEE are calculated

with $k = 4$ for $T_{ev} = 6$. Sharp ratio SR_{out} values given in Table 3 and in the following tables are calculated for $T_{ev} = 6$, meanwhile SR_{in2} values are calculated for $T_{es} = 120,60,30$.

Table 3. Performance comparisons for Dow Jones indices portfolios with $T_{es} = 120$

	KnnEE $(q = 0.8)(q = 0.8)$							Min-Var	MV	BSS	Naïve
	k=15	*k=30*	*k=45*	*k=60*	*k=75*	*k=95*	*k=105*				
SR_{out}	0.9523	0.9451	0.9387	0.9056	0.8876	0.8841	0.8828	0.8337	0.4911	0.7871	0.804
SR_{in1}	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	0.8490	0.5777	----	0.1049
SR_{in2}	5.4044	5.3112	5.2629	5.1128	5.1236	5.222	5.2416	7.3636	5.571	5.2413	4.3062
H^S	2.3331	2.3721	2.3805	2.3984	2.4072	2.4073	2.4	1.3298	0.3201	0.6649	2.4849
Turnover	0.0679	0.0548	0.0501	0.0395	0.0341	0.0305	0.0218	0.0394	0.3126	0.2513	----

Results for 120 months estimation period clearly shows better out-of-sample Sharp ratios for the KnnEE portfolios. Out-of-sample Sharp ratios for $q = 0.8$ and for all the k values are better than those of MinVar, MV, BSS and Naïve portfolios. Out-of-sample Sharp ratios of MV and BSS portfolios are even lower than that of Naïve portfolio, the latter, however, showing a much better result. Regarding turnover, KnnEE portfolios outperform MV and BSS portfolios for all k values. MinVar portfolio has a better result than some of the KnnEE portfolios but still KnnEE has scored better both in terms of out-of-sample Sharp ratio and turnover for $k = 75$, $k = 95$ and $k = 105$. KnnEE portfolios also achieved very promising results in terms of diversification. Results show that KnnEE portfolios are better diversified than MinVar, MV and BSS portfolios, and still yielding better out-of-sample Sharp ratios.

As seen from Table 3, the highest out-of-sample Sharp ratio is achieved with $k = 15$ but this is where the turnover is at its highest. On the other hand, lowest turnover portfolio provides the lowest out-of-sample Sharp ratio at the other end of k value spectrum. Hence the portfolio with the value $k = 60$ seems to offer a good trade-off between out-of-sample Sharp ratio and turnover.

The results of KnnEE portfolios for different q values are listed in Table 4. For all values of q and k, out-of-sample Sharp ratios of KnnEE portfolios are better than the rival portfolios given in Table 3. Out-of-sample Sharp ratios for $q = 0.7$ are lower than that of $q = 0.8$ whereas Sharp ratios for $q = 0.9$ and $q = 0.95$ are even better than $q = 0.8$ results. But these high ratios are attained at the cost of higher turnover values. Turnover increases more sharply at lower values of parameter k. These values reach even those of MV and BSS portfolios for $q = 0.95$. Those results suggest that optimal portfolio is achieved with the value of $q = 0.8$. But

these are ex post results and they are only obtained after the portfolios are evaluated with out-of-sample data. At this point $SR_{in2}SR_{in2}$ gives insight into choosing the optimal portfolio. One should take the qq value, for which $SR_{in2}SR_{in2}$ is the highest for $k = 60k = 60$. This corresponds to the value $q = 0.8q = 0.8$.

Table 4. Performance of KnnEE portfolios for $T_{es} = 120T_{es} = 120$

q		*k=15*	*k=30*	*k=45*	*k=60*	*k=75*	*k=95*	*k=105*
0.7	SR_{out}	0.8789	0.8657	0.8905	0.879	0.8679	0.8778	0.874
	SR_{in2}	5.1026	5.1382	5.0224	4.9807	4.8888	4.9742	5.0747
	H^S	2.4413	2.4377	2.4288	2.4303	2.4214	2.4169	2.4101
	Turnover	0.0472	0.0546	0.0689	0.0506	0.0481	0.0402	0.0251
0.9	SR_{out}	0.97	0.9635	0.9395	0.901	0.8921	0.8782	0.8864
	SR_{in2}	5.949	5.1914	5.0839	5.0159	5.0373	5.1747	5.2354
	H^S	2.1712	2.3574	2.3828	2.4066	2.4162	2.4168	2.3993
	Turnover	0.113	0.0564	0.0533	0.0479	0.0346	0.0372	0.0257
0.95	SR_{out}	0.9534	0.9596	0.9457	0.9069	0.8899	0.8828	0.8866
	SR_{in2}	6.695	5.0603	5.07	4.9149	5.0439	5.1651	5.1915
	H^S	1.7617	2.3519	2.3804	2.4115	2.4193	2.4195	2.3995
	Turnover	0.3894	0.0629	0.0521	0.0504	0.0389	0.0411	0.0282

KnnEE portfolios also yield better results compared to MV, BSS and Naïve portfolios for estimation period $T_{es} = 60$ as given in Table 5. MinVar portfolio performed better in terms of out-of-sample Sharp ratio. However this result is achieved at the cost of a very high turnover value (0.1174). Highest out-of-sample Sharp ratio for KnnEE portfolio is obtained with $k = 10$ ($SR_{out} = 0.2272$) but the turnover (0.1061) is also very high close to that of MinVar portfolio. Choosing the mid value $k = 30$ seems to provide a reasonable trade-off between Sharp ratio and turnover as in the case of $T_{es} = 120$. The highest SR_{in2} value is obtained for $q = 0.8$ again when $k = 30$. Then KnnEE provides an out-of-sample Sharp ratio of 0.2002 and a turnover of 0.0662. Although the Sharp ratio is poorer than that of MinVar portfolio, a better turnover value is maintained whereas MV, BSS and Naïve portfolios fall clearly behind. The results of KnnEE portfolios for $T_{es} = 60$ with different q values are also listed in Table 6.

Table 5. Performance comparisons for Dow Jones indices portfolios with $T_{es} = 60$

	KnnEE *(q=0.8)*					MinVar	MV	BSS	Naïve
	k=10	*k=20*	*k=30*	*k=40*	*k=50*				
SR_{out}	0.2272	0.2158	0.2002	0.1949	0.2032	0.2505	0.1877	0.1978	0.1721
SR_{in1}	0.2531	0.2531	0.2531	0.2531	0.2531	0.1942	0.2524	-----	0.1527
SR_{in2}	1.1321	1.1201	1.1077	1.1031	1.097	1.29	1.977	1.6902	0.989
H^S	2.3398	2.3847	2.4063	2.4116	2.4046	1.4403	0.2186	0.4179	2.4849
Turnover	0.1061	0.076	0.0662	0.0551	0.0457	0.1174	0.3421	0.2766	-----

Table 6. Performance of KnnEE portfolios for $T_{es} = 60$

q		*k=10*	*k=20*	*k=30*	*k=40*	*k=50*
0.7	SR_{out}	0.1721	0.1717	0.1735	0.1747	0.1746
	SR_{in2}	1.0983	1.1065	1.0895	1.0886	1.0975
	H^S	2.4849	2.4585	2.4493	2.4445	2.4365
	Turnover	0.0308	0.0434	0.0428	0.0456	0.0403
0.9	SR_{out}	0.23	0.22	0.1991	0.1963	0.205
	SR_{in2}	1.1173	1.0987	1.0784	1.0929	1.0852
	H^S	2.297	2.3786	2.4044	2.4145	2.4044
	Turnover	0.1233	0.0778	0.0671	0.0611	0.0466
0.95	SR_{out}	0.2277	0.217	0.2017	0.1964	0.2047
	SR_{in2}	1.0999	1.0822	1.0616	1.0877	1.0756
	H^S	2.2789	2.3778	2.3996	2.4155	2.4039
	Turnover	0.1277	0.08	0.0701	0.064	0.0495

To demonstrate the performance of KnnEE portfolios with shorter estimation periods, the results for $T_{es} = 30$ and $q = 0.8$ are also provided in Table 7.

Table 7. Performance comparisons for Dow Jones indices portfolios with $T_{es} = 30$

	KnnEE $(q = 0.8)$					MinVar	MV	BSS	Naïve
	k=5	*k=10*	*k=15*	*k=20*	*k=25*				
SR_{out}	0.2751	0.2598	0.2498	0.2463	0.2497	0.2594	0.3026	0.1873	0.2317
SR_{in1}	0.3133	0.3133	0.3133	0.3133	0.3133	0.2702	0.3235	-----	0.2127
SR_{in2}	0.8013	0.7852	0.7663	0.7818	0.7652	0.8627	1.6212	1.4425	0.6761
H^S	2.3364	2.3799	2.3941	2.4004	2.3906	1.3916	0.1567	0.6341	2.4849
Turnover	0.1422	0.1288	0.0979	0.0843	0.0843	0.2345	0.394	0.4476	------

For $T_{es} = 30$ and $q = 0.8$, MV and MinVar portfolios yield better out-of-sample Sharp ratios than KnnEE portfolios. However these values are achieved again at the cost of extremely high turnovers (0.2345 for MinVar and 0.394 for MV). On the other hand KnnEE portfolio delivers a

comparable out-of-sample Sharp ratio with a much lower turnover value of 0.0979 for $k = 15$ and $q = 0.8$. As for $T_{es} = 120$ and $T_{es} = 60$, the highest SR_{in2} value for $k = 15$ points the value $q = 0.8$. If $q = 0.95$ and $k = 5$, which correspond to the allover highest SR_{in2} value, are chosen, KnnEE portfolio's out-of-sample Sharp ratio comes closer to that of MV with a still much lower turnover value. The results of KnnEE portfolios for $T_{es} = 30$ for other q values are also listed in Table 8.

Table 8. Performance of KnnEE portfolios for $T_{es} = 30$

q		$k = 5$	$k = 10$	$k = 15$	$k = 20$	$k = 25$
0.7	SR_{out}	0.2312	0.2351	0.2374	0.2346	0.2341
	SR_{in2}	0.7382	0.76	0.7577	0.7714	0.7596
	H^S	2.4708	2.4612	2.4562	2.4481	2.4246
	Turnover	0.0247	0.0319	0.0345	0.0601	0.0638
0.9	SR_{out}	0.289	0.2679	0.2563	0.248	0.2517
	SR_{in2}	0.807	0.7849	0.766	0.7786	0.7619
	H^S	2.2825	2.3633	2.3886	2.3983	2.3887
	Turnover	0.1805	0.117	0.1002	0.0934	0.089
0.95	SR_{out}	0.2938	0.2754	0.2519	0.2509	0.2504
	SR_{in2}	0.8108	0.7797	0.7609	0.7764	0.7617
	H^S	2.246	2.353	2.3836	2.3939	2.3844
	Turnover	0.1971	0.1297	0.1078	0.0989	0.0955

The second data set, which is used for the performance comparison of KnnEE portfolios is composed of 15 equities from ISE-30. Out-of-sample Sharp ratio SR_{out}, in sample Sharp ratios SR_{in1}, SR_{in2}, Shannon entropy H^S and turnover values for KnnEE portfolios and the others are given for $T_{es} = 120$ in Table 9. The results are for $q = 0.95$ where the SR_{in2} value is the highest for $k = 60$.

Table 9. Performance comparisons for ISE-30 equities with $T_{es} = 120$

	KnnEE ***(q=0.95)***							**Min-Var**	**MV**	**BSS**	**Naïve**
	k=15	***k=30***	***k=45***	***k=60***	***k=75***	***k=95***	***k=105***				
SR_{out}	0.3716	0.3962	0.394	0.4087	0.415	0.4215	0.4137	0.4125	0.2521	0.3603	0.3892
SR_{in1}	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.1192	0.2074	----	0.1389
SR_{in2}	3.2399	3.8074	3.872	3.9088	3.8314	3.6595	3.2732	2.4271	4.807	3.0533	2.8637
H^S	2.4567	2.5895	2.6163	2.6305	2.6451	2.6571	2.6478	1.6621	0.7503	1.7644	2.7081
Turnover	0.171	0.0712	0.0566	0.0501	0.0466	0.0457	0.0561	0.058	0.1798	0.149	-----

KnnEE portfolio also performed better with ISE-30 data than MinVar, MV, BSS and Naïve portfolios for $T_{es} = 120, q = 0{,}95$ and $k = 75$. But if methodology, which has been derived here, is followed for choosing the optimal k value, which is 60 for $T_{es} = 120$, MinVar portfolio's out-of-sample Sharp ratio is slightly better than that of the KnnEE portfolio. The KnnEE portfolio, by contrast, has a better turnover value. So it can be said that MinVar portfolio and the KnnEE portfolio with the parameters $q = 0.95$ and $k = 60$, perform equally well. On the other hand, the MV portfolio yields the poorest results both in terms of out-of-sample Sharp ratio and turnover. Naïve and BSS portfolios perform better, but latter being with very high turnover value again. The results of KnnEE portfolios for $T_{es} = 120$ and for other q values are given in Table 10. As can be seen from Table 9 and Table 10, $q = 0.95$ SR_{in2} value is the highest for $k = 60$.

Table 10. Performance of KnnEE portfolios for $T_{es} = 120$

q		*k=15*	*k=30*	*k=45*	*k=60*	*k=75*	*k=95*	*k=105*
0.7	SR_{out}	0.3697	0.3825	0.3839	0.3887	0.3888	0.4027	0.3997
	SR_{in2}	3.464	3.4637	3.4707	3.5208	3.4901	3.5353	3.3451
	H^S	2.6816	2.6805	2.6773	2.6746	2.6723	2.6674	2.6538
	Turnover	0.0247	0.038	0.047	0.0539	0.0527	0.0474	0.0416
0.8	SR_{out}	0.3828	0.3961	0.3941	0.403	0.4051	0.4102	0.4001
	SR_{in2}	3.6528	3.6016	3.6611	3.7757	3.6777	3.7387	3.5252
	H^S	2.5891	2.6138	2.6255	2.6374	2.643	2.6491	2.6395
	Turnover	0.1014	0.07	0.0638	0.0534	0.0505	0.0424	0.0505
0.90	SR_{out}	0.3717	0.3964	0.3955	0.4078	0.4117	0.4155	0.4054
	SR_{in2}	3.6358	3.7421	3.8225	3.8906	3.8484	3.8227	3.5633
	H^S	2.5465	2.6007	2.619	2.6331	2.6433	2.6508	2.6391
	Turnover	0.1213	0.0668	0.0554	0.0564	0.049	4.41E-02	0.0508

KnnEE portfolio results together with rivals for estimation period $T_{es} = 30$ are listed in Table 11, with $q = 0.6$, for which the SR_{in2} value is the highest for $k = 30$.

Table 11. Performance comparisons for ISE-30 equities portfolios with $T_{es} = 60$

	KnnEE *(q=0.6)*					**Min-Var**	**MV**	**BSS**	**Naïve**
	k=10	***k=20***	***k=30***	***k=40***	***k=50***				
SR_{out}	0.1851	0.1852	0.1853	0.1854	0.1854	0.0731	0.1241	0.0843	0.1958
SR_{in1}	0.1968	0.1968	0.1968	0.1968	0.1968	0.1968	0.2504	----	0.1477
SR_{in2}	1.8817	1.8818	1.8804	1.8847	1.8834	1.4131	2.9945	2.2976	1.7606
H^S	2.7019	2.702	2.7021	2.702	2.7018	1.5516	0.64	1.2905	2.7081
Turnover	0.0011	0.0012	0.0013	0.0013	0.0015	0.1118	0.2692	0.2571	-----

The Naïve portfolio performed better than the others for $T_{es} = 60$. However the performance of KnnEE portfolios are close to it in terms of out-of-sample Sharp ratios. The turnover values of the KnnEE portfolios are also very close to zero, which is comparable to no turnover of Naïve portfolio. MinVar, MV, BSS portfolio performances are far from being competent in terms of both out-of-sample Shaı ratio and turnover. The results of KnnEE portfolios for other values of q are listed in Table 12 to demonstrate the choice of q value for the optimum portfolio.

Table 12. Performance of KnnEE portfolios for $T_{es} = 60$

q		*k=10*	*k=20*	*k=30*	*k=40*	*k=50*
0.7	SR_{out}	0.18	0.1765	0.1775	0.182	0.1804
	SR_{in2}	1.8599	1.8734	1.8594	1.8697	1.904
	H^S	2.6848	2.6804	2.6771	2.6701	2.6587
	Turnover	0.0387	0.0463	0.0538	0.057	0.058
0.8	SR_{out}	0.1697	0.1719	0.1699	0.1744	0.1779
	SR_{in2}	0.1681	0.1681	0.1681	0.1681	0.1681
	H^S	2.5803	2.6111	2.6258	2.6343	2.633
	Turnover	0.1189	0.0889	0.077	0.0673	0.067
0.9	SR_{out}	0.1671	0.1684	0.1732	0.1789	0.1787
	SR_{in2}	1.7397	1.862	1.8307	1.8493	1.9099
	H^S	2.5409	2.601	2.6218	2.6354	2.6324
	Turnover	0.1572	0.0861	0.0755	0.0661	0.0703

For the last case, the results of KnnEE portfolios are tabulated and compared with the others for $T_{es} = 30$ and $q = 0.6$, for which the SR_{in2} value is maximum at $k = 15$ in Table 13.

Table 13. Performance comparisons for ISE-30 equities with $T_{es} = 30$

	KnnEE ($q = 0.6$)					MinVar	MV	BSS	Naïve
	k=5	k=10	k=15	k=20	k=25				
SR_{out}	0.2788	0.2788	0.2788	0.2788	0.2788	0.1273	0.0876	0.033	0.2756
SR_{in1}	0.2694	0.2694	0.2694	0.2694	0.2694	0.1962	0.3332	----	0.1687
SR_{in2}	1.0121	1.0112	1.0111	1.0116	1.015	1.0083	2.1122	1.9634	0.9447
H^S	2.7023	2.7026	2.7027	2.7026	2.702	1.4557	0.5043	1.2216	2.7081
Turnover	0.0017	0.0018	0.002	0.0026	0.0036	0.2002	0.4185	0.3462	------

As can be seen in Table 13, KnnEE portfolios for all values of k out-perform MinVar, MV and BSS portfolios. Naïve portfolio is the only one, which has a comparable performance to those of KnnEE portfolios for $T_{es} = 30$. Results of KnnEE portfolios for different values of q are given in Table 14.

Table 14. Performance of KnnEE portfolios for $T_{es} = 30$

q		*k=5*	*k=10*	*k=15*	*k=20*	*k=25*
0.7	SR_{out}	0.276	0.2741	0.2716	0.2721	0.2693
	SR_{in2}	1.0053	0.9947	0.9874	0.9931	1.0197
	H^S	2.6849	2.6805	2.6771	2.6684	2.6536
	Turnover	0.0339	0.0426	0.0631	0.0665	0.072
0.8	SR_{out}	0.2741	0.2626	0.2678	0.2694	0.2658
	SR_{in2}	0.9204	0.9369	0.9405	0.9681	0.9997
	H^S	2.567	2.5965	2.6161	2.6228	2.6147
	Turnover	0.162	0.1239	0.1058	0.1012	0.1018
0.9	SR_{out}	0.2499	0.2701	0.2695	0.2748	0.2691
	SR_{in2}	0.8823	0.9318	0.9343	0.9784	0.9925
	H^S	2.5046	2.5901	2.6062	2.6196	2.6112
	Turnover	0.2282	0.1275	0.1128	0.1005	0.1025

Table 13 and Table 14 show again that $q = 0.6q = 0.6$ provides the highest $\mathrm{SR_{in2}SR_{in2}}$ value and therefore the highest out-of-sample Sharp ratios.

As demonstrated in above examples, choosing the parameter kk as the middle value of the evaluation periods provides the optimal results in terms of out-of-sample Sharp ratios and turnover values. On the other hand, the parameter qq can be selected according to the $\mathrm{SR_{in2}SR_{in2}}$ value to provide the maximum out-f-sample Sharp ratio. As the value of qq gets closer to 0.5 or 1, the results converges to those of Naïve portfolio as in the case of ISE-30 data with $\mathrm{T_{es} = 60T_{es} = 60}$ and $\mathrm{T_{es} = 30T_{es} = 30}$. For the six test cases considered, KnnEE portfolios are the best performers or the closest to the best performing among the rival portfolios. This indicates that KnnEE portfolio optimization methodology always achieves the most optimum or the closest to the most optimum diversification regardless of data and time span.

4. Conclusion

Classical mean-variance portfolio optimization model have been criticized for assuming that asset returns are always normally distributed and for being very sensitive to estimation errors. A novel portfolio optimization method is presented in this study, which is based on the k-nearest neighbor entropy estimation and addresses these issues. K-nearest neighbor entropy estimation is distribution free and does not rely directly on sample data. K-nearest neighbor estimated entropy of asset returns is used in the objective function to determine the weights of the optimal portfolios. A robust ex ante methodology is also proposed for selecting the parameters of the objective function.

The out-of-sample performance of the presented portfolio optimization method is compared to those of mean-variance, minimum-variance, Bayes-Stein Shrinkage portfolio optimizations and to that of Naïve portfolio. Comparison tests are performed with two different data sets and for three different estimation periods. For most of the test cases, k-nearest neighbor portfolio achieved the best out-of-sample performances and when it is not the best, it is the closest to the best performing portfolio. The results prove that the k-nearest neighbor entropy estimation is a robust method for portfolio optimization.

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Chapter 5

MADRASAHS, ULEMA AND RELIGIOUS EDUCATION ACCORDING TO TURKIST INTELLECTUALS[1]

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Introduction

Religion and nationalism are two fundamental values that direct humanity. Islam is a divine religion that contributes to the construction of social and cultural identity by promoting communal unity and solidarity. Nationalism, on the other hand, is a political and psycho-social human value and it is like cement that connects individuals of society to each other. As it is known, the 19th century took its place in history as the age of nationalisms, and the nationalism has affected institutions such as religion, education, culture and economy, especially political regimes, and it has been affected itself by these areas. This study aims to put forward the views of Turkism movement that has a highly effective on the society and the state from the late 19th century until the time of the new Republic of Turkey's first period about the ulema[1], madrasahs[2] and religious education. In this context, the views of four intellectuals -Ziya Gökalp (1876-1924), Ahmet Ağaoğlu (1869-1939), Yusuf Akçura (1876-1935) and Mehmet Şemseddin Günaltay (1883-1961)-, who were very influential on the thought of Turkism in that period and who had high representation of Turkism, were analyzed.

The date of the deterioration of the education system in the Ottoman Empire goes back to the end of the 16th century. The deterioration of the economy due to continuous wars and various problems in the scientific institutions negatively affected the madrasah system. As a result, the demand for science has decreased and professorship and judgeships have been started to be given by favor and bribery. The education system has turned into rote learning and narrating structure (Saray, 1987:41).

During the Tanzimat period, thanks to the civil reform program implemented in the Ottoman Empire (1839-1878), a relative improvement was observed in education and training in terms of quality and quantity. In this context, some vocational high schools were opened and new modern educational institutions were founded by making a comprehensive arrangement in education, except for the madrasah. This situation, however, has created duality in education. Individuals with different world views were raised from the "madrasah" and the civil and military "schools" of the Tanzimat. On the other hand, minority and foreign schools have made significant progress and the seeds of a major disaster that will threaten the survival of the state in the future have been sown (Akyüz, 1988:177-178).[3] The First Constitutional Era, in other words during the reign of

1 The class of scholars originating from the madrasahs that formed the education, judiciary, fatwa and religious organization in the Ottoman Empire. For more information on the ulema, see, (İpşirli, 2000a).

2 General name of education and training institutions in the history of Islam. For more information on the madrasah, see, (Bozkurt, 2020).

3 About the Tanzimat period education, see, ibid.:177-249. For detailed information about the science affairs organization in the Ottoman Empire, see, (Uzunçarşılı, 1988).

Abdülhamid II, very important developments were made in the field of education and training. This term was a period when the fruits of the Tanzimat arrangements were harvested and the educational organization was modernized. Schooling rate has increased, and educational activities, which were limited to Istanbul in the past, spread to the provinces. In this period the main purpose of the primary education was carried out in accordance with the "Islamism" policy, and the aim of secondary education was carried out in accordance with the "Ottomanism" policy. In the following years, the ideology of "Turkism" became an idea and thought that should be taught to students in schools as an alternative to the two previous ideologies (Kodaman, 1999:163-166).

The relations with the West gradually intensified and the press and publication activities diffused into the society. In the Second constitutional monarchy, the problems of education were tried to be identified again. In this context, the problems in madrasahs at that time were determined as follows in a layiha (The name given to the report or draft type document in the Ottoman bureaucracy) that was presented to the Meşihat (the highest administrative institution where Islamic affairs are carried out in Ottoman Empire): (1) No change or improvement could be made in madrasahs, which should be done according to the needs of every era. (2) Islamic teachings could not be reformulated according to the level of comprehension of the current periods. (3) The main issues have been left; unnecessary details were dealt with. (4) In general, sciences other than religious sciences especially physical science and natural sciences were excluded from the madrasahs program (Ergin, 1977:126-127).

Despite everything, the improvement operation of the madrasahs that gave a start with the Tanzimat and running on afterwards increased and became widespread thanks to the freedom of speech and thought ensured by the Second Constitutional Monarchy. Issues such as madrasah programs that not answering the needs of the era and these institutions losing its former charm and becoming a shelter for deserters made it necessary to improve the madrasahs (Akyüz, 1988:312-313). In addition to these, the content of religious sciences teaching in madrasahs is only filled with information such as prayer and ablution, yet neglecting moral issues; failure to teach virtues such as working, producing and advancing, and parallel to this, the fact that the sermon books used in education and teaching denigrated the earthliness and constantly encouraged asceticism and taqwa, were among the reasons of reform (Atay, 1983:221-222). In this period, although the multi-headedness of the Tanzimat education system continued, the importance of schools that teach in the Western model has increased. But this dilemma that continues in education has destroyed the unity and harmony in existing social and economic institutions and hindered a new system substitution too (Köprülüzâde, 1913).

In fact, looking at the issue from a broader perspective, the dissolution of the traditional religious system in Islamic countries at the beginning of the 20th century is most clearly seen in the fields of law and education. Because the disintegration firstly and foremost started with the pruning of some of the powers and privileges of these two institutions. In the process of westernization of the state, education gradually got out of the control of the ulema and the madrasah entered into the process of losing its traditional power and authority (Berkes, 1997:61). In such a process, Turkist intellectuals put forward their thoughts on the issue of education in Muslim geographies, especially in the Ottoman Empire. Problems in the structure and functioning of religious institutions, especially madrasahs, and the role of the ulema in education and social structure, and various issues of religious education were among the topics discussed by Turkist intellectuals.

1. The Madrasahs

When it comes to religious institutions, Ziya Gökalp is one of the most thinkers, concerned with madrasahs. While constructing the "New Life" in his mind, he reviewed and evaluated all the old social and educational institutions. According to him, Islam has the power to build a magnificent and superior civilization. As it gave examples of this in the past, it can do again. This requires, however, ictihad (jurisprudence) institutions that will correctly find and extract Islam from its main sources. To Gökalp's way of thinking, these institutions are madrasahs. "Islam has such a wealth of treasure that only one truth of it is enough to establish a magnificent civilization. But, in order to collect those truths from the Book (the Koran) and Hadith of the Prophet Muhammad (peace and blessings be upon him) and to dedicate them to the whole world, ictihad centers are necessary, and they are madrasahs." (Gökalp, 1909; Gökalp, 1976a:79).

According to Gökalp, who stated that all natural, biological, humanities and Islamic sciences were taught in the institutions where education and training were carried out in the early periods of Islam, the secret is to approach the issue in a holistic way. In addition, educational institutions should include other sciences as well as religious knowledge. "In the early days of Islam, all religious and social sciences were taught in madrasahs. The ulema who received education in these institutions were truly the inheritors of the Prophet and could be trusted them in religious matters. Madrasahs were spiritual masters who ensured the Islamic ummah to have a pure morality." (Gökalp, 1976a:80).

Gökalp, who linked the reasons for the backwardness of Muslims to themes that cannot be taught in madrasahs such as freedom, justice, equality and brotherhood thought that the way to regain the old glorious days is to revive and reform these institutions. "The reasons for the decline

and collapse Ottoman citizens have faced for several centuries should be sought in the breakdown of the madrasah system. Once upon a time, madrasahs were the places in which ideas such as freedom, equality, brotherhood and justice were born. Now, it is our biggest duty to work with all our strength to make madrasahs that way". After Gökalp points out the importance of madrasahs, he asks: "How to improve madrasahs?" In summary he offers the followings (Gökalp, 1976a:80-82):

(1) First of all, separate but low-level madrasahs in the same center should be gathered under one roof and made better quality. (2) Madrasahs should be divided into branches in which the middle level religious sciences and higher religious sciences are taught separately, and each course should be given by professional teachers. (3) In these institutions, courses including both social sciences and modern sciences as in the Tanzimat high schools should be taught. (4) Salaries of professors (mudarris) should be increased and an effective manager should be appointed. (5) Students' food and clothing should be provided. (6) Education should be freed from rote learning and annotation. Critical thinking should be given importance. For, those who memorize texts and commentaries are well-informed but cannot be scholars.

Gökalp considers madrasahs and professors as the solution authority for all religious and social problems of the Islamic ummah. Because the professors (mudarris') are not spiritual like the Christian clergy[4] and they adhere to the principles of reason and freedom of Islam. They use and encourage mental evidence in their religious interpretation (Gökalp, 1982b:26-27).

According to another Turkist intellectual Akçura (1910:5-9), madrasahs are the leading institutions that will lead and direct social development. But in order for madrasahs to fulfill this function, they first need themselves a reform. Only, after these institutions were subjected to a radical reform, the adaptation process of Enlightenment period values such as progress and modernity to Islam can be mentioned. Akçura has tried to justify the

4 Lewis has an objection to this matter. He claims that the clergy existed in the Ottoman Empire and argues for the following theses: One of the most characteristic features of Islam in the Ottoman Empire is that the religious officials were institutionalized as a hierarchical structuring. Theologically, there are no clergy in Islam. That is, there is no priestly rank ceremony, no baptism ritual, no priestly mediation between the Muslims and God. The existence of clergy, however, can be mentioned in sociological and political terms. The first example of this Ottoman religious institution is the organization of madrasahs and professors against deviant religious understanding and groups in the Great Seljuks. Nevertheless, solely in the Ottomans, the religious institution turned into a complete institutional structure and managed to be the guardian of belief and sharia. According to these expressions, it is an organized religious institution that Lewis understands from the priesthood. Indeed, the clergy in Christian culture has an institutional and organized structure but there are other and, in our opinion, more important distinctive characteristics of the priesthood. In other words, Lewis' thought would be an incomplete and false claim to attribute the clerical structure to just being organized. See, (Lewis, 2004:15-16).

issue of the improvement of madrasahs by revealing the deficiencies and mistakes of the Tanzimat period education policies. In such a way that, Tanzimat practices have continued the existing madrasah education and, in addition, opened modern schools providing Western-style education. On the one hand, this situation has revealed madrasahs with traditional medieval mentality, and on the other hand, those who adopt the Western understanding and are foreign to the values of the nation. As a result, duality in education has emerged. According to him, the way to correct this negative process is not to open new schools, but to reform madrasahs; to restore them to the dârulfünûn (university in which sciences other than religious ones are also taught) structure of the classical period.

From Şemseddin Günaltay's standpoint, madrasahs have been influential on national and intellectual life since the foundation of the Ottoman Empire. Most of the great historical figures were brought up in these institutions. But, the dying out the true ulema and the corruption of many units of the madrasah system had been one of the main reasons that prepared the collapse of the state (Günaltay, 1996:157). For example, political struggles have replaced education in schools and madrasahs, and even ten years old children have begun to follow party newspapers instead of reading textbooks. Women, on the other hand, have forgotten their memories and their sacred duties and turned to other goals (Günaltay, 1996:29). The collapse of madrasahs has started with the abolition of the lessons of history, philosophy and ethics from these institutions; then, it has reached the highest level with the exclusion of the positive sciences from the curriculums (Günaltay, 1996:165).

Günaltay stated (1996:189-190) that the Tanzimat schools, which were opened in parallel with the madrasah together with the Tanzimat, brought out different types of people, and stated that this situation had negative consequences. Madrasahs dominated the society thanks to their influence from the past. As for the Tanzimat schools, they took over the government. "One dominates the spirituality and moral of the people and the other dominates the materiality of the people". Consequently, the madrasahs-the Tanzimat schools fights hindered the society from being given a healthy and holistic education and ideal. Whereas, if every step taken and every arrangement made were established and executed in accordance with the mentality and culture of the people; If the madrasahs were not forgotten while the Tanzimat schools were being built, if these two factories had trained people for the same purpose and with the same education and at training consciousness, the homeland and the nation would not have encountered the current collapse they are in.

Günaltay, who believes that the tekkes, which are among the traditional religious institutions, have a role in the social collapse and depression,

has stated that the main educational institutions that prepare the ground for political and personal ambitions in Eastern societies are dervish lodges and hermitage houses. These institutions to raise sensitive souls, virtuous minds, excited, diligent, noble generations with high morals; they were established to ensure national unity and solidarity and to guide the society. However, these goals were subsequently forgotten, distorted from their purpose, and these institutions began to be harmful. For example, Bektashism, which dominated the Janissaries in Ottoman history, caused the deterioration of the order and security of the state (Günaltay, 1996:173-176). Despite all this, Günaltay has had the opinion that social institutions can be improved and made useful. In the past, dervish lodges, which raised perfect human being like Sheikh Galip, Yahya, Sünbül and Hüdâi Effendies can be reformed and can be contributing to the increase of Muslims' knowledge and wisdom (Günaltay, 1996:177).

In Günaltay's opinion, it is not possible to show a Muslim who lived parasitically in a corner of dervish lodges and shrines in the first periods of Islam. In fact, there was neither a dervish lodge nor a shrine in that period. Set an ideal example for Muslims, our prophet always emphasized that life consists of a struggle. It is impossible for lazy and freeloader people to live among Muslims. Already the Prophet Muhammed (peace be on him): "Don't ask people for any help, even if it's just to use your miswak."[5], prescribed (Günaltay, 1997:280).

Another problem in madrasahs is the scholastic understanding. According to Akçura (2002:73-74)[6], apart from the madrasahs, even the newly opened modern schools could not get rid of the scholastic method in natural and physical sciences teaching. The Scholastic method in thought and education is always to rely on books, masters, and authorities, and to be compelled or obliged to what they put forward. Scholasticism is seen not only in education, writing books and religious thought, but in all areas of life, and especially in mentalities. Sense of modern science and even contemporary religious thought lifted this limitation and showed to those who seek the truth that it can only be explored and obtained from life itself and nature. Although Catholic theology refrains from moving away from the theology of the Church Fathers, Luther introduced a new understanding by translating the Torah and the Bible into a language that everyone can understand, saying "get the judgments out of here". After these developments, Christian theology got rid of the scholastic conception by stating that "only with the principle inspired by the spirit and conscience that are inherent of natural life, their religion can remain intact" outside the scriptures and authorities.

5 (Bezzâr, 1989:II-106). For other hadiths that mean this, though not with the same vocable, see, (Müslim, 2009:Zekât, 108; Ebu Davud, 2004:Zekât, 27).

6 For the review in which the article was published for the first time, see, (Akçura, 1925:219-224).

Akçura also stated that the scholastic mentality still persists in schools and gave interesting examples. He asked the sea, hill and slope to the students in an elementary school he visited while he was an inspector, the students, who narrated what was written in the book very well, could not concretely show the sea, the hill and the slope on which the school was located. According to Akçura, the reason for this situation is the inaccuracy of the teaching method. This is because teachers have abstained from going beyond the authority of the book and haven't included life itself, nature and environment in education and teaching (Akçura, 2002:79).

In Akçura's opinion, the reason for the unsuccessful teaching in this and other examples is the scholastic method. For, the scholastic mindset does not think and question; it gets what it is given. It is parasite. It does not produce information from nature and from life based on facts. Whereas, the main source of information is nature and life itself. If on life and nature are studied and both are understood well, it is possible to dominate life and nature (Akçura, 2002:79-80). With these views, Akçura speaks of a radical methodological transformation by demanding the use of the inductive method[7] of natural sciences that identical to Enlightenment thought, instead of the deductive method[8] used by the scholastic understanding in science.

2. The Ulema

Another subject that our intellectuals emphasize is the situation of the ulema. Our intellectuals, who assign to the ulema an important responsibility in the whole institutions of the state in general and in the issue of education in particular, state that, however, the current ulema is far from fulfilling this important function in terms of knowledge, cultural background and short-sightedness. For example, Akçura mentions the strict and harsh attitude of the teachers towards the students, the inadequacy and lack of method of some teachers (Akçura, 2005:33-40).

He complains that our educational institutions are not able to give students an ambition and an ideal. In Akçura's opinion, who thinks that the biggest defect of our education system is the lack of perseverance, ambition

7 Induction is a method of reaching more general information by starting from individual facts. General information is obtained from the private ones. The inductive method became popular in the 17th and 18th centuries with scholars such as Francis Bacon, Galileo, and Newton who placed emphasis on experimentation and observation. This method is, however, criticized for the probability of its results. See, (Hançerlioğlu, 1989:421-422; Ozankaya, 1995:143).

8 Deduction is the process of using information you have in order to understand a particular situation or to find the answer to a problem. It is a method of thinking that provides access from the the whole to the particular, in other words, to the knowledge of the particular from the knowledge of the general. This method assumes that a conclusion will necessarily come from one or more premises based on the laws of logic. If the premises are correct, the result is necessarily considered to be correct. The deductive method is criticized for not making a new addition to the existing information and for repeating itself. See, (Hançerlioğlu, 1989:420; Ozankaya, 1995:142-143).

and ideal, if a nation wants to look to the future with confidence, it should raise individuals with strong and positive ideal. Children and young people should be given a solid education and strong faith should be instilled within the framework of the well-determined ideals. The main reason why ideal and discerning individuals cannot be raised is that the teachers who work in these institutions come from different environments such as different ethnicities, cultures and religions. The more bad and destructive the lack of ideal is for a nation, the more destructive the disorder in the ideal is too. For social unity and integrity, instead of many contradictory ideals that direct the members of the nation to different aspects and goals, there should be a single ideal and thought with well-defined borders. Because, having many ideals at the same time prevents the existence of a strong and superior ideal (Akçura, 1912:268).

According to Akçura (Akçura, 1912:267-268), another reason for existing a generation that lacked ideal is foreign schools rooted in the country. These schools should be harmonized by regulations, at least in basic matters, with our own schools. In addition to this, especially at secondary and high schools, the conflicting thoughts and ambitions of the teachers working in these schools should be melted into a same pot. Besides all these, a single ideal and goal with defined borders and targets for students should be determined, because, there is currently no moral and educational model in these schools that can be instilled into students.

According to the findings of Akçura (1912:267), it was only military schools that raised idealistic individuals in that period. Nizamiye schools, on the other hand, are far from giving a strong ideal, neither religion, nationality, patriotism, nor any other. For example, idealists from civil schools can easily become materialists and individuals who think about their bodily pleasures. The events of the Second Constitutional Monarchy are witnesses to this. According to Akçura, of course, there have been graduated favorable idealists from these schools, but their numbers are limited. Moreover, the owners of these ideals learned their homeland and nationality awareness from foreign sources and minorities living in the Ottoman Empire.

Akçura states that the factors that direct historical events and affect the development of humanity are materialistic and intellectual reasons. The influence of ideal thoughts is directly proportional to the strength and constructiveness of these opinions. The events that caused great changes in human history are only the work of great and bright personalities who sincerely believed in them. Otherwise, people who have poor faith cannot make great changes. In the emergence and spread of religions, there are always brave figures who believed in such a cause. The first martyrs of Christianity and the first mujahids of Islam are examples of this. Even

Luther said before an assembly that could burn himself alive, "I will never take my word back. God my helper!" he could shout out. Only those who have faith and ideals can show such courage (Akçura, 1912:268).

In fact, according to Akçura (1912:266), what is lacking in our nation is not a lack of men, but rather a deficiency of cause and the ideal. Our educational institutions and methods lack idealism and purpose. To be more exact, especially neighborhood schools, and Madrasahs as a continuation of neighborhood schools offer religious education and their goals are to raising a Muslim generation only. However, they cannot do it properly either.

For all these reasons, an intellectual class with ideal and faith must be found in every society; education and training institutions should raise such people. Otherwise, let alone the progress and development of society, even its existence would be endangered. According to Akçura, such an intellectual class did not exist in the last period of the Ottoman Empire. Because, the society has neither a correct understanding of education and teaching, nor a specific ideal and a strong belief. Although the Young Turks who declared the Second Constitutional Monarchy seem to have an ideal, their ideal, according to Akçura, was unfavorable rather than affirmative. "Namely, they were seriously considering that they needed to change the current situation. However, they could not clearly determine the future which would substitute this situation. They were not able to manage to plan and build." (Akçura, 1912:268).

Similarly, Ahmet Ağaoğlu is of the opinion that there is a need for enlightened clergymen who know the spirit of the age they lived and who can distinguish the essence of religion from its details. According to him, in the hands of incompetent men, religion has lost not only its influence but also itself. If other religious scholars could distinguish the lofty ideas and ideals of Islam from superstitions, as did Sheikh Mohammed Abduh (1849-1905), Sheikh Cemâleddin Efgânî (1838-1897) or Musa Cârullah Bigi (1875-1949), Islamic peoples could have taken important steps towards civilization and progress. Whereas, leaving the main problems, some people like Mustafa Sabri (1869-1954)[9] weaken the spiritual influence of Islam by dealing with secondary issues that are not related to the intention and soul of Islam such as women's clothing style and prohibiting women from walking around the streets (Ağaoğlu, 1972:61).

In this context, Günaltay accepts scholars, the representative of religious thought, among the actors who will shape the future of society (Günaltay, 1996:169). He believes, however, that scholars of the age and its intellectuals, especially the Sheikh al-Islam, haven't had the knowledge

9 He served as Sheikh al-Islam in the last period (1919-1920) of the Ottoman Empire. See, (Yavuz, 2006:350-353).

and cultural infrastructure to accomplish the tasks expected of them because scholars in this category have an understanding and doctrine that accepts superstitions as Islam and they also are far from providing a new social revival and development by saving thought from scholastic dullness (Günaltay, 1996:169). First of all, the ulema should struggle against negative actions, statements and thoughts that cause tangible and moral damages with false beliefs and convictions in the Islamic society. But, they should do this with knowledge and wisdom; and also should correct mistakes and make up for deficiencies. That is, the ulema, in a way, our Prophet's "Make things easy for people and not difficult. Give people good news and bring them joy, and do not gross them out" [10] should act in accordance with the hadith (Günaltay, 1916:340).

Günaltay, who also worked as a teacher and administrator in schools for many years, emphasizes the importance of a well-trained teaching staff. In this context, he thinks that there is a need for teachers who are aware of the needs of the country and society and have an ideal and pedagogical formation. According to him, teaching is a job that requires specialization. It is wrong to assign everybody as a teacher (Günaltay, 1996:269-273).

According to Günaltay (1996:249-261), who stated that the most important responsibilities of the intellectuals are the indoctrination and education of the new generations, the most effective factor in the rise and fall of nations is the issue of training and education. Günaltay, who stated that the main issue in education and teaching is to choose an ideal and a life model, has the same thoughts with Akçura on this issue (Akçura, 1912:265-268).

3. Religious Education

Our intellectuals, who emphasize education and training as a vital issue in their thinking systems in general, specify religious education and teaching as an indispensable requirement for the formation of a virtuous society. In this context, Günaltay reminded, for example, that German nationalists included religious education in secondary school programs based on philosophical and scientific data, and asks those who find religious knowledge education unnecessary in schools to pay attention to the German practice. According to him, for the destiny and future of the nation, members of the society must be virtuous and moral. The way to achieve this is through a healthy and reliable religious and moral education (Günaltay, 1996:278).

In Gökalp's thought, the general purpose of education is to prepare individuals for social life (Gökalp, 1977:77). However, in this preparation, Turkishness, Islam and contemporaneousness, which are different aspects

10 (Buhârî, 1999:İlim, 12; Müslim, 2009:Cihâd, 6).

and realities of social life, should be taken into consideration. The duty of Islamic education is to distinguish the true Islamic beliefs and traditions from the customs and bidats[11] that were passed on from the Arab nation at the birth of Islam and from other tribes in the following periods (Gökalp, 1914:14-16). As a result of this practice, when Islam's doctrines, beliefs and practices turn to their originals, Islam, which is already religion of reason and logic, will be in harmony with Turkishness and modernity. The purpose of Islamic education is to turn to the fundamental values system of religion. In this case, the understanding of Islamic teaching and education will comply with the operation of Westernization and Turkization as the basic principle (Türkdoğan, 1998:113). Essentially, "Islam accepts human wisdom and, the realities of the present period in the basis for materialistic and tangible and as for the value judgements the customs and traditation of the nations." Therefore, Islamization and modernization do not contradict each other. Instead of being two opposite social processes, these are phenomena that can combine with one another and complement each other (Gökalp, 1911:138-141; Gökalp, 1982a:40-46). As can be seen, Islamic education integrates and harmonizes with modern education and Turkishness education (Türkdoğan, 1998:113-114). Islamic education is especially important in the education process. According to Gökalp, "People who show a strong character in all their lives are generally those who receive religious education in their childhood. On the other hand who do not receive religious education in that era are confined to remain without personality and to live without willpower and discretion until their deaths" (Gökalp, 1982b:24).[12]

In Günaltay's opinion, the main function of education is to raise individuals who are idealistic and virtuous and beneficial to themselves, their environment and their country. As the existence of healthy, peaceful and happy societies is possible with individuals with such qualities. Just as a perfect society is required for a good individual, well-trained and educational individuals are necessary for a excellent society (Aydın, 1988:250).

According to our intellectuals, the curriculum is one of the most fundamental components in religious education. What needs to be done is to prepare a new curriculum in line with the requirements of the age and the dynamics of the society. Günaltay is one of those who work the hardest on this issue. Up to him, educating the people, who are the basis of society, as dynamic, productive and intellectual is among the primary

11 It is a term used about beliefs, worship, ideas and behaviors that emerged after the era of the Prophet Muhammad and are not based on the Islamic sharia evidence. For more information on the bidat, see, (Yaran, 2020).

12 These statements were expressed by Gökalp about two years before his death and at the foundation stage of the Republic, which shows how much attach importance to religious education.

duties of governments. The current curriculum, however, is raising a generation that consumes rather than produces. Every student graduating from school is looking for a job at the government gate in that he grows up deprived of the opportunity to establish his own business and maintain his life with the things he learned. This mistake should be corrected and new occasions and ways should be sought to raise enterprising individuals. Again, local factors should be taken into consideration in education. For instance, the curriculum of each province should be arranged according to the needs of that place. Education in Istanbul and Basra or Izmir and Erzurum should not be the same (Günaltay, 1996:271). Education and ideal unity, however, should not be overlooked in all programs regardless of the province (Günaltay, 1996:272-273). From Günaltay's standpoint, the method is as important as the curriculum and program in education. "Social science takes its basic principles from the education method. Social changes in nations are a result of the education method they apply. While investigating the reasons of success of nations that are successful in solving social problems, firstly it is necessary to consider the methods they follow in education and teaching." (Günaltay, 2003:238). A nation, either progresses or regresses according to the education model it follows and applies. Poorly managed education has more harmful and dangerous consequences than its benefit (Günaltay, 2003:238).

According to Gökalp (1989:73) also, the method to be followed in education should be chosen well, and especially religious and moral education should be given in a way that will affect the heart and conscience. He draws attention to this issue in a letter he sent to his daughters in 1919. He: "The lessons of religion and morality are also the most dramatic and illuminating lessons; But, these lessons are not being taught by dramatically and rapturously. The love of Allah and ideal are not being given to children well", by saying, emphasizes the lack of method in education. In another letter he wrote to his daughters, he has stated that the school has an important position in education and teaching and expressed that learning of values such as religion, morality and ideal is more effective and permanent in places where social consciousness is intense, such as school (Gökalp, 1989:75-76).

Another issue that Turkist intellectuals discourse on; it is the relationship of religious knowledge with the data of the positive sciences. In this context, they state that to be misunderstood and interpretation of religious knowledge and teachings as contradicting the data of positive sciences are dangerous. Because such a misperception causes suspicion and hesitation in young generations. For example, according to Gökalp (1918:41-44), the wrong teaching of religion and the irrational and illegitimate of some traditional practices feeds this conflict. So much so that who suffers from a religious depressions or crisis are not those who deny the principles of

religion, on the contrary, on the one hand, they have religious beliefs on the other hand, they are who experience these contradictions in their mind and conscience. He thinks that the solution of the tension that is thought to exist between religion and science can be solved only by way of the heart acting as a guide to conscience and the reason as a guide to science. He has expressed this succinctly in his poem "Religion and Science" (Gökalp, 1976b:10).

Günaltay, on the other hand, emphasizes that there is no conflict between religion and science, and that the real problem lies in the minds of those who cannot understand both. According to him, those who are responsible for this issue are insufficient in giving religious education to students and in establishing a sense of religion in the student's conscience. What needs to be done in this matter is to show that religion and science are two different dimensions of the same truth. He has pointed out that teachers in schools and those working in religious institutions should answer questions posed to them in a satisfactory manner within the framework of sound religious information. Even in the most extreme questions asked, attitudes such as reprimanding the person who asks and accusing him/her of irreligion are wrong. Displaying these attitudes have an approaching to accuse the other side of being in denial and help to the superstitions. Especially the students who study physical sciences should not be told untrue stories on behalf of Islam; also it should not be suggested that a scientific truth that the student believes in certainty is contrary to religion (Günaltay, 1996:278-280).

In Günaltay's thought, the development and the advancement of social life and an ethical social environment are possible thanks to generations who have a religious feeling. In order to raise a generation that is nationalist, loving his/her homeland, self-sacrificing, honorable, and studying science, religious knowledge, especially principles of Islamic faiths must be based on sound, reliable and scientific foundations. Choosing the teachers who will perform this duty among the competent and virtuous minds is another important issue. Otherwise, if at the methods followed up to now are insisted, matters makes worse while trying to be helpful and the foundations of a generation shifting to irreligion are laid (Günaltay, 1996:280-281).

Günaltay remarks that the Islamic world is in a miserable condition due to the ignorance and inertia of Muslims. Although this situation is known, up to him, those who say that studying new sciences is contrary religion should be cursed. Moreover, if someone in charge of teaching religious knowledge does this, it is a kind of murder he did, and he is criminal himself. There can be no greater betrayal of Islam than this. "Those whose brains are so infertile and whose ideas are so narrow should be left to be forgotten instead of teaching in the professorship chair." He also verbalizes that superstitions, and information from the distorted Torah

can shake even the inherent religious feeling in bright minds who have studied positive sciences. As a solution to all these problems, there is a need for short and understandable books that cover the Islamic faiths, jurisprudence, catechism and daily practices to be taught in schools, but do not go into details. More importantly, religious instruction should be given to those who are competent. If not, the inclusion of religious education in the curriculum would do more harm than utility. "Those who will undertake the teaching of these courses must be chosen from among those who are fully aware of the truths of Islam, who are aware of the world and who have knowledge in science and philosophy." Teachers of religious education with these qualifications, however, can eliminate the doubts and hesitations of the students with rational and scientific evidence and they can be a means to the formation of a sincere faith in young minds based on love, affection and scientific basis (Günaltay, 1996:281-282).

Like other Turkist intellectuals, also Akçura wants to be tolerated the qualities of youth such as curiosity, questioning everything, and taking a skeptical attitude. He primarily emphasizes the importance of removing doubts in the minds of young people. He points out the need to take into account the age and socio-psychological qualities of students in the education process. Especially in high school students, he expresses that in addition to the dynamism and sense of self-confidence brought by the youth, their pride and self are at the top. Self-overconfidence leads to the psychology of criticizing and denial of everything. Therefore, students with these qualifications should be given a healthy and reliable religious education. This instruction and teachings should not only consist of daily knowledge of catechism (an education modus in which ablution, ghusl and other religious rituals are memorized like a parrot), but on the contrary, it should be based on struggling with ideas and concepts that occupy the minds of young people and can drag them into the unbelief and atheism (Akçura, 1912:267).

Our thinkers agree on the futility of religious education with a monotonous and mere narrative that is detached from life. According to Ağaoğlu, who attaches great importance to literature and art products, especially in terms of their contribution to social unity and solidarity, society is a conscious group that has common feelings and thoughts, has a common ideal. Unfortunately, there is no such community in the Islamic world. He expresses that Ottoman-Turkish family and religious life is unfavorable for the formation of such a society (Ağaoğlu, 1972:99-102). To remedy this deficiency, in this context, literature and philosophy products should also be used in religious and moral education. Because to raise virtuous and good citizens with the role model and behavior patterns scattered in the textbooks and cultural works is the best possible way. But, since the moral issues was considered within the Islam until the last period of the Ottoman

Empire, it was have contented with only religious books (Ağaoğlu, 1972:62-63). Whereas, literature and philosophy have important possibilities for social life to rise on solid and reliable foundations. Philosophy strengthens social life with the facility of thought and contemplation, and as for literature with the dimension of emotion; both support social unity and solidarity. They also bring about the consciousness of being a nation by creating intellectual and emotional unions and creating shared beliefs and excitements. Thus, streams of thought are formed around common political and social ideals. In contemporary societies, these movements of thought have impact on social life. Ottoman-Turkish society, however, is very insufficient in these matters. Throughout Ottoman's ages, philosophy, except literature, was only partially included in Sufism literature (Ağaoğlu, 1972:102-104). For this reason, spiritual and aesthetic disciplines such as literature, art and philosophy in Eastern-Islamic societies were unable to fulfill the function of integrating the society under common values. The Eastern-Islamic thought involves an effort to justify the individual's obedience to the state, is not interested in relationships between individuals. It is disconnected from the realities of life, away from social problems, and fantastic and unreal. Contrary to the former, Western thought and literature have the positive and constructive qualities (Ağaoğlu, 1972:107-109. Cf., Özcan, 2010:146).

Among the Turkist intellectuals, Ağaoğlu in particular wants to be depicted the characters of who has virtue and morals to the new generations in the education process for a healthy and strong social structure. For this, such sample heroes should be included in literary works, especially like in Russian literature. The subject of literary works is therefore important. Whereas "In us, the sad adventure of love between a man who is afraid of an owl and a girl who faints with lightning, in a lifeless environment and between moans, or a portrayal of vulgar lust surrounded by prostitutes, raki and appetizers. Here are the issues!" (Ağaoğlu, 1972:110-111). According to Ağaoğlu's statements (Ağaoğlu, 1972:71-77), Eastern literature is a praise and obedience literature for state administrators. Misunderstanding and teaching of belief elements such as obedience, conviction, submission, and tolerance has created a society with spineless, lifeless and mute.

One of the sine qua non of Turkist intellectuals in the programming and regulation of education and teaching is the issue of nationality. In this context, according to Günaltay (1996:189-191,207. Cf., Aydın, 1988:241), the issue should be handled on the basis of protecting and developing national characteristics and values. If it is desired to raise individuals who are useful and valuable for the society, a national stance and ideal should be indoctrinated to new generations.

According to Gökalp's opinion (1917:322-327; 1981:151) also, education should rise on national foundations. Until now, madrasah

education has kept Turks away from Turkishness, while Enderun[13] has turkized non-Turks. Due to the cosmopolitan of our education system, our madrasahs and schools disrupt the morality and dignity of individuals. "Although in other nations the most distinguished and moral people are among the individuals who have advanced the most in education, we usually have the opposite. In Turkey, for homeland, the most harmful people are who have studied in madrasahs or modern schools. Many events we have seen since the proclamation of the 2nd constitutionalism confirm this paradoxical reality. These facts point out the following: Madrasahs and schools in Turkey, corrupts the morals and character of the individuals who has studied there". In Gökalp's opinion (1977:80), the idea of "nationalism, populism, westernization and republicanism" firstly should be instilled in students, although there are many ideals and thoughts to be given. A country with a generation raised on these principles can avoid any danger that may come from inside and outside.

Ağaoğlu, on the other hand, emphasizes the importance of literary works in terms of education and expresses the need for these works to include more national elements in accordance with the spirit of the actual age. According to him, Namık Kemal (1840-1888) and those who followed his path were the first to do this type of work and activities. In the following period, "Turkist" literature fulfilled this task.[14] From Ağaoğlu's point of view, patriotism and the feeling of loyalty to the homeland are born and developed with the training of emotions rather than suggestion and mental effects. With such efforts, Namık Kemal pioneered the emergence of Islam and homeland love in the country. Turkists, walking on the same way, instilled Turkishness and love for homeland to the youth and made them love Turkishness and homeland issues (Ağaoğlu, 1972:64-77,102-113).

The insufficiency of textbooks in terms of content was also seen as one of the important problems in the period our intellectuals lived. For instance according to Ağaoğlu (1972:58-59), the religious textbooks taught in schools are full of unnecessary and superstitious information that does not comply with the zeitgeist of the age and pedagogical principles. Available religious lessons consist of tedious and lifeless details that crush the soul and minds of children. Eight-nine years old children suffocate under the words fard, wajib, halal and haram. Parents, however, should tell them in their childhood: "Islam wants you to be a good man, and for this you have to have such attributes". However, the hearts of eight-nine-years-old children are scared and killed with details of ablution, ghusl and prayer. As a result, even when children finish school, they graduate

13 The palace educational institution established for the training of administrative and military staff in the Ottomans. For more information on the Enderun, see, (İpşirli, 2020b).

14 For the subject of the Turkism in literature or the literature in Turkism, see, (Akçura, 1981:16 ff.; Köroğlu, 2003:559-586).

without knowing what true Islam is, and in the following years they forget the details they have already hardly memorized. According to Ağaoğlu (1911:783-784), unfortunately, this aspect of religious education continues to be followed persistently. Instead of overwhelming students with details in the process of religious education and teaching, the information to be taught to them should be taught gradually, in a simple and understandable style. For, "The details of ablution, ghusl and cleaning make a person neither religious nor moral. There is no natural relation between istibrâ[15] and religious morality. This is why a man who sometimes looks religious from the outside becomes very immoral at the same time. Because, he thinks that if he obeys the rules of ghusl and istibra, he will have done all his duties against Allah." (Ağaoğlu, 1972:59). Within the framework of his views above, we can say that Ağaoğlu draws attention to the following four issues in religious education: (1) Understandability, simplicity, giving brief and concise information. (2) Addressing feelings and thoughts. (3) A gradual education and consistency. (4) To train individuals with moral (Göküş, 2013:202).

Günaltay too, takes care of urgent needs in education and teaching, and to do order of priority them. He emphasizes the pointlessness of dealing with details and imposing an education disconnected from life. According to him while our agriculture is not even at the medieval level and economic life is entirely in the hands of foreigners, to teach the literature of France to the children coming from their village; to be busy with whether the Pharaoh died by faith or didn't; to deal with whether the calf of Samiri made a sound or didn't; trying to teach whether Salih's camel's ears are made of gold or silver; exhausting pure and young minds with these and confusing their consciousness is a lamentable tragedy (Günaltay, 2003:257). Forasmuch as these are not the information that will recover and raise the country. On the contrary, the knowledge that will save the country and society is the learning and sciences that prepare children for the struggle for life. Therefore Turkey's new training program should be built on the foundations of civilized and experimental life and national culture (Günaltay, 2003:258).

Günaltay also has emphasized the importance of sermon and guidance books in terms of non-formal education. According to him, one of the important tasks of Shaykh al-Islam is to publish books that will meet the needs of the current period by observing the basic principles of Islam with the latest data of science. Another duty of this institution is to collect and to burn the books that full of superstitions distorting the belief and life of society for centuries (Günaltay, 1997:269).

15 Measures to dispose of the discharge and leakage in the urinary tract completely. For more information on the İstibrâ, see, (Öğüt, 2020).

Ağaoğlu remarks that the most important of these critical periods is childhood. So much so that the gains obtained in this period, which is the most sensitive stage of child upbringing, follow the person until the end of his life. Therefore, this period should be evaluated well. According to him, family life, which consists of closed, haremlik-selamlık (that explains for men and women sit separately) and limited communication and dialogue with neighbors, prevents children from developing personality and becoming individuals. This kind of isolated lifestyle does not allow for activities such as joint play and fun, excitement and joy, compassion and encouragement, which are most needed in childhood. On the other hand, celebrations of religious and national holidays, and collective prayers in mosques are exceptional times when the social conscience emotionalizes and joys and sorrows are shared. Such religious-social activities create common memories especially in the consciousness and souls of children and thus, the spiritual dynamics of social life prevail in each child from the first years of childhood.[16] It is obvious that these feelings and achievements will make a great contribution to the formation of a strong, solid and solidarist society (Ağaoğlu, 1972:78-79).

Since the Turkist intellectuals know the need for a holistic development, progress and enlightenment, they want non-formal education to be used intensively in addition to formal education. For this purpose, "national enlightenment committees" should be sent all over the country; everybody, from city-dwellers to peasants should be educated; to them social and cultural life, agriculture, health, religion and morality, trade and art should be taught. This duty should be of the Turkish Hearths. In addition, religious foundations, which were common almost everywhere in the country at that time, should be assigned to this job (Günaltay, 1915:245-247; 2003:253-258). Enlightenment committees should evaluate especially the Fridays and inform the people of villages, towns and districts on all matters. In these meetings, in which the people participated intensely, the community should be enlightened every subject of national, religious, commercial, agricultural and so on (Günaltay, 2003:255). According to Günaltay (1996:190-191), the preceptors, who will be assigned to introduce the public to the concepts of modernism such as progress, improvement and intellectual awakening, must be understand the language of the peasant, and who will appeal to their hearts. Therefore, those incumbents should be the old madrasa graduates. For, those who can narrate such innovations to the villagers without having frighten them and cause to suspect, are not the current scholars, but those who have been educated in old madrasahs that have been reformed and strengthened.

16 For the similar functions of Friday and Eid prayers, see, (Akçura, 1913:68-69; Gökalp, 1982b:49-50).

Conclusion

About a century ago, the Turkist intellectuals made the following tangible suggestions, very close to today's pedagogical data, for the education and teaching of the new generations: (1) It is necessary to save the new generation from wrong effects and prepare them for social life, but by making them use their own will. (2) Family education and training should be handled in accordance with the latest data of pedagogy. (3) The aim of education to be given to children should be the development of their intellectual abilities and tendencies. (4) Moral principles must be taught. (5) The madrasahs located in the same city but of low level should be gathered under one roof and made better quality. (6) Madrasahs should be specialized in a particular erea such as academy, and each course should be given by expert instructors. (7) Both social and natural sciences should be taught in madrasahs. (8) School programs should be planned and gradual. (9) Tutors should be selected from those with a pedagogical formation. (10) Education and teaching must have a goal and vision. (11) Besides theory, there should also be practice. (12) Education should not be based on fear but be based on incentive and initiative. (13) Efficiency should be paid utmost attention in education. (14) Education should be freed from rote learning and annotation; to critical thinking should be attached importance. (15) In the goal and planning of education, social value judgments and culture should be handled together with the education model. (16). Education should be national. (17) In instruction those who have love of duty should be preferred rather than have title. (18) Salaries of professors should be increased and managers be made more effective.

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Chapter 6

THREE WOMEN IN TERMS OF GENDER EQUALITY: MERIDA, RAPUNZEL AND MOANA

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1. Introduction

Gender involves all roles expected from the individual by society. World Health Organization defines gender as all behaviors and social norms displayed by men and women within social structure (WHO, 2018). There are important differences between the concepts of sex and gender. As a biological term, sex is used to define the genetic differences from birth between masculine and feminine (Cherry, 2005; Marshall, 1999). On the other hand, the term "gender" indicates the roles assumed by males and females in the process of socialization and the tasks adopted and applied according to these roles (Sancar, Acuner, Üstün and Bora, 2006). Sex is related to the nature of individuals whereas gender is related to their socialization and culture. Women and men are born with biological differences; in terms of their gender roles, they are obliged to display different behaviors due to social pressure so that they could meet expectations. Gender differences which develop with sex shape the lives of both women and men and reveal the perception of gender.

Horney (1926) stated that the difference between women and men was caused not by biological elements but social pressure. Dökmen (2004) echoed Horney and claimed that the difference between women and men were caused not by sex but by gender. Connell (2016) indicated social values as the determinant of gender roles. Gender and the division of tasks and labour that follow as a result of social roles assumed by individuals determine the stance of both women and men (Savcı, 1999). Gender roles in patriarchal structures emphasize the superiority of men and weakness of women. Traditional gender roles are derived from within the patriarchal system. According to psychoanalytic approach, woman is defined first as mother and primarily as seductive. The desire of men to create a living being from his body results in the subordination of women (Janin, 2012, 15).

In patriarchal structures the roles expected from women are compassion, sensuality, care-giving and being in need of protection whereas the social roles expected from men are being fearless, rationality and aggression. Patriarchal family is a system based on a monogamist ancestor, meaning man. This was developed with the idea of superiority of men and led the men to possess rights and voice over women. In addition, the women who are raised in a patriarchal system are obliged to submit to this system (Bingol, 2014). In other words patriarchal system appears as a system which is established by men where rules are determined by them. Women have to abide by and behave according to these rules if they want to have a place in this system. According to this system, while the economic power is under the control of men, women are seen as mothers and domestic workers in this system. In other words, the patriarchal system is defined as the form of life where women are behind men and that sovereignty is considered

to be in men. The place of women in patriarchal structure, which is an example of gender inequality, is in private space instead of public space. This is explained by the concept of gender role. The woman who grows in the same cultural structure adapts to her expected role. Being a woman or man does not show that the other sex is superior. Gender equality means equal rights and honour rather than biological equality (Flowers, 2010). Atış (2010) emphasizes that gender equality means equal rights for both women and men in family, work, marriage and education lives which are both private and public.

Tales and animations are used to convey the expectations of the society as regards gender roles. Feminist psychology strongly rejects this opinion and defends gender equality (Tobias, 2018). With the feminism movement which emerged in 1960s equal rights for women came to the agenda and women were given essential place in public life (Ferguson, 2017; Aktaş, 2013). Gender equality is defined as equal rights and law in society for individuals with different sexes (WHO, 2018). Allen (2018) emphasizes that women and men should have equal rights both in private and public sphere in terms of family, work, marriage and education. It is emphasized that gender equality is important in all areas (Stoet and Geary, 2018).

Bandura highlights the importance of social community in the development of behaviors and ideas of children (Bandura, 2018). Social cognitive theory indicates that modelling plays an essential role in psycho-social functionality (Bandura, 2018). Research has displayed that education through media which is based on Bandura's theory is effective in several areas (Fish and Oppenheimer, 2012). The most important media program which displayed the contributions of media in child development is Sesame Street workshop (Cole and Dollard, 2017). Sesame Street was developed to contribute to the education of children who could not go to school as an experimental study and continued to be organized according to the needs of children over the years (Cole and Bernstein, 2016). It is stated that Sesame Street is effective in social, emotional, cognitive, peer relations, peace-related thoughts, self-care skills and many other areas. Individuals who have seen Sesame Street in a period of their lives are reported to feel better than those who did not. The virtual worlds in animation films empower filmmakers to use values, create role models, and determine their degree of reflection in characters. One of the aims of the study is to discuss the effects of animation films on the educational process of children. The mass media takes its power through the influence of the essence, the main idea and the living environment of the story, which are conveyed to the children in their repetitive aspects within a certain period of time. The observin child finds out about the social order in which he is involved by comparing it with his own way of life and his experiences. Many studies have been conducted on the positioning of mass media in gender roles. The general

opinion on this issue is that the patriarchal system of thought is still valid in the world and this view is reflected in animation films. This positioning takes place with animations in the form of a product or object in which women are often employed in housework, care for children, work in low-level jobs in the work environment, or use their physical beauty. Social expectations put pressure on people to comply with these expectations. The most obvious indication of this oppression is that gender stereotypes appear in every aspect of life. These stereotypes are frequently found in the details of everyday life and in the showcases of the mass media. Cinema and television films and advertising visuals reflect indicators which repeat these stereotypes. Reading these indicators helps to reinforce the stereotypes. In particular, the positioning of children in accordance with these stereotypes creates a restrictive point of view on the perception of gender roles for children in the learning process by observing and role-modelling. The aim of this study is to emphasize the importance of these positioning effects in animation films on social gender understanding. In this respect, it is believed that media is important in child development and that it can be used in the field of education.

In this study, three different animations of Tangled, Brave and Moana, which are the most popular in recent years, were examined on the basis of social gender equality and the power of women with their own truths was discussed. The female heroine criterion was determinant in choosing these movies. Among the reasons for the selection of three semantically animated films are the fact that heroes are women from the beginning of the film to the end. In addition to the most important criterion mentioned above, women heroes oppose traditional gender roles; the role of the authority figure and the conflicts with the mother and / or father and the transfer of gender roles in terms of the relationship between men and women have been effective in the selection of films. Finally, they were chosen because it would serve the purpose of the research to include the strong stance of women among men in all three animation films.

2. Method

In this study, intertextuality and scenario sentences from qualitative research were examined. Intertextuality is defined as unlimited references and citations between works. Accordingly, it covers the examination of the similarity relationship between two or more texts (Palimpsestes, 2000). The texts communicate with each other by going beyond the period and geography in which they were written. This shows that the texts are timeless. The quote is to represent what is happening, address cultural accumulation, and convey the culture to the audience with the connection between the old and the new work. This forces the listener or viewer to comment. Quotations are expressed as both symbolic and very meaningful

indicators. Reading or listening results in the reader or listener rewriting the text (Aktulum, 2017).

3. Process

Films were examined within the scope of the research and found suitable for analysis. Then, the researcher watched the films and determined the scenes to be analyzed through Turkish dubbing and the texts were analyzed. The analysis was carried out in the form of analyzing the image plane, analyzing the linguistic message plane, and analyzing the gender indicators at the level of denotation / connotation. Within this study, the struggles for independence within traditional family structure of Rapunzel, Merida and Moana, who are the main characters of the movies, are displayed in an egalitarian structure. In the areas of art which take patriarchal system into account, it is seen that women are weak, powerless individuals who wait to be rescued whereas men are defined as nameless but powerful saviors called "princes". The tale of Rapunzel which was written by Grimm Brothers and printed in 1812 was filmed in 1988 for the first time. In the story, Rapunzel is imprisoned in a tower by a witch; a prince tries to save her but the witch blinds him. In the end of the story the prince hears a song sung by a sweet voice. The tears of Rapunzel fall on the eyes of the prince who can see again and they get married and become happy. The story was also designed as an animation movie and was aired on television channels. In 2010 the movie "Tangled" came out where Rapunzel is imprisoned in a tower by a witch. This time a thief, not a prince, comes to the tower of Rapunzel, who is a smart and strong woman who can defend herself against the thief. There are essential differences between the two structures. In the first one Rapunzel is expected to be an understanding, sensitive and care-taker person wheres in the second one she is expected to struggle for her independence. The heroine of the movie "Brave", Merida, is also a princess. An excellent archer, Merida has to marry the prince who comes first in the contests according to the traditional patriarchal structure. However, she rebels in order to gain the right to self-determination. The third movie, Moana, just like Merida, also portrays the courage to rebel against traditional structure so as to determine the fate of herself and her people.

4. The Analysis and Interpretation

4.1.Rebellion Against Princessism: Brave-Merida

Brave was aired as a Disney production in 2012 as a movie which reversed the strong, fearless and traditional prince roles.

Merida is born as the first heir to the throne in a kingdom in Scotland. She is the daughter of King Fergus and Queen Elinor. Her triplet brothers are very naughty. King Fergus gives a bow to Merida on her birthday.

Her mother gets mad at this present of the father. A woman who is an orthodox traditionalist, Queen Elinor thinks that princesses should not play with weapons. With her red, curly and fuzzy hair, Merida is a princess who can ride horses, play with swords and perfectly shoot arrows. The movie begins with the rebel of Merida against traditional sex roles:

"I will be able to do anything I want that does not require me to be a princess, I will change my fate" min.-06:30

Later she hits all targets in the forest while riding a horse and climbs a mountain of very sharp rocks which only kings can climb and drink water from. In the meantime the lyrics of the song emphasize the challenging and strong character of Merida:

"I fly and reach the skies" min.-08:17

With her dirty clothes, the dowdy Merida who does not abide by traditional gender roles is always in conflict with her mother. When she puts her bow on the table her mother gets angry whereas her father supports Merida in being a strong person:

" A princess should not have a weapon"min.-10:19 Mother

"They say only the ancient kings were brave enough to drink the fire."min.-11:03 Father

According to the traditions, Merida had to marry the son of Lord McGuffin, Lord Macintosh or Lord Dingway. The lords state that they accepted the invitation of the Queen but Merida objects. Queen Elinor clearly emphasizes that the most important social task of a princess or a woman is marriage and that she is prepared to this gender role from the day of her birth.

"Merida! You have been preparing for this for your entire life."min.-16:54 Mother

"We can never escape from our own personality." min.-18:01 Mother

According to traditional gender roles, women have to be the wife of a man. As a mother they should take care of children. As such, it is believed that Queen Elinor has traditional gender roles whereas Merida has gender equality.

The lords come to the the kingdom with their sons. Merida is obliged to put away her comfortable clothes and wear a dress with corset which would emphasize her femininity. During the introduction of grooms, the three candidates try to show their strength. Traditional gender roles expect the men to be strong, powerful and self-confident. Groom candidates try to prove their masculinity to the Queen and Elinor by telling stories of how many bandits they killed.

Merida has the right to state the skill that she preferred in the man she would choose. And she chooses archery which she is best at. A contest is held through which all men would show their strength. Evolutionary psychology claims that a powerful man has healthy genes and that he will ensure that a women gives birth to children. The most prominent feature of patriarchal structure is that the muscles of men are stronger than those of women and that women are in need of protection. The marriage of strong Lord son with the princess displays patriarchal structure. However, Merida follows the three groom candidates with the flag of her country and tries to claim the right to determine her own fate instead of the traditions. This rising of Merida is an essential revolt against the patriarchal structure. The idea that women could freely do whatever they want and have equal rights with men appears as an important step in the road to gender equality.

"I am Merida! I am the first-born heir of the Kingdom, and I'll be shooting for my own hand!"min.-26:05

Merida shoots the targets whereas three men fail and she has a fight with her mother. The words and behaviors of the mother display how much she wants Merida to show respect to patriarchal structure. However, thinking that they are equals, Merida continues to reject gender roles.

"Merida I forbid this" min.-26:50

When Merida cuts the carpet woven by her mother, she throws her bow to the fire. Both of them want to destroy the role of the other. One of them displayed this behaviour in order to eliminate patriarchal structure whereas the other did the same thing to eliminate gender equality. Running into the woods, Merida meets a witch in the depth of the forest and asks her to make a spell that would change her mother. Merida thought that she could change her fate by changing her mother. She offers her mother the cake given by the witch and her mother turns into a bear. When Merida was young, her father had lost his foot fighting a bear that attacked the kingdom. For this reason, she feared that her father would see her now-bear mother and ran into the forest seeking the witch. In the morning, her mother put on the table the fruits she collected, the leaf that she used as a napkin, and the fork and knife that she made from branches. However, as a care-taker, the mother learned from Merida that the fruits were poisonous. Later, Merida fishes in the stream with her arrows and manages to feed both herself and her mother.

"Ah wait, you say that a princess should never have a weapon" min.-54:13

From this scene, it is seen that taking care of oneself and gaining self-care abilities is independent from being a man or a woman. The idea is that a behaviour which looks masculine is essentially a self-care ability and in order to survive having male or female sex roles is essential.

Smart Merida solves the problem asked by the witch in order to lift the spell made by the witch and returns to the castle with her mother. Lords began to fight as no declaration was made as to the future groom. It is portrayed that rejecting traditional gender roles creates chaos, which is solved by two women, Merida and her mother. When Merida declares that they should determine their own fate, the sons of the Lords agree with Merida.

"Really, why do not we choose" min.-01:08:13

"But she is a princess"min.-01:08:54 Lord

The reaction of Lord is a good example of the fact that traditional lords do not accept the right to self-determination and the right to choose of a woman just like men. A woman can introduce a new type of behaviour only with gender equality.

Queen Elinor is noticed as a bear by her husband who wants to hunt her down. Wanting a revenge for his lost foot, the king tries to capture the bear but she runs into the forest. For the first time in her life, Merida sows the torn part of the carpet using a needle and thread while riding a horse. She stops her father from killing her mother with her arrow. At that moment, the bear who bit the foot of her father attacks the soldiers. That bear is a prince who transformed with the spell of the witch. The prince had asked the witch to have the power of 10 men so that he could beat his brothers, but the witch had turned him into a bear. The will of the prince to have more power when he was already powerful reflects the expectations of traditional social roles from men. The requirement of being the strongest for their existence is portrayed as a heavy burden of men. The king, lords and soldiers fight with the bear while Merida tries to shoot it with her arrows. The queen attacks the bear to protect her daughter. During the fight she notices that the rock is not sound and uses her intelligence by hitting the bear to the rock which topples on the bear. She uses her intelligence instead of strength and saves everyone.

In the animations which portray traditional gender roles, the main characters are either savior men or princes. However, in this movie, the main characters are Merida and Queen Elinor.

"There are those who say fate is something beyond our command. That destiny is not our own, but I know better. Our fate lives within us, you only have to be brave enough to see it." min.-01:24:20

This sentence was said at the end of the movie which encourages women to struggle. The creator of Merida stated that he created her thinking of her daughter when defending equality. He conveyed to the audience in Merida that women can also be brave, strong, tough and skillful. He is trying to tell children that the heroes of women could be themselves instead of men as portrayed by traditional gender roles.

4.2. Rewritten Princess Perception: Tangled-Rapunzel

In the previous stories of Rapunzel, she was portrayed as a woman who was in need of being saved. Imprisoned in a tower, Rapunzel is a woman who stays with a witch away from her family. The witch asks her to let down her hair so that she could climb the tower. On a day when he was wondering in the woods, the prince sees the sweet-voiced Rapunzel in the tower. Having explored how the witch climbed the tower, the prince enters the tower beside and falls in love with Rapunzel. The witch caught them and cut the hair of Rapunzel. She trapped the prince and blinded him. She also exiled Rapunzel to the desert. The prince runs across the desert when he was wondering blind. He hears a sweet voice and recognizes Rapunzel. Rapunzel saw that her beloved one was blind; she cried and her tears unmade the spell in the eyes of the prince. The prince and Rapunzel lived happily. Tangled came out in 2010 as a Disney production.

The story is fairly changed. In the previous story Rapunzel was a woman who was unable to set her own path. However, in this new movie she is created as a strong and smart woman.

A drop from the sun falls from to the earth in the form of a flower which has the power of healing. The witch notices it and keeps the flower for herself. The queen falls sick when she was pregnant to Rapunzel and the entire country looks for that flower. When it is found, the queen drinks the essence of the flower and recovers. Rapunzel was born with her golden yellow hair but the witch abducts and imprisons her in a tower.

Rapunzel lives in the tower with her only friend, chameleon. Remembering her magnificent days in the house with a song, Rapunzel plays the traditional gender roles of a woman. She performs cleaning, reading, drawing, knitting, making cake and other roles that are normally expected from a woman. Curious about the outside, Rapunzel thinks that the witch is her mother and asks for her permission to go out. The reaction of the witch underlines the weakness of women:

"You are as fragile as a flower"min.-12:00

In addition, she explains that external world is very dangerous and that a woman cannot deal with it. A thief, Flynn, enters the tower when he was running from royal soldiers. Rapunzel puts him out with a frying pan. Although she fears in the beginning, she continues to struggle and hides Flynn into the closet so that she could show her mother how strong she was.

"So I am too weak for the outer world, hah mum?" min.-21:24

When her mother emphasizes the weakness of women, Rapunzel changes her mind. When the witch is gone she makes a deal with the thief

who is bound with her hair. She says that she wants to see the balloons that are flown every year on her birthday for their lost princess. This is the only way to give back the crown to Flynn which he had stolen. Leaving the tower for the first time in her life, Rapunzel emphasizes how fun it is to be free.

"you are looking at an extremely free person"min.-31:30

Giving up on traditional gender roles is new for her which caused confusion: gender roles can have very suppressing natures. Resisting the expectations of the society leaves a person in a dilemma:

"I am a horrible daughter, I am going back"

"I am never going back"min.-32:13

Rapunzel's discourses display this dilemma clearly. Flynn's real name is Luicine. He tries to talk Rapunzel out of it but Rapunzel is determined to chase her dream. Luicine takes Rapunzel to eat at a restaurant frequented by thieves and bandits. Although she was uneasy in the beginning, Rapunzel showed warm and close behaviors to the bandits. It can be said that this behavior is consistent with traditional gender roles. Women are expected to be kind-hearted and understanding. Rapunzel tells about her dream and asks the bandits to talk about theirs; so, she gave them the opportunity to express themselves. When the royal guards arrive, one of the bandits helps Rapunzel and Luicine to escape. Rapunzel and Luicine are stranded between the guards and former accomplices of Luicine, but they save themselves fighting. In that particular scene, it is observed that women and men are equal. They supported each other but neither the man saved the woman or the woman saved the man.

While having a rest in the forest, Luicine is afraid of the smart horse of guards, Maximus. Rapunzel likes Maximus and soothes him. According to the traditional gender roles, the feeling of fear belongs to women. However, Luicine being afraid and Rapunzel keeping calm conveys that men also feel fear and women can act bravely. When they arrive at the kingdom, the festival which is organized for the lost princess every year had just begun. When the witch deceived and took Rapunzel to the tower, it is emphasized that woman cannot protect themselves. Social rules emphasize that it is men who protect women and women feel the need of being protected and directed by men. The patriarchal structure is displayed in the behaviors of the witch. Rapunzel noticed that there is the sun flower in all drawings she made in the tower and understood that she was the lost princess. Luicine comes to save Rapunzel. Rapunzel resists against the witch and acts sensibly while Luicine looks in the eyes of death and saves Rapunzel, which indicate that there is shuttling between traditional gender roles and gender equality.

Rapunzel is able to take care of herself and heroism is to be shared between man and woman, which are the discourses of gender equality. Although different from previous stories, it is seen that patriarchal structure is not totally abandoned.

4.3.The Woman Hero: Moana

Moana came out in 2017 as a Disney production movie. Strong and fearless, Moana lives on a Pacific island with her tribe. She is the daughter of the tribe chief and was grown with the stories of Maui and Teka told by her grandmother. The movie begins with the grandmother telling a scary story. Moana is the only child among other children who is listening to the story enthusiastically and fearlessly. Patriarchal structure dominates the living of the tribe. The men fish and women collect fruits and weave baskets.

When Moana grows, she becomes the chief who solves the problems of her tribe. The island began to die as Maui stole the heart of Te Fiti. There was no fish in the reef and coconuts began to rot. When Moana proposed to leave the reef and sail to the ocean she had a quarrel with her father.

"Let's fish beyond the reef"

"No-one goes beyond the reef"

"I know but if there is no fish in the lagoon... There is a hope in the oceans."

"We have one rule"

"An older rule when there were fish."

"A rule that keep us safe. And stay of endangered our people say you can run right back to the ocean." min.-14:39

The society tries to impose its norms to every individual in the society. Changes in rules are seen as a dangerous element which can lead to chaos. In patriarchal structures the rules of the society are harsher and in favour of men. The women have no chance of rejecting the rules laid down by men. It is observed that when Moana rebels against her father not a single woman defends her. Moana demands that rules are reviewed considering the needs of the society, that they are open to novelties and that women are given equal rights. However, her father emphasizes the unchanging nature of rules.

When her mother comes to calm Moana down, she reminds her that they are not free. According to traditional gender roles only men can be free. The lines of the freedom of women are drawn by men.

"Sometimes, who we wish we were, what we wished what we can do Moana"min.-15:30

As her lack of freedom is in conflict with her belief that she has to do what is right for her, Moana makes clear that she wants to abandon the role that is designed for her.

"*I wish I was an example child. But I went back to the water, I could not help myself. Every direction I choose, every path I take, every stone I step takes me here"min.-16:33*

She pushes the boat to the ocean on her own which indicates that there is not much difference between men and women in terms of muscle power. Although she could not reach the ocean, she tries going to the ocean again as her grandmother told her to do before she died. She pushes the boat on her own again and manages to leave the lagoon. In this harsh voyage, only ocean helps her. She aims to find Maui and ask him to restore the heart of Te Fiti. Maui is a huge, strong, big and well-built demi-god. The boastful Maui introduced himself as "the hero of every man and woman". But Moana makes clear that she does not need any hero.

"You are not my hero!"min.-23:24

Moana does not choose Maui as her hero, which can be evaluated as a revolt against traditional gender roles. Maui deceives Moana and imprisons her inside a cave. There is the statue of Maui made by himself in the cave. Moana climbs on the statue, pushes it with all her power and climbs the hole on the ceiling of the cave. Using both her muscle and mind power, Maui reaches the boat that Maui stole from her. While the society expects the women to be rescued, gender equality states that both men and women can rescue themselves. Moana is given as one of the best examples of gender equality. It is emphasized that men always have more muscle power then women. However Moana applies the compressive force and manages to topple the statue with muscle power which was not expected from her.

Having convinced Maui, Moana paid effort to each Teka fearlessly. When she was caught by pirates, Maui wanted to escape but Moana dived into them with courage so as to retake the heart. She captures the heart and gets rid of them. In yet another scene, they have to enter the cave of the creatures. Maui asks her to stay with the boat. Moana prefers to climb the mountain with Maui. It is emphasized that women need protection.

"Dear daughter of chief, why did not you stay in your town... You could, say, kiss the babies"min.-55:34

Women do not have such social roles as fighting, struggling and taking on adventures. Instead, they are expected to take care of babies and become mothers. This point emphasizes the supremacy of men. When they have to dive into an endless-seeming cave so as to go to the land of creatures, Moana did not refrain from diving despite her fears. Maui thought that Moana would be afraid and not dive.

"The girl is not here, no mortal can be brave enough to dive in here"min.-57:59

The crab is also shocked that Moana, as a mortal, came to the land of creatures. She deceived the crab and rescued Maui from the land of the creatures. When she came to fight with Teka Moana argued for continuing whereas Maui gave up after one trial. Moana made a plan to defeat Teka which consisted of lava and rocks. During the harsh fight Maui comes to her assistance. When she finds out that Teka is actually Te Fiti, she does not fear the lava monster any more and calms her down and restores her stolen heart. Moana shows everyone that a hero can be a woman.

5. Conclusion

The media appears as an important factor in changing the attitudes of individuals according to changing conditions. Gender roles are defined as the norms which are determined by the society and effectively influence the lives of individuals. A historical examination shows that patriarchal structure which has been underlining the traditional gender roles for long years emphasizes the weakness of women and strength of men. The most important distinction between men and women is that men are given freedom whereas women are confined to the house. The woman has duties in the house designated as private space. The woman needs to be fragrant, well-kept and beautiful. The cleaning of the house, care of the child and obedience are expressed as the gender roles expected from women. It is observed that women are not afraid of getting dirty, walking with bare feet and tearing their clothes. Merida does not like feminine clothes. A dress that shows her body contours does not make her happy. The corset, which will show her waist more slender, is portrayed as a torture for Merida. It feels more comfortable tearing off her dress. Merida does not reflect the femininity in patriarchal structure. Women are expected to reflect sexuality according to traditional gender roles. Like Merida, Rapunzel and Moana were not wearing feminine dresses. Moana and Rapunzel were walking barefoot. Merida's scattered hair is not among the behaviors expected of women. According to gender equality, women should have equal rights in all fields such as marriage, education, work and life. Merida's desire not to marry and her opposition to the lords is considered to be a reference to equal rights. Merida's director, Brenda Chapman, wanted to create a new type of independent and brave princess instead of helpless princesses (Favilli and Cavallo, 2016, 30). It seems that Merida advocates gender equality more clearly than other princesses. One of the common features of selected films is the strong and fearless nature of female characters. The role of being strong in the patriarchal structure is given to the man. While the behaviors such as fighting, using guns, fighting should be possessed by males, Merida, Moana and Rapunzel have shown these skills as a significant emphasis on gender equality. Resistance to patriarchal structure with feminist approach

is observed in all three movies. Merida is such a good archer that cannot be expected of a woman. One of the groom candidates who contested to marry her could not hit the target; the second one could not receive a high score and the last one hit the target accidentally. Merida hit the targets of all groom candidates. The gender roles given by patriarchal structure to women include being in need of protection (Bingöl, 2014). Merida and Moana are women who do not need protection. In addition, they are portrayed as heroins that can fight and defend themselves. Rapunzel fought with her frying pan and Moana defended herself with anything that she could find. Women are expected to submit to the patriarchal system and let the men decide on their lives. Merida, Moana and Rapunzel are important characters that reject this patriarchal system. In all three movies, the protesting of patriarchal structure is clearly displayed. Merida protests her parents for their marriage decision; Rapunzel protests the witch so that she could leave the tower and live, and Moana objected her father who did not let her do what she believed to be done to protect her people. Psychoanalytical approach defines woman as a seductive being (Janin, 2012, 31). Moana and Merida lack seductiveness. On the other hand, Rapunzel is portrayed as an affectionate and care-taker woman which is suitable for traditional sex roles. Although she and Luicine fell in love with each other, her compassion, intelligence and strength to take care of herself are featured most.

An examination of the male characters shows that the expectations of patriarchal structure are conveyed through Moana's father. Maui and Luicine, on the other hand, include aggression which could reflect the traditional roles; however, there are scenes that both showed signs of fear. It is believed that there are references to the equality of gender. All three movies stand out with women who are as strong as men, independent, claim their own rights, question patriarchal structure and emphasize equal rights. Changes in living conditions emerge equality of social gender depending on the reemphasising of feminism against traditional gender roles. It is believed that cinema and television, which have an important place in education, will bring changes in definitions of the gender roles by children. Social cognitive learning theory emphasizes that attitudes and behaviors could be earned through observation. Several studies showed that information communicated by media could be gained by children. Gender equality is explained as women and men having equal rights in family, education and working life. The fact that characters in stories and the media are mostly males results in the maintenance of patriarchal structure. Using media has gained importance in order to have equal rights in education system. The need to have female characters so that women become individuals who believe in their own power, are independent, free and able to claim their rights are met with the mentioned characters. The three movies which emphasise social gender equality are recommended for usage in the education of children.

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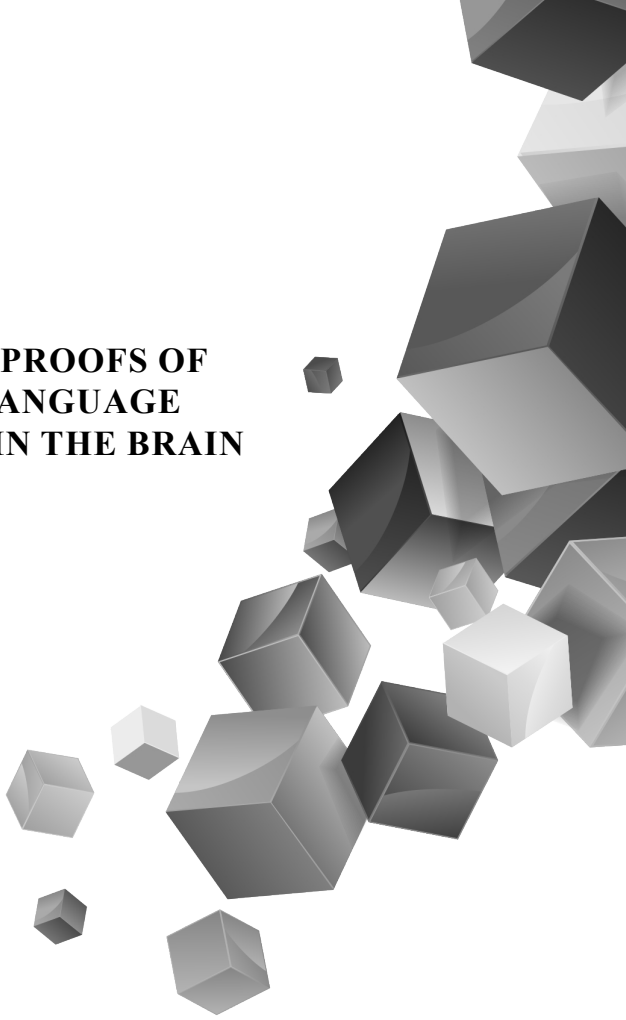
Chapter 7

NEUROANATOMICAL PROOFS OF FIRST AND SECOND LANGUAGE LEARNING PROCESS IN THE BRAIN



Zeynep Zeliha SONKAYA[1]

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Introduction

Language is the central in our life and this is the case not only of our native tongue, but also of other languages have been needed to communicate within the international community. Therefore, learning second language (L2) has become more important in recent years (Sonkaya,2019).

First Language (L1) or mother tongue acqusition is a fast and efortless process; but contrary to mother tongue acqusition, second language learning process is included several difficulties for many individuals. In particular for adults, it can be pretty hard and need a long period to communicate in L2. Because L2 learning covers the process for individuals to learn any language after their L1. For this reason, it has been stated that L2 term points out the language or languages apart from L1(Bayazıt,2019) and generally this term has been named as a target language (Saville-Troike 2012).

"Learning a new language is a difficult feat for which people have to develop a complex set of linguistic skills, including encoding the words of the new language, learning syntactic structure, and integrating the resulting representations with existing language knowledge. Especially in adulthood, L2 learning process is notoriously difficult as opposed to first language (L1) acquisition or child L2 acquisition" (Tagarelli, 2014). In the literature, a great deal of research has examined behavioral performance changes associated with L2 learning (Conklin & Pellicer-Sánchez, 2016; Orosco & Hoover, 2009; Roberts & Siyanova-Chanturia, 2013) but little is known about what changes are happening in the brain as L2 learning progress, when these changes occur during learning and how can we determine differences in brain changes that reflect successes of learning.

It is thought that although the research in L2 and cognitive neuroscience has got a long way in characterizing the process of L2 acquisition, methodological limitations have left important gaps in the literature. From this point of view, present systematic review study takes to address the investigation of L1 and L2 learning process that cannot be fully explored with behavioral methods alone. In accordance with this purpose, neural activities associated with L1 and L2 learning process was presented according to recent studies which was used neurophysiological and neuroimaging techniques.

Neuroanatomical Proofs of L1 Learning Process

The determining of language localization in the brain has been a matter of debate since early postmortem data from patients suffering from language disturbances allowed speculation about specific regions responsible for certain linguistic capacities (Friederici and Wantenburger, 2010). Language localization studies were first made by physicians Broca and Wernicke who did autopsies on patients had several language

difficulties before their deaths. Broca's area was found to be associated with speech production, and Wernicke's area was revealed to be related with processing the meaning of language.

In recent years, in particular within the last decades, neuroimaging techniques such as fMRI (Functional Magnetic Resonance Imaging), fNIRS (Functional Near Infrared Spectroscopy), and PET (Positron Emission Tomography) have become a popular as an emerging monitoring technique for studying the human brain reply to linguistic impulse in healthy individuals. According to the results of neuroimaging studies, left hemisphere has a specific role in the language acquisition network (Lazar and Antoniello, 2008; Karunanayaka,2008; Sonkaya; 2018), but still it is unclear whether one-to-one association between language and single determined brain areas as well. Besides, in some studies the complexity of language processing is related to be dispersed frontotemporal networks also consisting of regions in the right hemisphere (Friederici and Wantenburger, 2010).

Cumulated evidence obtained from previous neuroimaging and neurophysiological studies (Friederici and Wantenburger, 2010) suggests that anterior temporal, posterior middle and superior temporal cortex, angular gyrus and inferior frontal cortex have a significant role in the sentences processing system (Figure 1).

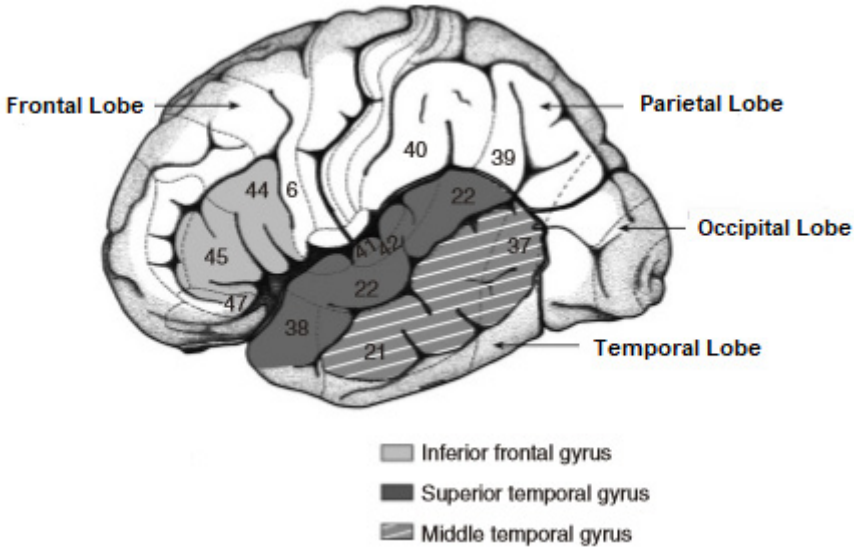

Figure 1. *A description of the language related areas in the left hemisphere*

In a similar line with reviewed neurophysiological studies, also neuroimaging researches are tried to determine the localization of the neural network by concentrating on specific linguistic systems and their interaction (Szaflarski et al, 2006; Kuhl and Rivera-Gaxiola, 2008, Vannest

et al., 2009; Yang et. al, 2015). Lesional and neuroimaging studies, especially fMRI studies, have clearly shown a left-hemisphere dominance for first language acquisition (Vannest et al.,2009). Particularly, "left perisylvian areas in the frontal lobe, also temporal and parietal lobes help to networks promoting many constituents of language processing such as word recognition, syntax and semantics" (Friederici and Wantenburger, 2010). In other respects, in some researches it has been emphasized, with increasing age, neuronal networks are changed vis-à-vis proficiency of language acquisition. In one longitudinal fMRI study, conducted by Szaflarski et al. (2006), it was investigated the language development of children between the age of 5 and 11. According to the study results, with increasing age, it was found to be progressive participation in language processing by the inferior/middle frontal, middle temporal, and angular gyri of the left hemisphere. Also, authors highlighted the importance of lingual and inferior temporal gyri of the right hemisphere and regression of participation of the left posterior insula/extrastriate cortex, left superior frontal and right anterior cingulate gyri, and left thalamus (Szaflarski et al., 2006). Likewise, in a large cross-sectional group of typically developing children ages between 5 and 18, Holland et al. (2001) showed increasing specialization of language functions to the left hemisphere as age increases. However, researchers remarked that lateralization changes were more closely tied to the period of acquisition for language tasks than to general maturation (Holland et al.2001).

In the last decade, "brain and behavioral studies indicate a very complex set of interacting brain systems in the initial acquisition of language, many of which appear to reflect adult language processing, even early in infancy" (Kuhl,2011:3). In particular, while Brodmann area (BA) 44 (pars opercularis of the left hemisphere) which corresponds with Broca's area was referred to as the neural seat of language production, neuroimaging findings demonstrate a distributed network for language comprehension process according to several neurolinguistic studies. This network includes "several frontal and temporal brain regions working in close connection both within and across the two hemispheres" (Friederici and Wantenburger, 2010).

Neuroanatomical Proofs of L2 Learning Process

Increased interest in the relationships between the brain and behavior over the past several decades has made neuroanatomical proofs of L2 learning process a topic of study in disciplines like neurology, psychiatry, neurolinguistics and neuroscience. Because language is the central in our lives and this is the case not only of our native tongue, but also of other languages have been needed to communicate within the international community.

"Learning a new language is a difficult feat for which people have to develop a complex set of linguistic skills, including encoding the words of the new language, learning syntactic structure, and integrating the resulting representations with existing language knowledge. Especially in adulthood, L2 learning process is notoriously difficult as opposed to L1 or child L2 acquisition" (Tagarelli, 2014). Therefore, especially in recent years, many of studies focus the determine laterization and localization of L2 process in the brain (Paradis, 2001; Toentino and Tokowicz,2011; Thomas and Backer, 2013; Li, Lagoult and Litcofsky, 2014). In one study results conducted by Tagerelli (2014) showed that the brain of adult L2 learners demonstrated highly dynamic activation, even during the early stages of L2 learning process. According to study findings brain activation was found in Broca and Wernicke associated with L1. Additional areas were engaged, suggesting that L1 mechanisms are not sufficient for L2 learning and processing. At early stages of learning, hippocampal activation was found for both vocabulary and grammar. At later stages, basal ganglia activation was observed for grammar, particularly in the caudate nucleus (Tagarelli, 2014)**.** In same line with this study, Hirsch et al (2000) at Cornell University used fMRI to identify how multiple languages are represented in the human brain. They found that native and second languages are spatially separated in Broca's area, which is a region in the frontal lobe of the brain that is responsible for the motor parts of language-movement of the mouth, tongue, and palate (Hirsch et al., 2000). Another fMRI study which was carried out by Wang et al (2009) showed very little separation in the activation of Wernicke's area in two languages, an area of the brain in the posterior part of the temporal lobe, which is responsible for comprehension of language (Wang, et al, 2009).

According to several fMRI study findings, L2 learners show the involvement of neocortical areas typically activated in L1 processing, like the inferior parietal lobe and left inferior frontal gyrus, particularly BA44, and BA47 for lexical and semantics, and BA44 and BA6 for grammar (Tagarelli, 2014). In addition to L1-language areas, there were also brain regions activated in the L2 learners that are not typically activated in L1 processing, which suggests that the L1 language areas, while engaged, are not sufficient for L2 learning and processing. First, activation was spied on regions that are thought to be involved in learning and memory consolidation, like the basal ganglia, hippocampus, mediotemporal lobe and possibly the middle occipital lobe. It makes sense that these brain regions would be comprised in an L2 learning paradigm, but not in L1, because L1 processing studies are generally performed on adults who have already learned their language (Skeide, Brauer, & Friederici, 2014). Second, although L1 activation is typically found in the left hemisphere, L2 learners show more extensive and bilateral activation, and actually

demonstrate right hemisphere dominance for many of structures. In the literature many of studies were demonstrated greater activation in L2 relative to L1 is likely due to the increased effort involved in learning and processing an L2 (Abutalebi, 2008; Skeide et al., 2014; Tagarelli, 2014), but the reason for right hemisphere dominance is still unclear.

In conclusion, the results from neuroimaging studies like this one may help with the issue of operationalize proficiency. Recent neuroimaging research has showed that behavioral evidence alone might not be sufficient for determining proficiency, since different groups of speakers may perform similarly on language tests, but show different brain patterns (Tagarelli, 2014). Regarding learners who exhibit different levels of behavioral performance, findings from this study demonstrate that those learners who perform poorly on L2 tasks rely on different structures over the course of learning from those who perform well. In particular, for grammar, poorer learners show a greater reliance on structures related with more declarative memory, like the mediotemporal lobe and hippocampus, whereas better learners show a shift to structures related with procedural memory and implicit processes, like the basal ganglia, BA44, and BA6. These suggestions that the profile of a highly proficient learner might go beyond high performance on behavioral tasks and consists of activation of certain neural regions that suggest the ability to automatize grammar. The goal of L2 teaching, then, might not only be to increase scores on language tests, but also to determine what sorts of training conditions and cognitive abilities can facilitate the involvement of these automatic processes in the brain.

Conclusion

In this study, neuroanatomical proofs of L1 and L2 was tried to investigate according to available neuroimaging studies. Different study results suggest activation of specific brain patterns is significantly correlated with highly effective learning of a L2. These results highlight the implications for neurocognitive theories of L2, and demonstrate the importance of integrating neural and behavioral methods in L2 research.

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Chapter 8

RECENT DEVELOPMENTS IN RENEWABLE ENERGY SOURCES: HIGH-ALTITUDE WIND ENERGY

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1. INTRODUCTION

High Altitude Wind Energy also known as **"**Airborne Wind Energy**",** is a new and developing form of renewable energy technology that uses airborne devices to generate power. Unlike conventional wind power which uses tall wind turbines affixed to the ground or far out at sea, airborne wind energy uses free floating devices such as balloons, kites and tethered wings suspended high up in the air.

High altitude wind power is a widely distributed renewable clean energy. The characterized of high-altitude wind energy is fast speed, wide distribution, high stability and perennial. Utilize high-altitude wind power can get high stability with low cost of wind power generation, which is one of the notable features for high-altitude wind power, but also is one of the most significant advantages for high-altitude wind energy compared to conventional wind energy. High altitude wind power generation equipment is more compact and flexible, far superior then the traditional fan, which equip with thick blades and the tower must be fixed in the depths of the ocean or in the ground.

High altitude wind turbine history can be traced back in history to 1943. The first high altitude wind energy system was be invented and was used in the war, as a bomber/glider supported to fly by the silent battery-powered. Can capture wind energy then to use the wind energy converted to charge the battery, to provide the propulsion power. Then come into 1976, the concept that use of is to harness the lighter balloon than the air to capture the high altitude wind, the balloon with the wire tied on the fixed rotor, then to use the wind energy to turn the shaft to the unified direction of rotation, the shaft will produce mechanical energy and turn into electrical energy by the generator, next to transmitted the electricity to the power station via wire. Now widely be recognized kite gen system's earliest prototype was appeared between 1970 and 1980 (Tang, 2013: 10).

For capturing the winds power from the high altitude winds different devices based on aircraft technologies have been developed such as: aerofoil kites, sky-sails, gliders and sail-planes both with wind turbines attached to bring power as well as the forces down to the earth. Theses devices can be connected to either a stationary ground station to produce electricity, or to another moving, but non-flying object to produce a traction power, such as the rotation of a fly Wheel.

Airborne wind energy devices such as a tethered wing or an aerofoil kite are electro-mechanical systems that extract the power from the kinetic energy of the winds circulating around in the sky. Most airborne wind power devices are designed to fly in a crosswind or transverse direction allowing them to concentrate the winds immense wind power resource

at medium to high altitudes of more than 200 metres. This is because at altitudes above 200 metres the winds speed is generally higher and more consistent than nearer to the Earth's surface so we can use these high winds as an energy source and generate power using it. Also, the lift and forces produced by the wind at these altitudes is sufficient to both support the airborne device and generate power. Since these airborne wind devices operate at a greater altitude with stronger wind speeds more electricity can potentially be generated with a greater consistency.

Since begin of new century, Europe and United States has developed rapid with generation technology and scientific technological achievements commercial operation in the field of High-altitude wind power. But the high-altitude wind energy technology has not yet been formed in a large-scale for application. Several companies are currently working on high-altitude wind energy in Europe and United states. Those companies and organization are speeding up the technology research process of High-altitude wind energy. Currently there have three main forms for high-altitude wind power (Bronstein, 2011).

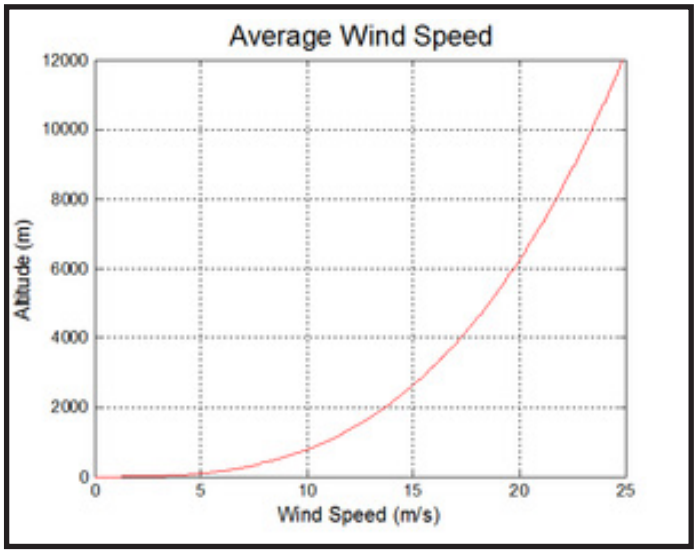
Wind energy is one of the most advanced technologies nowadays for renewable energy sources. In the areas where energy production capacity is needed the most the available land space is limited and has lead to a strong focus on offshore technology for the future investments. Airborne Wind Energy is one of the options that could be used especially in the offshore wind market when the technology becomes more mature and viable for the commercial application. Offshore wind energy also offers greater energy potential as wind speeds are higher out in the oceans. The wind resource in high altitudes is very promising when compared to the conventional wind energy height and wind speed, because at higher altitudes there is significantly higher wind speeds and more consistent wind resources.

The success and on-going development of renewable energy resources including wind energy will benefit greatly from advances in new technologies, ideas and the control systems being introduced getting more mature as they evolve. High Altitude Wind energy is a relatively young technology and industry but the ideas and concepts already developed seem to have a promising potential playing a vital role in the renewable energy sector.

2. FEATURES OF HIGH ALTITUDE WIND ENERGY

The principle to harness high altitude wind energy to generate electricity is very simple, because of the distance was increased from the earth and the friction was be reduced with the earth, then the wind speed will be gradually increase. Each doubling increase of the wind speed, the energy it contains will be increase 8 times in theory. In the way so that the most stable and strong wind in the earth is exist in the troposphere at 4 to 10 kilometer above the ground, where the wind speed exceeds 100 kilometers per hour, and also it better to forecast than the surface wind **(**EWEA, 2008). The primary reason for seeking wind at high altitude is that the wind tends to blow faster and more constantly the higher you go (Figure 1). Add to that the nominal power increases with the cube of wind speed. The estimated potential of wind power currently stands at 3600TW[1], much higher than the 15TW required worldwide on a daily basis. Nevertheless, wind power is limited at low altitudes, as estimates show an exploitable share of only 72 TW[2], in-land at altitudes below 100m. This is only 2 % of the entire potential, as power density is much higher at greater altitude (Figure 1).

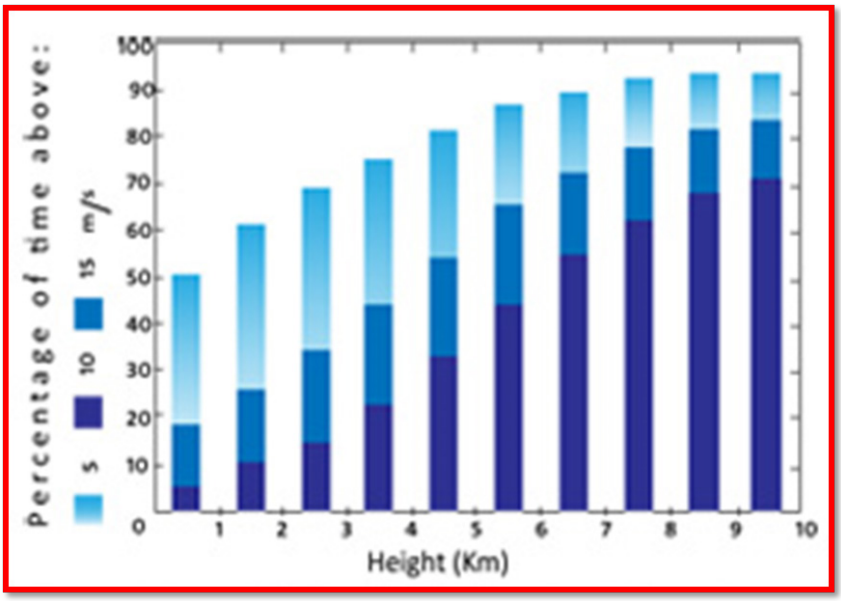
Figure 1: *Power Contained in High Altitude Wind*



*Resource***:** http://large.stanford.edu/courses/2014/ph240/gerrard1/*, 2020.*

Up until now electricity production from wind has been derived exclusively from wind turbines, using only low altitude winds which suffer from low speeds and an inherent intermittent nature (Figure 2) associated with the surface boundary layer and natural terrain orography.

Figure 2: *Dependability of High Altitude Wind as a Resource*



Resource: http://www.omnidea.net/hawe/project_motivation.html, *2020.*

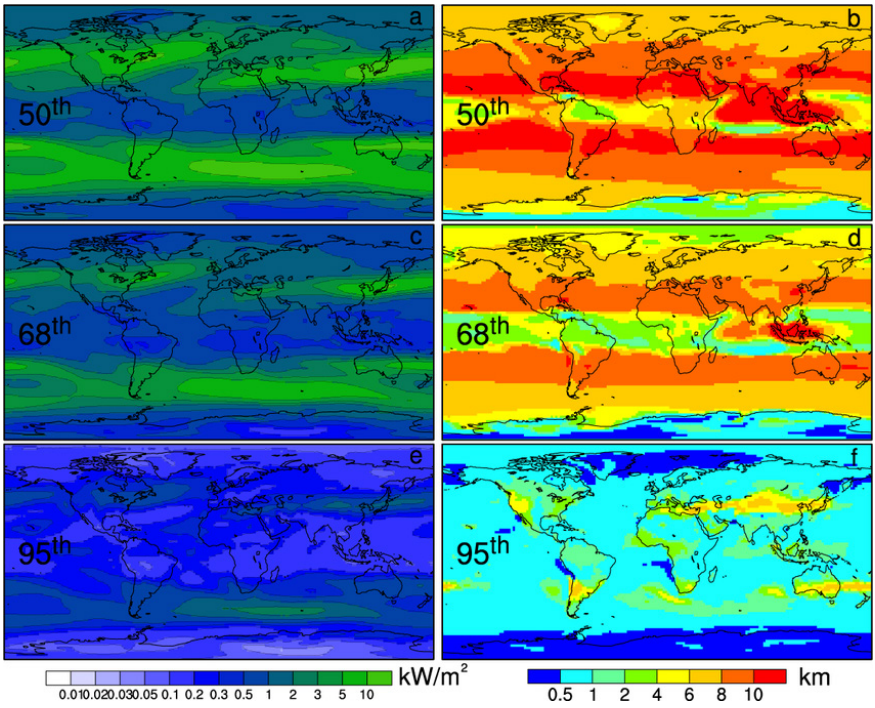
Wind power density [w/m²] is the wind power which the air flow in unit time to through a unit cross sectional area in vertically direction. The formula as the followed:

[W= ½ V³. P] (Archer & Caldeira, 2009: 309).

Where **V** is the wind speed, **P** is the air density. Wind speed is doubled then the wind power increased 8 times (standard air density is 1.225kg/m³, the air density highly in 6000m is about 0.44kg/m³, only decreased about 1-fold), therefore from the above equation the capacity of wind power density is determined by wind speed which acted a decisive role.

Areas with the highest median optimal power density are also, in general, the ones with most reliable winds, because of the high power expected to be available 95 % of the time. For example, the area of optimal wind power density > 10 kW/m² to the east of Asia near Japan (Figure 3a) experiences wind power densities of at least 1 kW/m² 95 % of the time (Figure 3e), practically unthinkable near the ground even at the windiest spots. The optimal altitudes, however, are generally high, above 6 km 95 % of the time (Figure 3f).

Figure 3: *Optimal wind power density (kW/m², left panels) and optimal height (km, right panels) that was exceeded 50%, 68%, and 95% of the times during years in 1979-2006.*



Resource: Archer & Caldeira, 2009: 312.

The reason for lower wind speeds at surface is wind shear between the circulating atmosphere and the surface of The Earth. Surface topography and features break up the circulation. It is useful to imagine the flow of a river that will normally be much slower at the edge than in the middle where the main volume of water can flow unimpeded by boulders and branches etc. In each hemisphere's winter, wind power density patterns are generally similar to the annual patterns, but the bands of high winds at the mid-latitudes near 10,000 m are generally broader, extend further equatorward, and have higher wind speeds.

Although in general wind speed increases with height, altitudes at which winds are strongest can vary, depending on the weather conditions. For example, low-level jets cause wind maxima at the top of the boundary layer (Stensrud, 1996: 1700), 1,000 m above ground. Obvious benefits would arise if a high-altitude technology were able to dynamically reach this "optimal" height. First, harnessing the maximum wind power possible at a given location by reaching the optimal height increases the capacity factor, which is the ratio of actual generated over rated power, when compared to the capacity ratio at a fixed altitude. Also, the intermittency

problem (i.e., periods with low wind power densities) at a specific location and altitude can be ameliorated by lifting or lowering the kites to avoid low wind speeds.

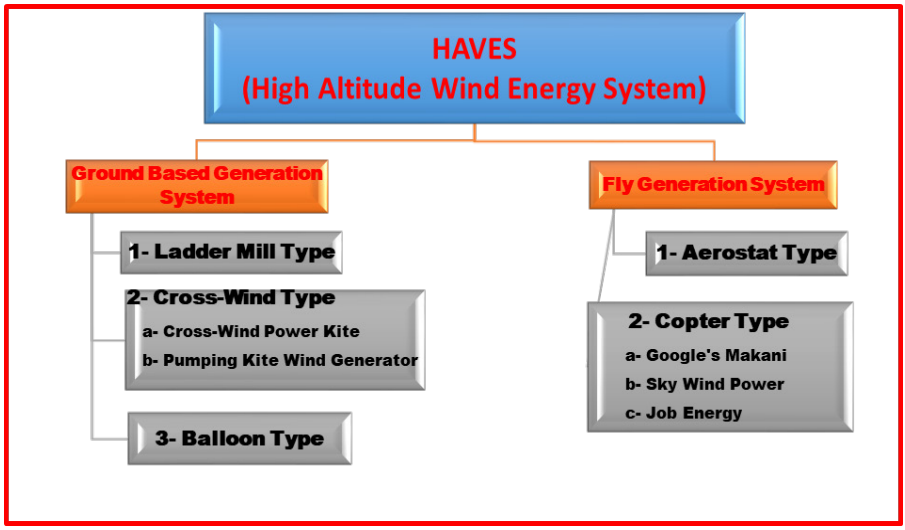
3. TYPES OF HIGH ALTITUDE WIND ENERGY SYSTEMS (HAWES)

Wind extraction models at high altitudes are categorized as the Ground based generating system and the Fly generating systems. AWESs are generally made of two main components, a ground system and at least one aircraft that are mechanically connected (in some cases also electrically connected) by ropes (often referred to as tethers). Among the different AWES concepts, we can distinguish Ground-Gen systems in which the conversion of mechanical energy into electrical energy takes place on the ground and Fly-Gen systems in which such conversion is done on the aircraft (Diehl, 2013).

In a Ground-Gen HAWES (GG-HAWES) (fFigure 4), electrical energy is produced on the ground by mechanical work done by traction force, transmitted from the aircraft to the ground system through one or more ropes, which produce the motion of an electrical generator. Among GG-HAWESs we can distinguish between fixed-groundstation devices, where the ground station is fixed to the ground and moving-ground-station systems, where the ground station is a moving vehicle.

In a Fly-Gen HAWES (FG-HAWES) (Figure 4), electrical energy is produced on the aircraft and it is transmitted to the ground via a special rope which carries electrical cables. In this case, electrical energy conversion is generally achieved using wind turbines. FG-HAWESs produce electric power continuously while in operation except during take-off and landing maneuvers in which energy is consumed. Among FG-HAWESs it is possible to find crosswind systems and non-crosswind systems depending on how they generate energy.

Figure 4: *Classification of High Altitude Wind Energy Systems*



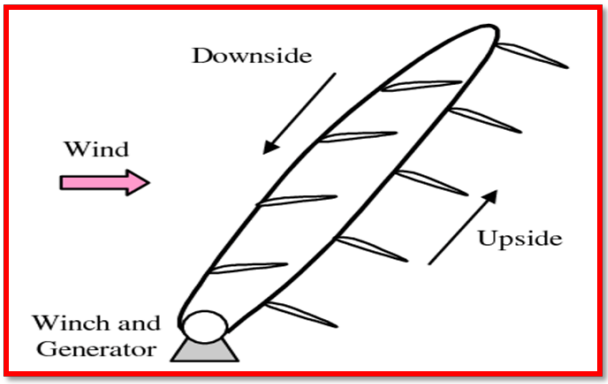
3.1.1. Ground Based Generation System

In Ground-Generator Airborne Wind Energy Systems (GGAWES) electrical energy is produced exploiting aerodynamic forces that are transmitted from the aircraft to the ground through ropes. As previously anticipated, GG-AWESs can be distinguished in devices with fixed or moving-ground-station.

Ground based generating system consists of generator at ground level, tether cable, actuators and on-board sensors. Mechanical support for the kite at high altitude is given by the tether cable and which is tied to the motor-generator shaft. This kite operates in two phases i.e. Traction phase and Recovery phase. In traction phase, as the Kite ascends to higher altitudes, it cuts the wind and the tether cable is pulled resulting in transfer of mechanical energy to the shaft of the generator. This produces electric power at the generating station**.** Where as in recovery phase, the Kite is pulled back by the control unit placed at the ground station. In this phase, electrical power is not generated. Hence, generator acts as a motor in recovery phase and reels in the excess tether cable. On board sensors are suspended in the brindle system of the control pod for controlling the trajectory of the Kite. These Sensors generate the information regarding position, inertia (EWEA, 2008**)** and wind speed and are relayed to the control unit. Ground based generating systems are classified into Moving and Fixed ground based generating systems**.** Based on the nature of Kite movement, HAWES systems can be classified as: Ladder mill, Cross-wind types.

3.1.1.1. Ladder mill type: The ladder mill type HAWES is a fixed ground based generating system. In this model, the Kites are placed on the tether cable such that they are arranged in ascending and descending sequence as shown in figure 5. The Kites in the ascending part are positioned to give extreme thrust whereas those on the descending part assist their counterparts resulting in maximum lift . This maximum lift pulls the tether cable in an upward direction.

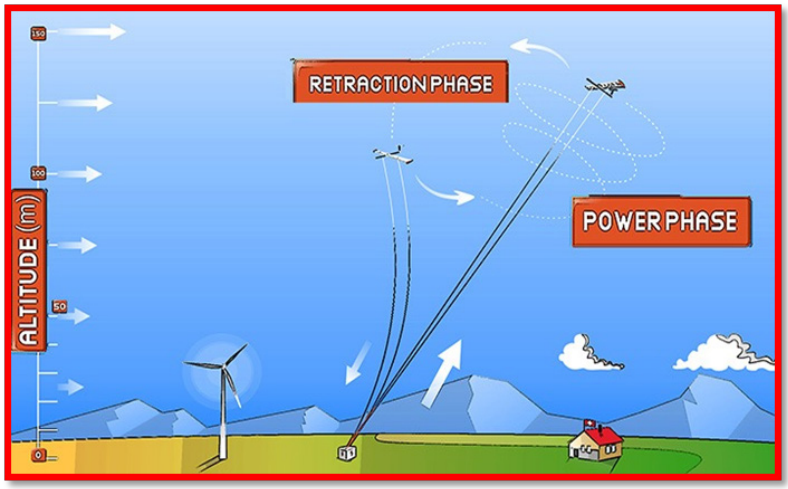
Figure 5: *Ladder mill type*



Resource: *Lansdorp & Williams, 2006 : 4.*

3.1.1.2. Cross-wind type: In this model, the Kite path is diagonal to the wind direction. As the tether cable is connected to the ground, the Kite forms a closed loop with cross winds in a circular direction as shown in figure 6. The speed of the cross wind depends on the lift to drag ratio of the system.

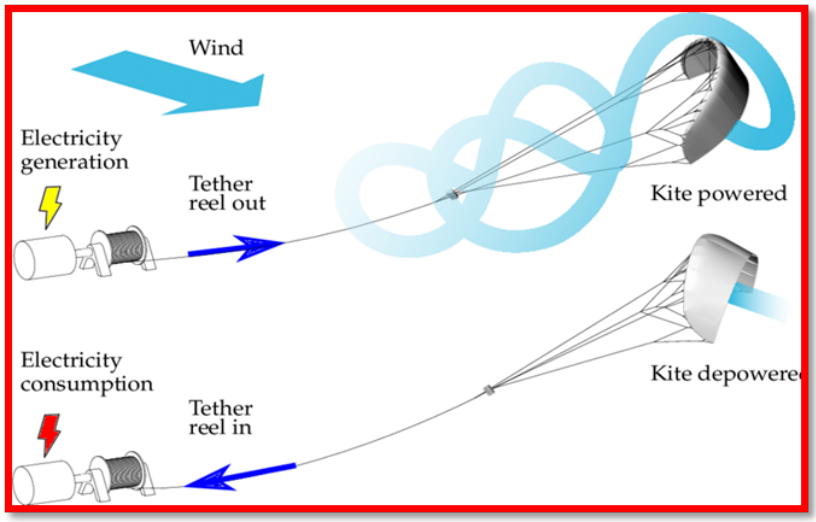
Figure 6: *Cross wind power kite*



Resource: https://thebulletin.org/2016/01/kite-power-latest-in-green-technology/, *2020.*

Pumping kite generators present a highly discontinuous power output, with long alternating time-periods (in the order of tens of seconds) of energy generation and consumption. Such an unattractive feature makes it necessary to resort to electrical rectification means like batteries or large capacitors. The deployment of multiple HAWES in large high-altitude wind energy farms could significantly reduce the size of electrical storage needed.

Figure 7: *Working principle of the pumping kite power system*



Resource: Van der Vlugt, 2013.

There are several different concepts and configurations of AWE systems (Cherubini, et al, 2015; Diehl, et al, 2017). A comparatively simple one is the pumping kite power system illustrated in Figure 7. The kite consists of a flexible membrane wing that is steered by a suspended kite control unit (KCU) and tethered to a drum on the ground which is coupled to a generator.

When reaching the maximum tether length, the kite is depowered and retracted, using the generator as a motor and consuming a fraction of the formerly generated energy. The change of the flight patterns between reel-out and reel-in phases results in a net energy per pumping cycle (Van der Vlugt, 2013; Van der Vlugt, 2019).The main objective of the control algorithm is to ensure a robust and safe flight operation of the kite.

3.1.1.3. Balloon type: This model is based on Magnus effect. The airborne unit is filled with light gas (Helium) and the rotating cylinders are arranged. These cylinders rotate due to high altitude and the mechanical energy is transmitted through the tether (Perković, et al, 2013).

They utilise a power source in high altitude winds that is stronger and more constant than wind nearer the ground. Therefore, intermittent power

surges and breaks are far less likely. And more power can be obtained. They are relatively cheap to produce – unlike the ground or sea-based wind turbines. Balloons are light and portable, they can be deflated. Non-polluting and constantly renewable energy source. Versatile – especially suitable for isolated communities or workplaces. Easily brought into action in emergencies. Little maintenance required. Safe and environmentally friendly.

High altitude balloons for generating electricity are still in the early stages of development. But the massive ground-based wind turbines probably can't be made much more efficient or cheaper to produce. The potential for harnessing the power of the wind at this higher level, where the winds are constant and strong, makes this a very exciting field. There is a huge potential for extracting energy. It is there for the taking. And the versatility and manoeuvrability of the balloons, make this a very attractive renewable-energy option.

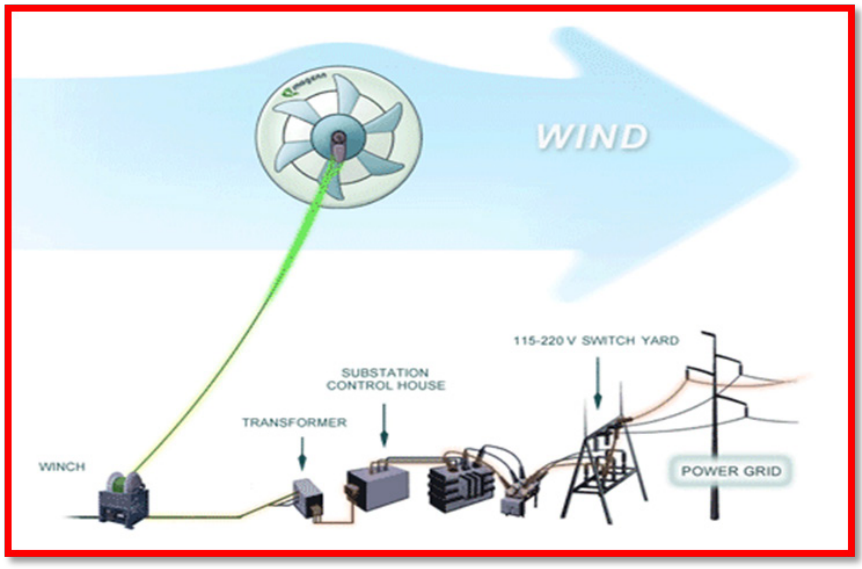
3.1.2. Fly Generation System

The other category of HAWES is Fly generating system. In these systems, the electrical energy is generated at the airborne unit and is transmitted to the sub-station located at ground through the tether cable. This type of systems consists of copter or aerostat, generator, converters and tether cables. The airborne unit is propelled to the preset elevation by the generator, which acts as a motor during the lift. After reaching high altitude, the machine acts as a generator. The electrical energy produced by the generator is converted to a suitable power level through converters. These systems are categorized into two types based on configuration: 1. Aerostat Model 2. Copter Model.

In Fly-Gen HAWESs, electric energy is produced onboard of the aircraft during its flight and it is transmitted to the ground trough one special rope which integrates electric cables. Electrical energy conversion in FG-HAWESs is achieved using one or more specially designed wind turbines.

3.1.2.1. Aerostat ın this model: the Aerostat is filled with light weight gas such as hydrogen and helium. A generator, converter and control units are placed inside the Aerostat. During the launching phase, the turbine acts as a propeller while the generator as a motor (Kolar et al, 2013). The entire unit is supported by an electrically conducting tether cable (Perković, et al, 2013). The generated power is transmitted to the ground through these cables (Ramesh et al, 2012).

Figure 8: *Magenn Air Rotor System (MARS)*



Resource: Chaudhari, 2015: 313.

The system Magenn air rotor system (M.A.R.S.) is one of the types of Offshore Wind Turbine. This kind of turbine is lighter than the air. It uses the wind power to produce electric energy. The reason why it is possible to stay in higher level of atmosphere is the Helium that is used to fulfill the turbine. This helps the turbine to be in areas where wind has higher speed, than on the lower levels of atmosphere. The M.A.R.S. spins around the horizontal axis following the wind direction (Figure 8).

3.1.2.2. Copter: In this model, airborne unit consists of several turbines which are placed as an array. These turbines are controlled to keep the airborne unit afloat. Several researchers are developing various prototypes and some of those like Google's Makani, Sky wind Power and Joby Energy are prominent.

4. THE ADVANTAGES AND DISADVANTAGES FOR HIGH ALTITUDE WIND POWER

Conventional wind power plants is always installation in rural where is a low electricity demand. Conventional wind power plants can't be installation in the city where is need more electricity demands, that means need long-distance transmission to supply the electricity. But the high altitude wind power generation equipment can be freely arranged in the airspace if with the ordinance of no-fly, so that will not occupancy any lands, also will not impact the surrounding landscape.

For the environment, the high altitude wind power does not like conventional wind power, will not make any noise to influence the around residents or wild animals because of the blades to rotation. Also the high altitude wind power doesn't relate to fossil fuel, so will not produce carbon dioxide or other pollutants. And because wind itself does not contain any contaminants, therefore will not cause any environment pollution. The economic benefit of high altitude wind power has a high efficiency. That is a significant way to replace the fossil fuel to reduce the generation of toxic gases.

However, airborne wind energy systems are not without their disadvantages. Bad weather in the form of thunder and lightning strikes pose very serious risk to the destruction of any airborne device. No power is generated if the device is retracted during bad weather. Safety hazard as the airborne devices and power cables may become detached or damaged falling to the ground. Public acceptance of these large floating airborne devices over land and residential areas. Design and control challenges of these autonomous systems in all wind and weather conditions. Kites and wings must be light and durable to fly in the high altitude winds. Electrical energy losses in the long conducting cable from the airborne generating system to the ground. Tether drag due to large diameter tethers that must survive many duty cycles of varying load, for ground-based systems. And the high altitude wind power generation equipment need to maintenance to ensure the safety when to flight and working, case the maintenance cycle is frequent, hence the cost of the 19 maintenance will relate increase (Bronstein, 2011).

High altitude wind power generation will operate in the high altitude airspace, so even if to set the whole system far away from over the city, and also has set up a commercial no-fly airspace ordinance, once the hurricanes and other natural disasters coming, it can resulting a series of flight accidents happened by the equipment crashed, that will bring dangerous to the people who live in the building and the wild animals surrounding the areas where nearby the flight crashed airspace.

When people walk on the streets and feel the wind blowing in the face, which those wind cannot provide electricity for the city where people live. However, a wind machine placed in the high altitude above the city can provide electricity depends on the theory, the wind that will be captured to provide electricity was called high altitude wind energy. Then range of high altitude wind energy in typically indicate at least above from the ground for 3 kilometers away, can be high more than 10 kilometers. Since the energy was be contained in this airflow can highly reached 100 times than the annual energy that was be needed in global. The jet stream arises because of solar radiation leads to the temperature difference between the

tropics and the poles; the temperature difference leads to changes the air pressure, resulting to produce wind. The reason why the jet stream runs so fast because of the high altitude space was located far away from the ground which with temperature difference and almost not influenced by the friction. Thus, only very little energy is required to produce and maintain the airflow.

The average wind speed changed with the height in spring and autumn is similar as the annual average wind speed, but is obvious different for the vertical distribution in winter and summer. From the following, we can easy see that the available range of height altitude wind power we can harness is between ground and 12000m. Between the available range of high altitude wind power, the wind power density will increase followed by the increased wind speed, so the converted power P will be corresponding increase by the wind turbines. But at same time due to the change of seasons, the wind speed in the same level of high altitude wind power also will changed, therefore to reasonable and regular use the high altitude wind power is very necessary, that can provide a very impressive renewable energy resource to human race (Ren, 2009).

5. CONCLUSIONS

High altitude wind energy is currently a very promising resource for the sustainable production of electrical energy. The amount of power and the large availability of winds that blow between 300 and 10000 meters from the ground suggest that Airborne Wind Energy Systems (AWESs) represent an important emerging renewable energy technology.

The untapped wind potential at high altitudes can be utilized for generating electric power through HAWES. There has been tremendous research happening all over the world which resulted in various models of HAWES. Due to the interdisciplinary nature of these systems, significant developments in fields like material science, control, power electronics, machine design, aerospace and power systems were made. Although there is some advancement in technology, many challenges like stability, grid integration, optimal utilization of energy storing devices, etc. are still to be addressed. Due to these reasons, harnessing the wind energy at high altitudes is at the nascent stages restricting it to the laboratories.

High-altitude wind energy could be a major enhancement in the wind power industry. If feasible on a bigger scale, more research can be done around the world. At the moment, wind turbines planted on the ground or floating in offshore areas are limited to how the wind blows near the surface, and that constantly changes on a daily basis. There’s still a lot to figure out with high-altitude wind farms, such as how much it would cost to build them and how they would play with frequent air traffic in the sky.

Airborne wind energy have great potential to lower our reliance on battery power while being a more consistent source of energy.

During the research and development process, some key technical difficulties of high altitude wind power and a series of environment impact should be consider were all have been described. For this very impressive development prospects 27 project will certainly attract a lot of capital investments. And the materials can use the light-weight carbon fiber with high strength. Detection and control system are all have mature technology, while before the large meteorological disaster comes can rely on weather forecasting techniques to avoid accidents. The real difficulty is lack of the attention and intervention from various national governments, since the establishment of no-fly zone to set up air traffic control need to get the support from the government (Bolonkin, 2011).

Such a strong and steady high altitude wind provide a huge renewable energy resource, after to solve the technical difficulties, the reasonable to harness high altitude wind power not only can end the long-term demands for fossil fuels, but also can protection the environment in maximum. In the next years, a rapid acceleration of research and development is expected in the airborne wind energy sector. Several prototypes that are currently under investigation will be completed and tested.

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Chapter 9

THE EFFECTS OF MONETARY POLICY DECISIONS ON FINANCIAL STABILITY IN TURKEY

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1. INTRODUCTION

Financial stability is one of the primary objectives of central banks along with price stability. Developments in the financial markets are extremely important behind the 2008 global financial crisis, which adversely affects the economies of developed countries. Accordingly, since the early 1990s, the focus of monetary policies has been to achieve price stability as well as financial stability. Especially in the European Union countries where inflation rates are low, the fact that only price stability performance is not sufficient to avoid the crisis increases the importance of financial stability. Within this framework, taking macro prudential measures to ensure financial stability and the implementation of monetary policies are the main issues of the central banks of many developed countries.

In order to ensure the financial stability of the growing importance of monetary policy was reflected in Turkey and especially since the end of 2010. Significant changes have been made in the area of monetary policy. So focused on price stability based on inflation targeting regime implemented in Turkey since 2006, it has been extended by a financial stability objective of monetary policy approach. The main framework of this practice, called the new monetary policy approach, is the diversification of monetary policy instruments aimed at financial stability under the current inflation targeting regime. Thus, it is aimed to achieve the objective of price stability and financial stability together. The new monetary policy approach is still valid for the implementation of policies that contribute to financial stability through measures taken in the axis of banking system.

Impact on the financial stability of the new monetary policy approach in Turkey, the monetary policy will be applied in future periods is important in terms of determining the shape. Monetary policy practices that contribute to financial stability will also increase the resilience of the economy against external shocks, thus ensuring a sustainable economic stability in general. The aim of this study was to investigate the relationship between financial stability and monetary policies implemented in Turkey. In this context Central Banks have a broad range of responsibilities consisting of making regulations as to the liquidity aiming financial stability, maintaining an effective execution of the payment system, keeping credit sources available, joining effective supervision and regulation function, constructing the legal infrastructure, applying a short term interest rate policy and as a conclusion trying to decrease the financial stress

2. CONCEPT OF FINANCIAL STABILITY

Although the concept of financial stability is generally controversial, it means that the financial markets and the major financial institutions operating in these markets are stable. This definition means that financial institutions are sound, in other words, they have sufficient capital to cover their losses in ordinary and extraordinary situations. Market stability does not generally mean stability in asset prices. Even in stable markets, excessive volatility can be observed in asset prices. On the other hand, market stability means that there is no volatility with significant real economic consequences. The definition of excessive volatility and which volatile asset prices cause volatility or instability in the overall financial market is controversial. The concept of financial stability is often addressed in terms of avoiding financial crises, but also in terms of managing systemic financial risk1. If systemic risk is well managed, then systemic financial crises will probably not occur. Systemic risk management; market risk management market participants and banking supervision, market surveillance and systemic risk management is performed by the state authority (Schinasi, 2003: 4).

Another definition is financial stability; Financial intermediation is the ability of a financial system consisting of financial intermediaries, markets and market infrastructure to eliminate financial imbalances and to resist shocks. This reduces possible irregularities in the financial intermediation process, which significantly undermines the distribution of savings to profitable investment opportunities. In this context, achieving financial stability requires identifying the main sources of risk and fragility. Such resources include the inefficiency of the distribution of financial resources from the owners to investors and the mismanagement of the financial risk and wrong pricing. In this sense, it is necessary to identify vulnerabilities and risks, because the pursuit of financial stability should be forward-looking. In other words, inefficiencies in pricing and risk management, or inefficiencies in capital allocation, can lead to financial stability and economic stability in the future when they constitute the basis for fragilities (ECB, 2013: 5).

Financial vulnerabilities are considered in four groups. These;

(i) Excessive reductions in bank profitability due to credit losses and poor economic environment.

(ii) Renewal of tension in sovereign debt markets due to low growth and slow reform practices.

(iii) Difficulties in bank funding in stressful countries.

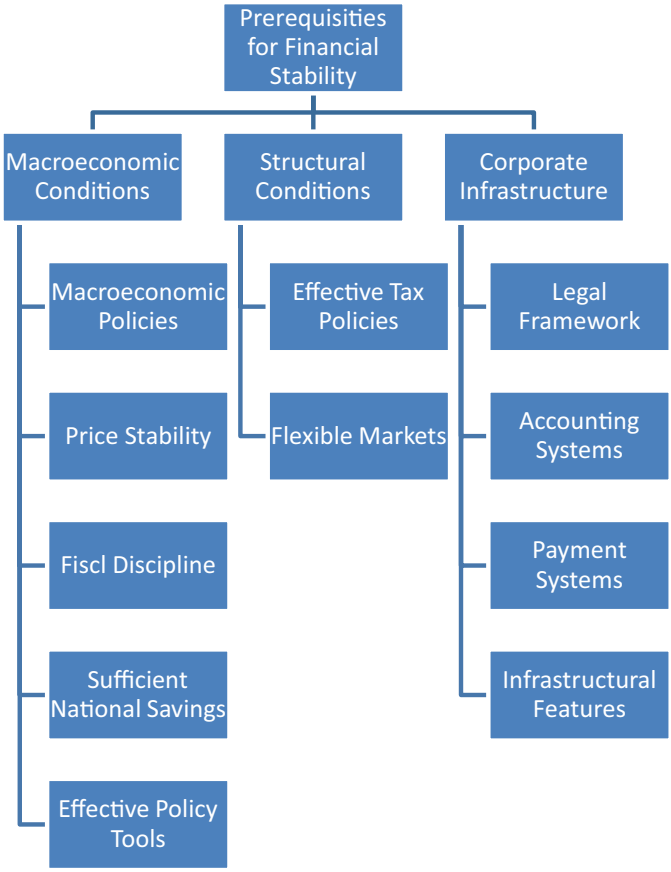
(iv) Reassessment of the risk premium in global markets due to prolonged capital inflows to secure ports and prolonged return-seeking periods.

According to Donath and Cismaş (2008), the concept of financial stability is mostly defined as avoidance of financial crises but also refers to the management of systemic financial risk. Good management of systemic financial crises reduces the likelihood of these crises. The management of systematic financial crises takes place through the special risk management of market participants and through the banking supervision and supervision of the authorities.

3. **PREREQUISITES FOR FINANCIAL STABILITY**

In order to ensure financial stability, some prerequisites must be met. These conditions are divided into various subheadings according to Donath and Cismaş (2008). These subheadings are shown in Figure 1. The first is related to macroeconomic policies. Sustainability of economic policies is an important condition for financial stability. The growth rate, which is close to the potential growth rate, causes the uncertainties in the economy to disappear. Achieving price stability promotes long-term contracts and minimizes relative price uncertainties and distortions. In addition, public deficits and public debts should be sustainable and reasonable. It is necessary to diversify the public debts in terms of maturity and foreign exchange. National savings need to be sufficient to finance domestic investments without unsustainable external borrowing. Macroeconomic policy instruments should be consistent and sufficient with the exchange rate regime: Monetary authorities should be independent in pursuing price stability. In addition, public authorities should be able to control public expenditure and collect sufficient revenues.

Figure 1: *Prerequisities for Financial Stability*



Source: Donath and Cismaş (2008: 31-40)

The second prerequisite for achieving financial stability is the structural conditions in the real economy. Under this condition, tax regimes should be stable and predictable. In addition, flexible, competitive and efficient markets that affect financial incentives are required. The third of the prerequisites for financial stability is the establishment of a corporate infrastructure that enables the efficient functioning of financial markets. For this, the legal framework to which the financial markets are subject is required. The legal framework should clearly define the responsibilities, obligations and rights of the parties in financial transactions; identifying codes that support market forces in providing adequate information and appropriate incentives; provision of means to strengthen legal rights and obligations. The accounting systems considered within the framework of the institutional infrastructure include meeting the information required by the financial markets. High quality accounting systems are essential to

ensure transparency in the transactions required for market discipline and effective internal management. Other contents of the corporate infrastructure are payment systems and market-specific infrastructure features for the execution of transactions.

4. LITERATURE REVIEW

Schwartz (1995) states that a monetary policy implementation aiming at price stability has an aspect that prevents financial system fragility in terms of both the formation chance and efficiency. In addition, he finds that central banks, which are successful in maintaining monetary stability, reduce the necessity of making interventions as the ultimate lending authority, albeit implicitly. This determination is based on the justification that the main source of financial instability is the fluctuations in the price level.

Sanchis et al. (2007) examined the effect of monetary policy on financial stability between 1981 and 1999 with the help of data from 79 countries. Dummy variables representing systemic and non-systemic bank crises were used as dependent variables. Various financial and macroeconomic variables were used as independent variables. In this study, although the central bank independence is one of the important variables in explaining the financial crises, it is concluded that the effect of the degree of independence is not linear.

De Graeve et al. (2008), using the banking sector and macroeconomic data for Germany between 1994 and 2005, examined the relationship between the stability in the banking sector and the real economy. The study for German banks concluded that there was a trade-off between monetary policy and financial stability. In this study, the probability of banks going into crisis was used as dependent variable and various bank-based and macroeconomic variables were used as independent variables.

Granville and Mallick (2009) examined the relationship between monetary and financial stability by using quarterly data for 12 countries included in the European Monetary Union between 1994 and 2008. Effect-response functions were used in the study based on VAR model.

Soedarmono et al. (2011) examined whether the Asian banks are prone to moral danger after the 1997 Asian crisis with panel data and the Generalized Moments Method (GMM) covering the period 2001-2007.

Michalak and Uhde (2012) examined the impact of credit risk securitization on the soundness of the banking sector by using panel data from 13 countries and Switzerland between 1997 and 2007.

Hallak (2012) examined the relationship between private sector external debt and financial stability by using monthly data for 1990-2006 for developing countries.

Albulescu (2012) examined empirically the macroeconomic variables affecting financial stability by using quarterly data between 1999 and 2011 in the euro area countries.

Bordo (2018) take two key historical examples stand out in the record of serious financial crises which were linked to credit driven asset price booms and busts: the 1920s and 30s and the Global Financial Crisis of 2007-2008. The question that arises is whether these two 'perfect storms' should be grounds for permanent changes in the monetary and financial environment.

5. **METHODOLOGY**

In this study, ROA, ROE, CAR and EXCHR variables are considered as dependent variables and four different models are formed. Monetary variables, which are considered as independent variables, are selected from the variables used by the CBRT in monetary policy applications or directly or indirectly affected by these practices. These variables are % change in O/N interest rate, inflation rate calculated on special CPI axis and % change in M1 money supply. The overnight interest rate of the central bank is the upper corridor interest rate funded by the CBRT. This interest rate is the main monetary policy instrument used by the CBRT to ensure price and financial stability. The inflation variable calculated on the basis of the special CPI axis also reflects the monetary policy implementations of the CBRT. The index refers to the index excluding energy prices, food and non-alcoholic beverages, alcoholic beverages, tobacco products and gold. The change in M1 money supply is another important factor in determining the impact of the monetary policy implementations of the central bank on financial stability.

Explanations regarding the data used in the study are presented in Table-1.

Table 1: Variables Used in Analysis

Variable Symbol	**Variable Name**
CAR	Capital Adequacy Ratio
ROA	Return of Assets
ROE	Return of Equity
EXCHR	% change in $/TL
POL	Policy Interest Rate
INF	Inflation for Special CPI
M1	% change in M1 Money Supply

The CBRT can carry out foreign exchange transactions in order to realize the changes in the exchange rate around the desired parity level in the economy and in response to the extreme changes in the USD / TL

parity. It does this through foreign exchange buying / selling auctions or direct trading. These transactions made by the CBRT affect the exchange rates and this affects the bank balance sheets. The data used in the analyzes were compiled from the database of CBRT and BRSA and Eviews 9 package program was used in the analyzes. The data consists the 2010:Q1-2019:Q4 period.

6. **RESULTS**

1.1. **Stationary Results**

One of the most important aspects of time series should be examined; is the determination of the stasis of these series. In order to obtain econometric meaningful relationships between variables; the analyzed series should be stationary series. The stop of the series was tested by Augmented Dickey Fuller Unit Root Test unit root test.

Table 2: ADF Test Results

CAR	Level	-0.795410	%1	-2.632688	Prob.
			%5	-1.950687	0.3643
			%10	-1.611059	
	1st Difference	-6.306599	%1	-2.632688	Prob.
			%5	-1.950687	0.0000
			%10	-1.611059	
EXCHR	Level	0.766664	%1	-2.641672	Prob.
			%5	-1.952066	0.8742
			%10	-1.610400	
	1st Difference	-7.119164	%1	-2.639210	Prob.
			%5	-1.951687	0.0000
			%10	-1.610579	
M1	Level	-0.156047	%1	-2.647120	Prob.
			%5	-1.952910	0.6211
			%10	-1.610011	
	1st Difference	-5.630743	%1	-2.647120	Prob.
			%5	-1.952910	0.0000
			%10	-1.610011	
POL	Level	1.400066	%1	-2.628961	Prob.
			%5	-1.950117	0.9571
			%10	-1.611339	
	1st Difference	-4.222318	%1	-2.630762	Prob.
			%5	-1.950394	0.0001
			%10	-1.611202	

ROA	Level	-1.084587	%1	-2.636901	Prob.
			%5	-1.951332	0.2460
			%10	-1.610747	
	1st Difference	-1.953447	%1	-2.636901	Prob.
			%5	-1.951332	0.0498
			%10	-1.610747	
	2nd Difference	-54.22003	%1	-2.636901	Prob.
			%5	-1.951332	0.0000
			%10	-1.610747	
ROE	Level	-4.636012	%1	-2.628961	Prob.
			%5	-1.950117	0.0000
			%10	-1.611339	

When the ADF test statistic shown in the tables is examined, it is absolutely smaller than the Mac Kinnon critical values at 1%, 5% and 10% significance levels. H0 hypothesis cannot be rejected because the values are greater than the critical values, and the series are not stationary. Since it is less than the critical value of 0,05H0 hypotheses are rejected and it is assumed that there is no unit root problem in the series and the series are stationary. As a result, because the series was not stationary, differences were obtained from the first order (ROA series was not used because it was stationary in the second order.

1.2. **ARDL Results**

ARDL Boundary Test or delayed autoregressive boundary test, M.H. The test developed by Pesaran and Y. Shin in (2001) is a model used to test the concept of cointegration, which states that there are at least two non-stationary series of levels. It is a model for capturing long and short-term causal relationships. In this cointegration test, as in the other cointegration tests, there is no requirement that the cointegration relationship between them be equally stable.

It is possible to apply the boundary test regardless of whether the variables to be used in the model are stationary at the level or stationary at the first difference. For this reason, it is not necessary to determine the degree of stability of the variables before applying the boundary test. Since the ARDL model cannot be applied to the stationary variables in the second difference, the variables should be tested against the possibility of being stationary in the second difference.

Since the ARDL approach uses an unrestricted error correction model, it has better statistical properties than the Engle Granger test and yields more reliable results in small samples than the Johansen and Engle-Granger tests.

Table 3: CAR ARDL Results

Test Statistic	Value	k
F-statistic	4.034028	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
% 10	2.37	3.2
% 5	2.79	3.67
% 2,5	3.15	4.08
% 1	3.65	4.66

Accordingly, since the F-statistic value is greater than the upper limit values, there is a long-term relationship between the variables at 5% significance level (the null hypothesis suggesting that there is no long-term relationship is rejected).

The error correction term coefficient (-0.34), as it should be negative and statistically significant, confirms the long-term relationship.

It shows that short-term deviations from the long-run equilibrium between the variables have improved towards the long-term equilibrium by 34% in each quarter.

Table 4: ROE ARDL Results

Test Statistic	Value	k
F-statistic	8.676367	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
% 10	2.37	3.2
% 5	2.79	3.67
% 2,5	3.15	4.08
% 1	3.65	4.66

Table 5: EXCHR ARDL Results

Test Statistic	Value	k
F-statistic	9.103126	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
% 10	2.37	3.2
% 5	2.79	3.67
% 2,5	3.15	4.08
% 1	3.65	4.66

Accordingly, since the F-statistic value is greater than the upper

limit values, there is a long-term relationship between the variables at a significance level of 1% (the null hypothesis suggesting that there is no long-term relationship is rejected).

1.3. **Granger Causality Test Results**

In the causality analysis, only the two-way causality relationship was determined between M1 and inflation, while the one-way causality relationship was determined among the other variables (shown in red).

Apart from this, no causal relationship has been found from CAR to POL and ROE. The results of the analysis are presented in Table-6.

Table 6: Granger Causality Tests

H0 Hypothesis	df	All	P Value
CAR does not Granger Cause INF	2	0.0000	0.3036
EXCHR Granger Cause INF			0.0008
POL, Granger Cause INF			0.0028
M1 Granger Cause INF.			0.0630
ROE, does not Granger Cause INF			0.6996
CAR Granger Cause EXCHR.	2	0.0052	0.0110
INF does not Granger Cause EXCHR.			0.3504
Pol, Granger Cause EXCHR			0.0522
M1, Granger Cause EXCHR			0.0278
ROE, does not Granger Cause EXCHR.			0.5601
CAR, Granger Cause M1.	2	0.0006	0.0082
INF, Granger Cause M1.			0.0151
EXCHR, does not Granger Cause M1			0.1249
POL, does not Granger Cause M1			0.1225
ROE, Granger Cause M1.			0.0069

7. **CONCLUSION AND EVALUATION**

The concept of financial stability is not as clear as price stability. In other words, there is no consensus on the definition of financial stability yet. However, when the relevant literature is examined, it can be said that financial stability generally means stability in financial markets and payment systems and resilience against possible shocks. This difficulty in defining the concept also arises in terms of measurement. Financial stability does not have a single measurement method such as price stability. For this reason, financial stability indices are tried to be formed by taking various indicators as reference.

Recently, the relationship between financial stability and monetary policy and its results has become very interesting. The main reason why financial stability is evaluated together with monetary policy is the important roles of central banks. Following the 2008 global financial crisis,

the CBRT aims to achieve financial stability in line with its price stability target. Within this framework, it has diversified its existing pool of monetary policy instruments and started to use these instruments effectively for financial stability. 2000 and 2001 on the basis of the banking sector impact despite 2008 from the global economic crisis to be deep within the scope of Turkey was put into practice after the experience of the crisis Transition to Strong Economy program has almost succeeded in leaving an undamaged way.

In the monetary policy process of the CBRT, there are various practices aimed at financial stability. The CBRT and BRSA operate in interaction with these implementations. In this study, it is aimed to reveal the effects of monetary policy applications on financial stability. In this context, the effects of independent variables compiled from the monetary policy instruments of the CBRT on the variables that are accepted as financial stability indicators are analyzed. In the analysis using ARDL approach, since the F-statistic value is greater than the upper limit values, there is a long-term relationship between the variables at 5% significance level for CAR, EXCHR and ROE.

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Chapter 10

A RESEARCH ON THE DETERMINATION OF THE OPINIONS AND EXPECTATIONS OF ACCOUNTING PROFESSIONALS ABOUT E-TRANSFORMATION PRACTICES: SAMPLE OF VAN PROVINCE

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1.INTRODUCTION

Sustainable competition factors such as the speed of information processing systems, quality and cost caused changes in customer expectations and paved the way for the e-transformation process in the world. E-transformation means the culture, business structure and processes, organizational structure of an institution; It is an information and communication technologies focused system that aims to change it completely for the benefit of employees, customers, stakeholders and potential stakeholders and can submit it in e-environment if desired. In this context, e-transformation perspectives have been investigated in their activities in order to ensure that accounting professionals can effectively benefit from computer technologies, use computers as a support tool in accounting, and perform electronic recording, reporting, analysis and control elements of accounting in the shortest time and with the least error (Kulak,2019:1).

Electronic transformation process in Turkey has started with the e-government project. One of the applications within the scope of this project is the Tax Office Automation Project (VEDOP), which was implemented in 1998 by the Revenue Administration (Revenue Administration), an affiliate of the Ministry of Finance. VEDOP project, by making all transactions made in the tax office can be done by computer; It was aimed to reduce the workload, increase the motivation and productivity of the personnel, and to create a reliable decision, support and management information system from the data and information obtained through computers (Kibar Bilginli, 2011: 174-175). E-transformation in accounting started with e-document systems such as e-invoice, e-ledger, e-declaration, e-archive and e-notification developed within the scope of the project. E-Invoice is a system that allows compulsory invoices to be created, recorded, archived electronically and submitted when necessary, according to the VUK and TCC (Kara and Yılmaz, 2017: 229). It is presented, signed with a financial seal to ensure its invariance. E-invoice has the same qualities and legal features as paper invoices (Gülten, 2018: 58). Taxpayers who want to use the e-invoice application can issue invoices only to those who are registered in the e-invoice system. In the same way, taxpayers who want to receive an e-invoice can receive invoices from the taxpayers who issue invoices through the application provided by the Revenue Administration (RA). Therefore, taxpayers who want to issue an e-invoice or receive an e-invoice are obliged to be registered e-invoice users in the RA system (Kara and Yılmaz, 2017: 229).

E-ledger is a set of regulations in which the compulsory books are prepared as electronic files, recorded on paper without being printed, and the integrity, integrity and accuracy of the source are ensured with a

financial seal or electronic signature (Doğan & Tercan, 2015). E-ledger is an e-application that removes the necessity of organizing the notebooks in a paper environment and thus saves the taxpayers from the burden of printing, approval and archiving on paper. In addition, since it allows the audit and reporting to be kept as standard data, the expected benefit from him will be better understood in the upcoming periods (Doğan & Tercan, 2015). In order to use the e-ledger, it must be prepared on the basis of Extensible Business Reporting Language (XBRL), which is a standard in Extensible Markup Language - Extensible Markup Language (XML) format (Kara and Yılmaz, 2017: 225).

The e-waybill application is defined as "the application that covers the regulations regarding the arrangement of the delivery note prepared in paper environment, its transmission in electronic environment, its storage and submission". Certain sectors and taxpayer groups have been obliged to switch to e-delivery note application with the Tax Procedure Law General Communiqué No 509. With the e-delivery note application, it is aimed to monitor the movement of goods electronically (GİB, 2020a). As of August 2020, 77754 users are using the e-delivery note application (GİB, 2020b).

Electronic archive allows the electronic preservation and submission of the second copy of the invoice created electronically (Tektüfekçi, 2016: 164). E-archive is an application that enables the electronic storage and reporting of invoices determined by authorized institutions. E-archive enables companies and individuals who are not included in the e-invoice system to send invoices electronically and also to keep the invoices sent. E-commerce sites with a turnover above a certain amount are required. Only archived e-archive invoices are reported to the Revenue Administration. The e-archive application reduces costs and saves time by performing transactions electronically instead of filed invoices. It was published in the Official Gazette on 25 August 2011 and entered into force. Thanks to this regulation, users can take advantage of services such as receiving and sending electronic messages in a reliable environment and keeping these documents (Eşer, 2018: 81).

2. LITERATURE

The findings of major national and international studies on electronic transformation and applications in accounting are given below.

Amidu et al. (2011) was conducted to investigate e-accounting practices among SMEs in Ghana and to examine the expectations, realities and barriers to adoption of e-accounting by professional accounting professionals. The research design is based on a survey methodology using a systematically selected sample of SMEs across the country. Findings show that SMEs are starting to use e-accounting software to create their financial information.

Noronda and Kulkarni (2012) applied the questionnaire form they developed to 40 sworn accountants with the method of face-to-face interviews in their study, which was conducted in order to determine the opinions of accounting professionals working in India on e-accounting and there was no study on this subject in India. According to the findings presented by creating descriptive statistics, e-accounting offers new opportunities for accounting professionals above all. But the new working environment formed; It is created in a very difficult way due to the lack of knowledge of the employees and the companies' adoption of e-accounting. For this reason, it was stated that some standards should be developed and put into practice in India for the said transactions.

Spoz (2014) mentioned the problems encountered during e-invoice applications of enterprises operating in Poland. It has been said that e-transformation is becoming widespread in the world and in Europe, but it is not at the desired level in Poland. Reasons such as instability, insufficiency of legal regulations, lack of information on e-applications, insufficient internet infrastructure were cited as the reason for this.

Lian (2015) conducted an empirical study in order to understand the e-invoice application, which has been used as a new application in Taiwan. According to the results of the study conducted with 251 valid questionnaires, they concluded that gender, social influence and behavioral intention are determinants in decision-making between perceived risk level and trust in e-applications.

Marinagi et al. (2015) conducted a field study to examine the use of electronic invoices in Greece. According to the survey data obtained from 42 enterprises, it was emphasized that although the rate of use of e-applications in Greece is low, its acceptance is promising. In the study, especially the factors that prevent the use of e-invoices were emphasized. Accordingly, insufficient knowledge and lack of management support were shown as two main problems.

Kara and Yılmaz (2017) stated that in the study on the use and applications of e-documents by accounting professionals in Van, new developments in XBRL technology will attract more attention with applications such as e-books and e-invoices.

The research carried out by Garip and Karasioğlu (2019) was carried out in order to identify the problems faced by the professional accountants who use e-applications intensively during the e-transformation process and to offer solutions to these problems. For the purpose of the research, a survey was conducted with 138 professionals registered in the Chamber of Independent Accountants and Financial Advisors in Karaman. As a result of the analysis made after the data was collected, it was determined

that the members of the profession think that the biggest problem with the e-transformation process is the lack of qualified personnel.

Kulak (2019), in his study to investigate the opinions of accounting professionals in Malatya on e-accounting, applied the questionnaire form, which was developed using the literature and consists of 2 parts and 29 questions, to the professional accountants with the method of face to face interview. A questionnaire was administered to 104 professional accountants. As a result of the study, they found a positive and significant relationship between accounting professionals and e-transformation.

In the study conducted by Çıtak and Baskan (2020), a questionnaire was applied to 51 professional accountants registered in Kırıkkale Chamber of Independent Accountants and Financial Advisors. In the study, it was aimed to determine the opinions of accounting professionals about the effects of electronic developments in accounting on accounting professional ethics. As a result of the survey application, it was determined that e-transformation practices affect professional ethics behavior, support professional care, lack of infrastructure of employees affects accounting professional ethics behavior, and lack of training on e-transformation affects the understanding of professional accountancy. No difference was found between the effects of e-transformation on angelic ethics according to the demographic characteristics of accounting professionals.

3. RESEARCH METHOD AND FINDINGS OBTAINED

In this section, the purpose of the research, method, used techniques and findings will be explained.

3.1. Purpose and Scope of the Research

The aim of the study is to evaluate the opinions of professional accountants who are one of the users of e-applications that take place in all areas of our lives with the e-transformation process. In this direction, the aim of the study is; To determine the opinions and expectations of accounting professionals about the e-transformation process and to offer solutions for the problems that arise as a result of the research. The research was applied to the accounting professions working in the province of Van in the Eastern Anatolia Region. The research was carried out in the province of Van due to the accessibility to the main mass and the availability of professional accountants with sufficient samples to be analyzed. The questionnaires were randomly selected from among 120 professional accountants operating in Van. Accordingly, 120 questionnaires consisting of 26 expressions were evaluated within the scope of the research.

3.2. Research Method

The research was conducted with the method of questionnaire. Before the research was done, it was examined in studies in this field. Afterwards, the basic data of the research were obtained by filling the questionnaire prepared with the professional accountants using face to face interview technique. While creating the survey questions, similar studies previously conducted in this field were used (Demir and Çam, 2001: 71-79). In addition, one-to-one and face-to-face meetings with accounting professionals were effective in the research process and in the preparation of the survey questions. In the preparation of the questionnaire form, Durmuş's (2018: 142) article titled "Opinions and Expectations of Members of Accounting Profession About Digital Accounting a Research in Malatya Province" was used in his work titled Reading on Technology and Knowledge Management. The questionnaire form consists of 2 parts and 26 questions and various statements. In the first part, the questions about the demographic characteristics of accounting professionals, and in the second part, the opinions of the accounting professionals about e-transformation practices are mentioned. In order to determine the opinions of accounting professionals about e-transformation practices, a five-point Likert scale containing expressions such as "I strongly disagree, disagree, undecided, agree and strongly agree" was used.

3.3. Research Reliability

Reliability of 26 questions in the questionnaire was measured by Cronbach's Alpha method and Alpha coefficient was determined as 0.910. When the reliability was measured for the 20 questions we used in this study, the Alpha coefficient was found to be 0.950. Since the minimum reliability level of 70% in social science research is considered sufficient, it can be stated that the level of reliability provided in the research is valid.

3.4. Research Findings

In this part of the study, firstly general or demographic findings related to the research will be given, and then findings related to determining the opinions and expectations of the accounting professionals participating in the study regarding the e-transformation process.

3.4.1. Frequency Analysis Results Related to Demographic Features of Accounting Professionals

It was analyzed with 6 questions prepared in order to obtain information about the demographic characteristics of accounting professionals participating in the study and the results regarding the analysis are as follows;

Table 1: Demographic Characteristics Of The Participants

Gender	***Frequency (f)***	***Percent (%)***		**The number of staff you employ in your office**	***Frequency (f)***	***Percent (%)***
Male	83	69		0-3 person	18	15
Lady	37	31		4-6 person	65	54
Total	120	100,0		7-9 person	37	31
Age	***Frequency (f)***	***Percent (%)***		10-12 person	-	-
25-30	14	12		13 person and above	-	-
31-40	40	33		Total	120	100,0
41-50	30	25		**Education Status**	***Frequency (f)***	***Percent (%)***
51-60	21	18		Associate degree	14	12
61 and above	15	12		License	96	80
Total	120	100,0		Post Graduate	10	8
Professional Activity Year	**Frequency (f)**	**Percent (%)**		Total	120	100,0
1-5 year	9	8		**Average frequency of using the Internet Tax Office (in a day)**	***Frequency (f)***	***Percent (%)***
6-10 year	25	21		Less than 1 hour	4	4
11-15 year	40	33		1-2 hour	10	8
16-20 year	25	21		3-4 hour	54	45
21-25 year	10	8		5-6 hour	42	35
26 and above	11	9		7 hour and above	10	8
Total	120	100,0		Total	120	100,0

The first part of the questionnaire consists of 6 closed-ended questions aiming to determine the demographic characteristics of accounting professionals.

According to Table 1, 69% of the accounting professionals participating in the study are male and 31% are female. The proportion of those who are 41 and under is 45% among professionals, while the rate of those aged 41 and over is 55%. It is observed that the participants are predominantly bachelor's degree and there are no doctoral graduates. Here, it is important for the members of the profession to turn to graduate education in order to follow the current developments in the field of accounting. It is seen that

62% of the participants have less than 16 years of professional experience. When the distribution of the personnel participating in the study according to the number of personnel employed in their offices is examined, it is seen that 54% of them have between 4-6 and 31% have 7-9 personnel. The existence of digital transformations that reduce the impact and number of staff members closely follow developments in information technologies as well as their professional knowledge, and push them to be able to use software related to their fields. When the frequency of using the Internet Tax Office in a day is examined, it is seen that 57% of the professionals use less than 5 hours.

3.4.2. Frequency Analysis Results Related to Knowledge Levels and Opinions of Accounting Professionals About E-Transformation Applications

20 questions were asked about the views and knowledge levels of accounting professionals about e-transformation practices and they were asked to mark their status according to the given options (I strongly disagree, I do not agree, I am indecisive, agree, absolutely I agree). The results of the analysis are as follows;

Table 2: Knowledge Levels And Views Of Accounting Professionals

Rate the questions below with a score of 1-5	I strongly disagree (%)	I do not agree (%)	I am indecisive (%)	I agree (%)	Absolutely I agree (%)
LEVEL OF KNOWLEDGE AND EFFORT EXPECTATIONS					
1.Adequate training is received on e-transformation applications.	3	54	4	36	3
2.Members of the profession have sufficient knowledge about e-transformation applications.	6	48	10	33	3
3.E-Transformation applications are simple and straightforward.	7	32	3	48	10
4.E-Transformation applications are easy to use.	5	27	3	50	15
5.Updates on e-transformation applications are followed.	3	20	6	54	17
6.E-Transformation has a positive contribution to business performance.	15	25	5	44	11
7.E-Transformation reduces the workload.	25	24	6	30	15

8 It is necessary to follow technology well in order to dominate e-transformation.	2	7	3	48	40
CONTRIBUTIONS TO THE ACCOUNTING PROFESSION					
1.E-Transformation applications make the accounting profession more efficient.	5	26	4	45	20
2.Members of the profession gain prestige thanks to the e-transformation applications.	28	35	7	25	5
3.Thanks to E-Transformation, unfair competition among professionals is decreasing.	28	30	6	32	4
4.E-Transformation will provide new opportunities and career opportunities to members of the profession in the future.	20	39	10	29	2
ASSISTANCE OF PUBLIC INSTITUTIONS AND ORGANIZATIONS (Revenue Administration etc.) HELPS					
1.Adequate information is provided by the Revenue Administration regarding e-Transformation.	5	30	9	50	6
2.Sufficient number of pilot implementations are made regarding the e-transformation	42	33	13	7	5
3.Sufficient technical support and feedback is provided by the Revenue Administration regarding the problems encountered with e-Transformation.	23	32	5	34	6
4.Due to the encryption and authorization used in e-transformation, it is considered that the relevant public institution has an adequate privacy and security network.	3	12	7	55	23
5.There are difficulties in accessing the relevant public institution regarding problems related to e-transformation.	5	31	4	45	15
COST AND PROFIT EXPECTATIONS					
1.E-Transformation increases personnel costs.	4	30	2	36	28
2.Extra costs are incurred due to the improvement of the technological infrastructure in the office.	3	4	3	58	32
3.Sufficient fees are charged from taxpayers for the services offered to businesses with the extra costs brought about by e-transformation.	30	43	6	17	4

According to Table 2, according to the members of the profession participating in the research, there is not enough training about e-transformation applications, Professional members do not have enough knowledge about e-transformation applications, e-transformation applications are simple and understandable according to the members of the profession, and e-transformation application is easy. They stated that they follow the updates on transformation practices, e-transformation contributes positively to business performance and reduces the workload, and it is necessary to follow technology closely in order

to dominate e-transformation. E-transformation practices make the accounting profession more efficient, e-transformation does not reduce unfair competition, e-transformation practices do not gain respect for professionals, e-transformation does not provide new opportunities and career opportunities to professionals in the future, Not enough information has been provided by the Revenue Administration, not enough pilot applications have been made about e-transformation, that there is not enough technical support and feedback by the Revenue Administration about the problems related to e-transformation, and because of the use of encryption and authority used in e-transformation. it is thought that the public institution has sufficient confidentiality and security network, there are difficulties in accessing the relevant public institution in the problems related to e-transformation - the transformation increases the personnel cost, extra costs are undertaken due to the technological infrastructure improvement in the office and e-return They stated that the taxpayers were not charged enough for the service offered to the businesses for the extra costs brought about by the cold.

Relationships between the knowledge level and effort expectations of professional accountants and their contribution to the accountancy profession, the assistance of public institutions and organizations, and their cost and earnings expectations were investigated with appropriate correlation analysis. Correlation analysis is a statistical method used to test the linear relationship between two variables or the relationship of a variable with two or more variables and to measure the degree of this relationship, if any. They have received sufficient training on e-transformation applications, that the members of the profession have sufficient knowledge about e-transformation applications, that e-transformation applications are simple and understandable according to the members of the profession, and they follow the updates on transformation applications where e-transformation application is easy, e- the transformation contributes positively to business performance and reduces the workload and it is necessary to follow the technology well in order to dominate e-transformation, e-transformation practices make the accounting profession more efficient, e-transformation reduces unfair competition, e-transformation practices gain respect to the members of the profession. , that e-transformation provides new opportunities and career opportunities for members of the profession in the future, that sufficient information has been provided by the Revenue Administration about e-transformation, that enough pilot applications have been made regarding e-transformation, the Revenue Administration Directorate on the problems encountered with the suffice by It is thought that the relevant public institution has sufficient confidentiality and security network due to the use of encryption and authorization used in e-transformation, problems related to e-transformation are experienced in

accessing the relevant public institution, e-transformation increases the cost of personnel, it was concluded that extra costs are incurred due to the improvement of the technological infrastructure and that the extra costs brought about by e-transformation are not paid enough from the taxpayers for the services provided to the enterprises.

4. CONCLUSION

Developments in information technologies have led to changes in all areas of life and in every profession. Technological changes in the field of accounting have affected businesses, public institutions and professional organizations, especially accounting professionals. With this digitalization in the field of accounting, systems such as e-invoice, e-ledger, e-declaration, e-archive, which are called electronic document applications, started to be used. With these electronic applications, records are now being kept and stored electronically, not by hand; Thus, results such as reduction in labor, paper, printing, mail, archiving costs, time savings, reduction in the risk of loss of documents, increase in efficiency and effectiveness of transactions, reduction of error risk in transactions, and increase in employee motivation. In addition, e-transformation applications in accounting have important contributions in preventing informality in the economy and increasing tax revenues. In addition to these contributions, there are a number of problems faced by professional accountants in the e-transformation process.

The aim of the study is to determine the opinions and expectations of the professional accountants who take an active role in the e-transformation process in accounting. As a result of the survey conducted with 120 members of the professions operating in the province of Van and being members of the chambers union, the positive opinions of the accounting professionals, the problems they draw attention and their expectations are as follows:

Electronic applications positively affected the professional accountants. Many records that were written by hand in the past years with the help of electronic applications are now kept electronically; Many hand-held books and documents are recorded and stored electronically thanks to electronic applications. With this application, the professional accountants involved in the one-to-one process were not easy to adapt to the process. Although the Ministry of Finance has opened many electronic applications for the use of taxpayers, it has not been possible to achieve electronic transformation with taxpayers who have almost no information infrastructure. Accounting professionals first participated in electronic transformation training with their own means and then through professional organizations and professional associations, took over their training expenses themselves and contributed to the increase of the success of the applications by sharing these trainings with their taxpayers. Accounting professionals state that they

have sufficient knowledge of digital accounting and have received training before, but they still need training on digital accounting and draw attention to the need for continuous training. Professional accountants think that the transition to digital accounting is not long enough and that there are not enough pilots in the transition. In addition, members of the profession are concerned about the problems that may arise from the use of e-passwords and authorization in terms of security and privacy. According to the members of the profession, it was stated that the Revenue Administration did not provide enough information about e-transformation, that there was not enough pilot implementation about e-transformation, that there was not enough technical support and feedback by the Revenue Administration about the problems encountered with e-transformation.

As a result, e-transformation applications, which emerged as a result of the integration of information technologies and accounting applications, were implemented as a legal obligation. One of the most important advantages that e-transformation provides to accounting professionals is that it has a positive contribution to business performance, reduces workload, makes the accounting profession more efficient, and gives the accounting profession respectability. As a disadvantage, we encounter extra costs due to the personnel costs and the technological infrastructure improvement in the office. It is thought that informing and raising the awareness of the members of the profession and taxpayers in e-transformation applications will provide the expected benefit from the practice.

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Chapter 11

WHY DO TURKISH CONSUMERS DRINK TURKISH COFFEE? AN EXAMINATION OF DETERMINANTS AND ATTRIBUTES

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INTRODUCTION

Why do Turks drink Turkish coffee? Which attribute of it they like the most? Is it because of its taste? Or is it because of its special presentation method? There is abundant literature on the heavy consumption of Turkish coffee by Turkish people. Its long history and its role in traditions and social life have long been studied by many researches (Acikgoz, 1999; Girginol, 2018; Hattox, 1988; Heise, 2008; Kucukkomurler and Ozgen, 2009; Pala, 2006; Republic of Turkey Ministry of Culture and Tourism 2013, Sheridan, 2004; Yilmaz, *et al.,* 2017). But surprisingly no research had been detected to study some aspects of Turkish coffee that have influence on satisfaction. It is widely known that Turks like Turkish coffee but it is still a mystery which components of it they like the most.

In their studies aimed at determining the consumption habits of customers visiting the cafes and pastry shops in Gaziantep Giritlioglu and Gundogan (2017) suggested that the most preferred type of coffee in cafe establishments is Turkish coffee with a rate of 55%. A recent study conducted by Temeloglu and Akdeniz (2019) showed that 41.8 % of the respondents consume Turkish coffee one or more cups per day. Data released by the International Coffee Organization (ICO) states that coffee consumption of coffee per capita in Turkey increased by 14% to 1186 grams in 2018. Turkish coffee with its special preparation, brewing techniques, and its rich communal culture made it worthy of being inscribed in 2013 into UNESCO's Intangible Cultural Heritage List. Turkish coffee is not only a drink but an integrated part of the culture. It has also been recognized as a symbol of friendship and hospitality, with locals meeting at coffeehouses to converse over coffee, or coffee being offered to visitors as a welcoming gesture. The beverage's importance in social occasions was also an important factor in its inscription, with coffee being served during holidays and being the most essential beverage of couples' engagement ceremonies (Republic of Turkey Ministry of Culture and Tourism 2013).

Turkish coffee with its heavy consumption and its importance as an integral part of Turkish community deserves more attention of researchers. More in-depth analysis should be carried out to understand both Turkish coffee and its consumers since Turkish coffee is nowadays faced with the danger of losing its traditional identity against modern Western coffee chains. Considerable amount of research shows that despite the heavy coffee consumption which was mainly limited to Turkish coffee in Turkey in the past, the consumption habits of Turkish customers is changing (Asik, 2017). Due to the increased interest in new coffee types of the Western World and rapidly developing coffeehouse chains in recent years in Turkey, consumption of Turkish coffee is subject to decrease.

Especially young people prefer new coffees prepared by Western methods in global café chains and show less interest in Turkish coffee (Yilmaz *et al*., 2016). In addition to the decrease in Turkish coffee consumption, Turkish coffee consumption is moving indoors (e.g. at home) (Asik, 2017) unlike consumption of third wave coffees outdoors (e.g. coffeehouses, brand name coffee chains).

Besides the risk of losing popularity, Turkish coffee recipes are subject to change due to oral preservation tradition of its preparation and presentation techniques. Traditionally, practices concerning the preparation and service of Turkish coffee have been based on the traditional knowledge of the performer. The knowledge, skills, know-how and rituals pertaining to the Turkish coffee consumption have been guided by the traits transferred from one generation to another within Turkish community, often from mother to daughter and/or master to apprentice. Turkish coffee tradition and culture have been attained by members of family through word of mouth, observation and participation. Beyond family, coffeehouses, as cultural spaces, have become venues where this tradition has been transmitted (Republic of Turkey Ministry of Culture and Tourism 2013). One such traditional trait, for example, is that '*lokum*' (traditional Turkish sweet) should be served along with the Turkish coffee. The domestic consumption of Turkish coffee and the traditional Turkish coffee culture at homes had formed the historical coffeehouses outdoors. In a way, Turkish coffee preparation and service practices have been preserved and transmitted orally through generations both at homes and coffeehouses resulting with numerous Turkish coffees with numerous flavors and aromas. The oral preservation of Turkish coffee tradition brings out the problem of safe-keeping and reliability that deserves to be extensively and systematically examined. These problems pose a number of questions regarding consumer satisfaction. Are Turkish coffee consumers satisfied with the coffee taken away from home? Which particular attributes of Turkish coffee are the primary concerns of them while evaluating their likeliness of Turkish coffee?

Besides oral tradition, Turkish coffee preparation and service have been undergone a transformation over the last couple of decades due to new developments and changes mainly in technology and society. Today, silver coffee pots and electronic Turkish coffee machines are used to prepare coffee both in homes and coffeehouses. Nowadays the ritualistic way of drinking Turkish coffee is being slowly replaced by Western way of coffee consumption. However, this change in Turkish coffee consumer's behavior has been investigated in a few researches (Karababa and Ger, 2011). Despite the ample research conducted by European and American researchers on coffee as a consumer product, the literature on Turkish coffee is scarce. Besides, the existing literature on Turkish coffee

focuses mainly on Turkish cultural heritage (Girginol, 2018; Goktas, 1994; Gursoy, 2007; Hattox, 1988; Heise, 2008; Kucukkomurler and Ozgen, 2009; Sheridan, 2004; Yasar, 2005) and Turkish coffee product attributes (Ozgur, 2012). Only two compiled articles which primarily focus on consumption manners of Turkish coffee customers (Karababa and Ger, 2011; Temeloglu and Akdeniz, 2019; Yilmaz *et al*., 2016) were detected. However the growing coffee market in Turkey necessitates more researches towards various facets of consumer behaviors and preferences of Turkish coffee consumers. In this sense, the satisfaction of Turkish coffee consumers is a great focus of this study. Therefore this paper will focus its attention on changing preferences of Turkish coffee consumers and their satisfaction levels with the product, preparation and presentation attributes of Turkish coffee they had away from home.

LITERATURE REVIEW

The lore of coffee began in Ethiopia in the ninth century and coffee drinking became widespread throughout the Arab world (where alcohol was forbidden) by 1500. Hattox (1988) suggests that early Syrian merchants introduced coffee from Egypt to Istanbul in 1.555 and used the coffeehouse as a marketing device. To attract new consumers coffee was presented to them hot and correctly brewed. Consequently, these Syrian merchants and many others from the Levant opened cafés in an unoccupied niche in Middle Eastern society. Restaurants were almost unknown, and taverns were forbidden to Muslims. In addition, the beverage became associated with Mohammed's birthday and was commonly drunk at night during the monthlong fast of Ramadan. Taking its origins from the prophet Mohammed as he gave it to the Muslim society to replace the wine that Islam forbade, Muslims were instrumental in spreading the beverage throughout world. After a couple of centuries, the beverage was enjoying a considerable popularity in Europe. Legend says that Europeans began to embrace coffee after the Ottoman Turks left some bags of coffee beans behind as they gave up the siege of Vienna in 1683. (Kiple and Ornelas, 2000, p.4)

Turkish coffee is famous with its generic name for a certain thickness which is the finest grind size in the world. The brewing of Turkish coffee has a unique method as the grinds are mixed directly into cold water and no filtration is done (Kucukkomurler and Ozgen, 2009; Yilmaz *et al*., 2017). To date, Turkish coffee has been an important part of Turkish society. Its brewing method, idiosyncratic smell and taste, presentation, ceremonial way of drinking and socializing effect are quite unique and different than many different cultures. Turkish coffee is still a cultural feature among Turkish society and consumed very frequently (Argan *et al*., 2015).

Turkish Coffee Product

There are two types of coffee beans: Arabica and Robusta. Robusta is a resistant variety, less susceptible to diseases, with a higher content of caffeine and lower quality than Arabica. (Sepúlveda *et al*., 2016) Arabica coffee is more appreciated than Robusta coffee by consumers. Traditional Turkish coffee is produced from Arabica coffee beans. The bean type is called Rio Minas and it is cultivated in Brazil between 600-1500 mt altitudes (Girginol, 2018).

In Turkey, coffee can be named differently depending on the ingredients used for brewing *(e.g. Menengiç – made of hackberries, Çorekotu- made of black cumin seeds)*, the way of *brewing (e.g. Kul – brewed in hot ashes, Deve Batmaz- with extra foam)*, the city of origin (e.g. Adıyaman Kervansaray, Adana Gar), the tradition and culture *(e.g. Cilveli –cooked by bride-to-be for groom-to-be when couples' families meet each other),* and the ethnic group *(e.g. Tatar coffee- Turkish coffee with cream on top).* This article focuses on the traditional Turkish coffee that is consumed in all regions of Turkey.

Traditional Turkish Coffee Preparation

The preparation of Turkish coffee involves mainly three stages: roasting, grinding, and brewing (Yilmaz *et al*., 2017; 217). For a delicious and pleasant Turkish coffee it is important to roast the beans freshly just before brewing. During the roasting process the color of the coffee beans changes from green to brown. For a strong aroma and flavor a dark roast is the most preferable but a medium roast will also bring out the hidden flavors locked inside the beans (Kaz *et al*, 2011; Kucukkomurler and Ozgen, 2009; 1697, Ozgur, 2012; Yilmaz *et al*., 2017; 218;). Roasted Turkish coffee should be left to cool immediately (Kaz *et al*, 2011; Ozgur, 2012). Also it is very essential to keep coffee humid in order to preserve the volatile matters that are revealed during the roasting process (Gursoy, 2007, Ozgur 2012).

The roasting stage is followed by grinding the coffee beans. Throughout the ages, Turkish coffee have been grinded by garlic presses (*in Turkish dibe*k) and mortars (*in Turkish havan*). In time, hand grinders (*in Turkish değirmen*) came into use. Today, electronic grinders that save energy and time are mostly used to grind Turkish coffee. The ground size of Turkish coffee calls for an extremely fine grind size which is even finer than the grind used in pump-driven espresso makers. It is the finest size of grind (*particle size between 75 and 125 microns*) (Ozgur, 2012) that is used in any style of coffee making (Kucukkomurler and Ozgen, 2009; 1697). The grind size of Turkish coffee is similar to powdered sugar or flour at a glance. This powdery texture brings out noteworthy differences

in taste since the contact area of coffee with water increases. This increase results with higher extraction and an increase in flavor (Kucukkomurler and Ozgen, 2009; 1697). To reach the peak of perfection, the fine ground coffee should be used as quickly as possible since the flavor begins to diminish. In addition coffee should stay in a cool and dry environment and should be stored away from light, heat and moisture in tightly closed containers (Yilmaz *et al*., 2017; 218).

Turkish coffee is brewed by the simplest and oldest way of brewing coffee in which water is poured over grounds of coffee and heated together. A unique equipment which is called '*cezve*' is used to brew Turkish coffee. '*Cezve*' is a narrow-topped small boiling pot made out of steel or traditionally copper. Unlike filter coffees in West, Turkish coffee is prepared by mixing the fine ground coffee, cold water, and sugar (if desired) together and then slowly heating the mixture up to its simmering temperature (Alves *et al*., 2010 ; Yilmaz *et al*., 2017; 217). One of the important points at this stage is to add the ingredients in order; first cold water, then Turkish coffee blend and lastly sugar. The recommended amount of ground coffee per person is at least 7 grams. This corresponds to between 1 and 2 heaped teaspoons of coffee for each cup. Differently from the Western world, Turkish coffee is brewed with sugar instead of customarily adding sugar just before drinking. There are four varying levels of sweetness for Turkish coffee ranging from plain to very sweet. The brewing process in total should be a maximum of 3 minutes. During brewing process the mixture is stirred with a spoon to make all the ground coffee and sugar saturate with water and to obtain a homogeneous mixture. While brewing it is important to have a fine foam. Therefore one should manage brewing temperature to avoid over extracting. In order to obtain more foam coffee is simmered two times (Kucukkomurler and Ozgen, 2009; 1697, Yilmaz *et al*., 2017; 217).

Presentation of Turkish Coffee

Coffee service and coffee consumption in Ottoman Empire was a ritualistic leisure with specific artifacts, particular participant roles, an informal script and an audience (Rook, 1985). In early 19th century Ottoman Empire coffee was served on gold and silver-studded clothes, on special trays and cup covers, coffee cups, and coffee sleeves. Depending on the financial status of the family, service utensils varied (Yilmaz *et al*., 2017; 217).

Once the coffee boiled, Turkish coffee is immediately served in ceramic or porcelain cups (*fincan*). Most of the cups have handles. Those which do not have handles are generally placed in a metal container (*zarf*) with a handle (Kucukkomurler and Ozgen, 2009; 1696). The usage of '*zarf*' during coffee service is an old tradition inherited from Ottoman

Empire. As an important item in coffee presentation, porcelain cups were placed in '*zarf*' since 17th century to prevent the burning of the drinkers' fingers. Since '*zarf*' gives an additional elegance to coffee presentations and reflects a deep history, today it is still used in some coffeehouses mostly touristic ones and even in some houses (Kaz *et al*, 2011).

In Ottoman Empire, serving coffee was a significant ceremony in palaces and in coffeehouses. In addition to coffee itself, coffee makers, servants, games like backgammon and chess, poems, storytellers contributed to this ceremony and made it a joyful daily life routine. Coffee consumption became a leisure time activity with high interest in luxury and comfort rather than being a necessity (Karababa and Ger, 2010). Jars with intense aromas and traditional desserts were served before coffee. To enrich the serving and pleasure rosewaters, sherbets accompanied coffee at the time of service (Bey, 2002; 267; Kaz *et al.*, 2011). Although Turkish coffee preparation and service has gone through several changes, today considerable attention is still given to its production and service. Since it is an indicator of the importance given to the guests, coffee is still served in decorative utensils along with water and a bite of sweet or Turkish delight (*lokum*). In present, coffee still continues to contribute to cultural and spiritual wealth in Turkish culture (Yilmaz *et al*., 2017).

METHODOLOGY

Study Problem and Objectives

The consumption of coffee in Turkey has a long story. Turkish coffee was consumed for various motivations; to stay awake, for its taste and aroma, to socialize with friends and relatives and/or as a part of a ritual in many customs. Although there have been many research on social and cultural aspects of Turkish coffee, no research have been done from the consumers' point of view. Surprisingly, consumers' evaluation and satisfaction with many facets of Turkish coffee have not been studied thoroughly. Consumers' satisfaction with Turkish coffee is multidimensional. Satisfaction might be influenced by product attributes (*e.g. type of coffee bean, duration of roasting*), preparation attributes (*e.g. coffee ground-to-water ratio, temperature of brewing, desired amount of sugar*) and its presentation manners (*e.g. being served in a miniature porcelain cup, being served with water beside*)

Besides, the oral preservation of long Turkish coffee tradition over the centuries and entrance of Western coffee chains into coffee market in Turkey resulted with numerous ways of Turkish coffee preparation and service practices, giving us skepticism that the consumers of Turkish coffee might not be satisfied with the recent Turkish coffee attributes such as product, preparation and presentation practices. In line with the

significant and important findings of previous researches indicated in the literature part of this paper, this study focuses on satisfaction level with the consumption of Turkish coffee away from home. Therefore the objectives of the presented paper are:

1. To investigate the satisfaction level of Turkish consumers with their Turkish coffee drinking experience taken outdoor locations (e.g. cafes, coffeehouses, restaurants)
2. To detect the existence of a relation between Turkish coffee attributes and satisfaction level.
3. To identify which attributes of Turkish coffee (product, preparation and presentation) taken outdoors effects the satisfaction level of Turkish coffee consumers.
4. To help to structure a guide on Turkish coffee production and presentation standardization.
5. To reveal emerging topics that give direction to further studies on Turkish coffee.

Participants

To respond to the aims proposed in this study, a quantitative analysis has been carried out based on Turkish coffee consumer surveys. With the use of a structured questionnaire, a relatively large sample was retained. Approximately 700 questionnaires in Turkish language, were distributed to the academic staff of university, in order to be distributed to their acquaintances who consume Turkish coffee. The field work was done in July 2019, in the city of Canakkale, Turkey. This time period was chosen so as to increase number of respondents since it is summer vacation period in the region. Finally a sample of 528 usable questionnaires was gathered.

Data Collection

Since the questionnaires were designed to have clear guidelines and a simple structure, the method of self-completion was chosen. Before being distributed to the main sample, the questionnaire was pilot tested and finalized after minor revisions. A convenience sampling process took place and respondents were asked to evaluate their latest and overall Turkish coffee consumption experience outdoors (e.g. in a coffeehouse or café) according to product, preparation and presentation attributes of it.

Measurement

The questionnaire was divided into three different sections. In the first section, a total of 17 questions with 5-point Likert scales (with 1 stating '*strongly disagree'* and 5 indicating '*strongly agree'*) regarding three dimensions related to their Turkish coffee consumption experience. Out

of these questions, 4 of them were aimed to measure 'product' attribute, 5 of them 'preparation', and 8 of them 'presentation' dimension of satisfaction. In the second section of the questionnaire two questions were asked to rate their level of satisfaction on a 10-point semantic differential scale regarding their last consumed coffee outdoors and their overall satisfaction with Turkish coffee taken outdoors. Moreover, respondents were also asked to indicate their socio-demographic status (gender, age, education, income and their frequency of Turkish coffee consumption) in third and last section.

Data Analysis

SPSS 21.0 was used for the statistical analysis of this study. Initially, descriptive analysis was conducted in order to sketch the socio-demographic profile of the respondents. Further analysis involved Exploratory Factor Analysis (EFA) for the construct of the validity of the scale and to reduce the data to a smaller set of summary variables (product, preparation and presentation). The reliability of the scale was analyzed using Cronbach alpha coefficient. Correlations between variables were evaluated by T-tests and ANOVA. Finally the datasets were pooled for the purpose of developing multiple-variable regression models for the three Turkish coffee attributes. Based on the data quantitative relationships between our studied variable were established. In line with the findings of Variance Inflation Factors (VIFs) and Tolerance Indices (TIs), a regression model was built by Adjusted R^2 and F statistics.

FINDINGS

Sample Characteristics

Table 1 provides an overview of socio-demographic profile of the sample. The respondents are gender-balanced, with a small preponderance of females (54.7%). More than half of the respondents (56.8%) were younger than 30 years old with the majority portion (40.6%) between ages of 21-30, while a considerable amount of respondents (20.3%) were aged between 31- 40. These findings tend to support the view that female and younger consumers develop more interest in Turkish coffee.

Regarding their education level, more than half of respondents (total of 57.6%) did not hold a college or university degree, 19.9% of them held a vocational school degree, and only 1.9% of them had a postgraduate degree. The occupation of the respondents was diverse, with students (26.7%) and state employees (20.3%) being the most common ones. Finally a crushing majority of 82.5 percent indicated a monthly income under 4.000 Turkish Liras.

Table I. *Sample Characteristics*

		f	%
Gender	Female	289	54.7
	Male	239	45.3
Age	20 and under	86	16.3
	21 – 30	214	40.5
	31 – 40	107	20.3
	41 – 50	75	14.2
	51 and above	46	8.7
Education	Primary Education	85	16.1
	High School	219	41.5
	Vocational School	105	19.9
	Graduate	109	20.6
	Postgraduate	10	1.9
Occupation	State employee	107	20.3
	Self-employment	66	12.5
	Merchant	34	6.4
	Laborer	83	15.7
	Retired	25	4.7
	Housewife	59	11.2
	Student	141	26.7
	Other	13	2.5
Monthly Income (in Turkish Liras)	1.000 TL and under	150	28.4
	1.001 – 2.200 TL	130	24.6
	2.201 – 4.000 TL	156	29.5
	4.001 – 6.000 TL	70	13.3
	6.001 TL and above	22	4.2

Construct Validity

Exploratory Factor Analysis (EFA) was carried out to examine the factor structure of the scale on the sample. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity was used to detect suitability of the data for factor analysis. The sample size of 528 individuals was around 31 times the number of items on the scale (17), which made it adequate (must be 5–10 times) to qualify for factor analysis. The analysis showed that the KMO value was 0.87 (needs to be between 0 and 1) (Kaiser, 1974) while Bartlett's Test of Sphericity result was $\chi 2 = 2823.286$ and significant at $p < 0.001$. These results indicate that the data do well for factor analysis.

Factor analysis was applied in this study to extract main factors affecting consumers' Turkish coffee drinking experience. A total of 16 attribute belonging to product, preparation and presentation dimensions of Turkish coffee were listed in the questionnaire using the five-point

Likert scale. Based on the results, one of the different components of Turkish coffee drinking experience was 'product' related. 'Fresh ground coffee', 'good aroma', 'absence of humidity' and 'no odor of other herbs and spices' were all in that same dimension. The second factor of the scale was *'presentation'* related and it consisted of 5 items. This dimension included water-sugar-coffee ratios, brewing methods and instruments. The last factor was *'presentation'* related and it was made up of 8 items.

Table II. *Exploratory Factor Analysis*

Factors and Factor Items	Factor Loadings	Eigenvalues of the factors	Cumulative Variance %	Cronbach Alpha coefficient	Mean	Standard Deviation St
Product		**5.301**	**33.131**	**0.802**	**3.92**	**0.80**
Freshly grinded coffee beans	0.648				3.90	1.04
Good aroma	0.674				3.89	0.97
No humidity	0.645				3.92	1.02
No odor of other herbs and spices	0.509				3.99	0.99
Preparation		**1.967**	**12.296**	**0.693**	**3.52**	**0.69**
Enough coffee ground was added into water.	0.427				3.91	0.99
Requested amount of sugar was added.	0.412				3.78	1.13
Prepared in slow heat.	0.668				3.32	0.99
Brewed in copper pot.	0.593				3.09	1.09
Cold water was added.	0.380				3.50	0.92
Presentation		**1.246**	**7.791**	**0.811**	**4.06**	**0.63**
Served in a miniature porcelain cup.	0.413				4.06	0.93
Ideal temperature of serving.	0.519				4.07	0.92
Served with a saucer.	0.512				4.22	0.87
Clean cup and saucer.	0.596				4.00	1.01
Not faulty cup and saucer without cracks.	0.547				4.09	0.92
Served with water.	0.479				4.21	0.91
No coffe stain out of the cup and on the saucer	0.493				3.97	1.05
Satisfaction level with Turkish coffee						
Satisfaction with the latest Turkish coffee taken outdoors.					3.48	2.15
Satisfaction level with the overall coffee experience taken outdoors.					3.67	2.28
Total Variance Explained: 51,332						
Principal Component Analysis with Varimax Rotation Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO): 0,870 Bartlett's Test of Sphericity: $\chi 2 = 2823.286$ $p<0,001$						

Table 2 represents the mean scores associated with the latest and overall Turkish coffee drinking experience. In this part of the questionnaire, respondents were asked to rate their satisfaction level on a 10-point-scale (1=lowest and10=highest). The mean scores equal to 3.48 and 3.67, belonging to latest and overall satisfaction respectively, showed consumers' dissatisfaction with their Turkish coffee drinking experience since the scores were quite lower than the average ($\bar{x}$=5).

Factor loadings, eigenvalues of the factors, variance explained, Cronbach Alpha coefficient, mean, and standard deviation for each item by each factor are presented in Table 2 above. The principal component assessment was carried out with varimax rotation. A cutoff for the factors equal to 0.40 is determined for each item. One item (11th item – *coffee cup was placed in a 'zarf*'- belonging to 'presentation' factor) was excluded from the scale with a factor loading equal to 0.25 which is lower than 0.40. According to the results of the initial analysis, the primal measuring instrument formed by 17 items decreased to 16 items in total. The final exploratory factor analysis showed that the measurement instrument consisting of 16 items in total at 3 factors explained 51.33% of the total variance. The eigenvalues of the factors were determined as 5.30 for the product, 1.96 for the preparation, and 1.24 for the presentation attributes. By the Eigenvalue criterion, all three factors were found to be greater than 1 and considered as statistically significant. The Cronbach Alpha coefficient ranged from 0.69 to 0.81 for the three dimensions of the scale. Presentation factor with a mean score which is equal to 4.06 reports the highest satisfaction factor comprising the overall satisfaction level of Turkish coffee consumption. Nevertheless, mean score differences present only a portion of the picture when attempting to explain which attribute of Turkish coffee is more influential on satisfaction. Thus further analyses were carried out for more precise results.

Comparative Analyses

Table III. *Satisfaction Level Influenced by Gender*

Factor	Gender	n	$\overline{X}$	s.d.	t criterion	p (degree of significance)
Product	Female	289	3.94	0.82	0.400	0.690
	Male	239	3.91	0.77		
Preparation	Female	289	3.49	0.65	1.167	0.244
	Male	239	3.56	0.72		
Presentation	Female	289	4.12	0.65	2.386	0.017*
	Male	239	3.99	0.60		

* $p<0.05$

To determine the satisfaction of Turkish coffee consumers influenced by the gender of the respondents, a T-test for independents samples was

applied. The results from that test showed that gender as an independent variable significantly differentiates the satisfaction from 'presentation' attribute of Turkish coffee. The males had lower mean values ($\bar{x}$=3.99) for that factor compared to females. Thus, the results determine that males demonstrate less satisfaction from the 'presentation' of Turkish coffee compared to females $t_{(528)} = 2.386$; $p<0.05$.

Table IV: *Satisfaction Influenced by Education Level*

Factor	Education Level	n	$\overline{X}$	s.d.	F	p	Multiple Comparison
Product	Primary Education	85	3.89	0.78	1.519	0.195	-
	High School	219	3.84	0.78			
	Vocational School	105	4.05	0.79			
	Graduate	109	3.98	0.83			
	Postgraduate	10	4.05	0.98			
Preparation	Primary Education	85	3.54	0.59	2.212	0.067	-
	High School	219	3.44	0.70			
	Vocational School	105	3.66	0.75			
	Graduate	109	3.50	0.66			
	Postgraduate	10	3.80	0.67			
Presentation	Primary Education	85	4.04	0.61	3.931	0.004**	2-4
	High School	219	3.97	0.66			
	Vocational School	105	4.07	0.59			
	Graduate	109	4.25	0.61			
	Postgraduate	10	4.28	0.62			

** $p<0.01$

Due to the fact that there are more than two groups belonging to education level and occupation variables, analysis of variance, ANOVA model was used. ANOVA test results for education level variable showed that there were statistically significant differences between different education groups within the sample regarding '*presentation*' criteria ($p=0.004$). In order to find out which education group means were significantly different from each other a post-hoc test Scheffe was used. According to the findings, high school group (2) was less satisfied with '*presentation*' attribute of Turkish coffee than graduates (4).

Table V. Satisfaction Influenced by Occupation

Factor	Occupation	n	$\overline{X}$	s.d.	F	p	Multiple Comparisons
Product	State employee	107	4.04	0.88	1.627	0.125	-
	Self-employment	66	3.84	0.82			
	Merchant	34	4.03	0.72			
	Laborer	83	4.05	0.77			
	Retired	25	3.87	0.80			
	Housewife	59	3.73	0.88			
	Student	141	3.84	0.70			
	Other	13	4.13	0.76			
Preparation	State employee	107	3.66	0.72	2.354	0.023*	1-7
	Self-employment	66	3.53	0.66			
	Merchant	34	3.61	0.81			
	Laborer	83	3.56	0.65			
	Retired	25	3.57	0.62			
	Housewife	59	3.53	0.67			
	Student	141	3.34	0.67			
	Other	13	3.70	0.49			
Presentation	State employee	107	4.26	0.60	2.986	0.004**	1-2 1-6
	Self-employment	66	3.91	0.69			
	Merchant	34	4.04	0.78			
	Laborer	83	4.10	0.55			
	Retired	25	3.91	0.51			
	Housewife	59	3.91	0.64			
	Student	141	4.05	0.63			
	Other	13	4.16	0.62			

* $p<0.05$ ** $p<0.01$

According to the ANOVA scores there were statistically significant differences between different occupation groups within the sample regarding both *'preparation'* and '*presentation*' criteria (p=0.023 and p=0.004, respectively). The Scheffe Test was carried for additional exploration of the mean differences among multiple groups. The results indicated that students (Group 7) were less satisfied with the preparation of Turkish coffee than state employees (Group 1). In addition, self-employed people (Group 2) and housewives (Group 6) had less satisfaction of the '*presentation*' of Turkish coffee compared to state employees (Group 1).

Table VI. *Pearson's Correlation Matrix for the Scales*

Factors	Pearson's Correlation Coefficient	Product	Preparation	Presentation
Satisfaction with the last Turkish coffee consumed outdoors	r	0.444	0.383	0.412
	p	0.000***	0.000***	0.000***
Satisfaction with Turkish coffee in general that consumed outdoors	r	0.336	0.310	0.322
	p	0.000***	0.000***	0.000***

***:p<0.001 **:p<0.01 *:p<0.05

To determine whether there was a statistically significant negative or positive correlation between three attributes of Turkish coffee consumption and consumers' satisfaction level, Pearson's correlation method had been applied. Pearson's correlation coefficient (r) magnitude around 0.3 and 0.4 indicated a statistically positive and moderate correlation at the 1‰ level of probability.

Table VII. *Regression Analysis for Satisfaction Level (with the last coffee and overall coffee experiences taken outdoors) and Attributes of Turkish Coffee*

Factors	Standardized β	t	p	Multicollinearity Essentials: Tolerance Indices (TIs)	Multicollinearity Essentials: Variance Inflation Factors (VIFs)	Model Summary
Product	0.685	4.970	0.000***	0.603	1.658	Adj.R^2= 0.514 F= 62.675 P= 0.000***
Preparation	0.544	3.635	0.000***	0.686	1.458	
Presentation	0.824	5.267	0.000***	0.736	1.358	
Product	0.432	3.115	0.002***	0.603	1.658	Adj.R^2= 0.401 F= 33.393 P= 0.000***
Preparation	0.476	3.160	0.002***	0.686	1.458	
Presentation	0.622	3.947	0.000***	0.736	1.358	

Dependent Variable 1: Satisfaction with the latest Turkish coffee taken outdoors.
Dependent Variable 2: Satisfaction level with the overall coffee experience taken outdoors.

***:p<0.001 **:p<0.01 *:p<0.0

For the purpose of detecting the issue of multicollinearity between the set of Turkish coffee consumption factors and consumers' satisfaction level with the last coffee consumed outdoors, a regression modeling was carried out. Variance Inflation Factors (VIFs) and Tolerance Indices (TIs) quantities proved the inexistence of a multicollinearity problem. The rule of thumb numerical values of VIFs between 1 and 5 (shown in Table 7 above) indicated the existence of a correlation between the studied variables of this study. Further analysis of Adjusted R-Square, F and P values had proved the researchers' concern for the correlation that needed

to be examined in detail. According to the Adj.R^2 value that was equal to 0.514 showed that approximately half of the variation in the satisfaction with latest Turkish coffee taken outdoors (dependent variable 1) was due to the variation in the attributes of Turkish coffee. Among the three attributes, '*presentation*' attribute of Turkish coffee had the strongest effect (β=0.82) on satisfaction level while *'product'* (β=0.68) and *'preparation'* (β=0.54) attribute had lower effects. Similar to our findings for the satisfaction with the latest coffee consumed outdoors, again we found a correlation between the overall satisfaction level of consumers and the three Turkish coffee attributes. Adj.R^2 of the second model with 'Dependent Variable 2' was 0.40 and that score meant that the 40 percent of the overall satisfaction level of consumers could be explained by the three Turkish coffee attributes. Of the three factors, once again *'presentation'* had the strongest effect on the overall level of satisfaction with the Turkish coffee taken outdoors, while the effect of '*product*' was the least.

DISCUSSION AND CONCLUSIONS

This paper presents insight into traditional Turkish coffee and provides evidence that various attributes of Turkish coffee affect consumers' satisfaction. This paper further evidences the relationships among the studied facets of Turkish coffee drinking experience and customer satisfaction. Exploratory factor analysis revealed that satisfaction with Turkish coffee is multidimensional, including three attributes: product, preparation and presentation. Further, the three facets together explained a total of 51% of the variance. The results demonstrated that more than half of the variance in satisfaction outcome was due to the three components of Turkish coffee. This represents that a change in these three factors will result in significant changes on the satisfaction level of consumers.

The first and probably the most important conclusion that derives from this study is the high concern of consumers about the presentation of Turkish coffee compared to product and preparation attributes. As shown in EFA Table, '*presentation*' related attributes had the highest mean whereas '*preparation*' related variables had the lowest. Besides mean scores, Regression Analysis scores also proved that among the three components effecting Turkish coffee drinking experience, *'presentation'* attribute had the strongest impact compared to *'product'* and *'preparation'* components. A change in '*presentation*' related attributes of Turkish coffee will lead to major and higher changes on the satisfaction level of consumers rather than changes in *'product'* and *'preparation'* attributes. This result may be due to two reasons. First, Turkish coffee is more than just a drink in Turkish lifestyle and culture. It is a symbol of hospitality, friendship, and joy. Several Turkish proverbs such as '*The memory of a cup of coffee lasts for forty years.*' and '*One neither desires coffee nor a coffeehouse.*

One desires to talk with others, coffee is just the excuse." also reflects its great importance in Turkish culture. Therefore presentation of coffee as being the most visible part of Turkish coffee drinking experience may be regarded as the most important component of the customs. Second, the social interaction, traditions, rituals and customs generally occur at the moment of coffee consuming. Plus, there is an important tradition favored by many Turkish people mainly women. According to the custom, one can have his/her fortune told from the leftover coffee grounds in the cup following the coffee drinking experience. Most of the communication between individuals during a Turkish coffee experience takes place at this stage. Due to its proximity to *'presentation*' process, presentation of Turkish coffee might have the strongest impact on overall satisfaction with Turkish coffee.

This study also intended to investigate whether Turkish consumers were happy with the Turkish coffee they had consumed out of their houses or not. The findings of this current research indicated that Turkish consumers were generally not satisfied with their overall Turkish coffee drinking experience outside. This might have several reasons. First, this might be because of the three factors studied in this paper. Reasons concerning the '*product*' intrinsic factors might be coffee bean type, freshness, aroma, and smell. Dissatisfaction of consumers might be due to failures in brewing techniques. Inexistence of a standard preparation guide for Turkish coffee results with several undesired outcomes. As stated in literature review of this study, the transfer of the knowledge to next generations on making Turkish coffee is mainly based on oral traditions. The know-how regarding the preparation process (e.g. water-to-coffee ratio) is preserved orally by the members of the Turkish society (Republic of Turkey Ministry of Culture and Tourism 2013). Thus, the oral preservation of recipes results with numerous ways of Turkish coffee making methods. In addition to the oral preservation, entrance of international coffee chains into Turkish market and their modern coffee making techniques have also contributed to increasing versions of Turkish coffee. Not surprisingly, these may lead to dissatisfaction of consumers since the taste, flavor and aromas that they are used to change continuously. Lastly, consumers might be dissatisfied because of '*presentation*' attributes of Turkish coffee. Moreover, dissatisfaction of customers may be due to other variables that are not studied in this paper. Since, almost half of the variance (49%) in satisfaction was explained through other variables that are not included here; some of the dissatisfaction may be a matter of other variables (e.g. employee service quality, physical environment quality, individual differences, etc.)

Another finding that deserves attention from this study refers to demographics. This paper revealed that females and people with more education level were more sensitive to presentation of Turkish coffee rather than product and preparation intrinsic variables in comparison with males. This is of great importance to understand the profile of Turkish coffee consumers when the case is satisfaction. That is to say that if the performance of '*presentation*' related attributes of Turkish coffee is enhanced, the majority of women and educated people are assumed to be more satisfied with their Turkish coffee drinking experience. One interpretation of this finding is that fortune tellers and their listeners (sometimes customers) are mostly women in many societies (Alidou and Verpoorten, 2019; Kissman, 1990; Taneda, 2000) and Turkish society is not an exception to this phenomenon.

Unexpectedly, an unknown blur area arose from the findings of this research. According to the results of ANOVA and Scheffe Tests, state employees are found to be significantly different than some other occupation groups regarding Turkish coffee drinking experience. In terms of preparation attributes, they tend to be more satisfied than the students and in terms of presentation attributes, they tend to be more satisfied than self-employed people and housewives. This incidental finding regarding state employees needs more investigation.

Limitations and Recommendations for Future Research

This study provides useful basis for satisfaction with Turkish coffee. However, it needs to be viewed by its limitations like any other research. First the research sampling procedure is limited to one geographical area in Turkey; therefore, the findings may have limited generalizability to whole Turkish country. Future researches may focus on different regions of Turkey in order to make the results reflect the rest of the country.

Another limitation of this study concerns the scope. Customer satisfaction in this study was rather narrowly conceptualized in terms of three attributes of Turkish coffee. Although 51% of the variation in customer's satisfaction was explained by the three attributes of Turkish coffee determined in this study, the remaining 49% (almost the other half) is explained by other factors that were not examined here. Some attributes (for example employee service quality, purpose of socializing, physical environment quality, fortune telling aspect) of Turkish coffee drinking experience influencing consumers' satisfaction evidently remained unknown given that almost the other half of the variance in satisfaction remained unexplained. It might be necessary for future studies to include these factors as their main areas of interest.

Practical Implications

The findings of this study lead to recommend that managers should put more effort to the '*presentation*' aspect of Turkish coffee along with other attributes in order to satisfy their customers since 'presentation' related attributes matter the most when it comes to evaluating their Turkish coffee drinking experience. Therefore, more emphasis should be placed on the properness of the service such as the serving temperature and the cleanliness of the cups and saucers or service with water and sweets. Noting that presentation is not the only thing that matters, managers should also consider product and preparation attributes.

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Chapter 12

IDENTIFYING IDENTITY, THROUGH GEOGRAPHICAL LOCATION RATHER THAN NATIONALISM: *BELONGINGNESS, ATTITUDES TOWARDS LANGUAGE AND NATIONAL IDENTITY CONSTRUCTION, OF TURKISH CYPRIOTS*

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0. Introduction

It would not be wrong to say that, in a greatly globalising world, the changing social, cultural and economic structures of the existing world systems have both positive and negative consequences. Particularly the discussion whether the flow in the power relations between countries brings the risk to change the existing with new, under the name of change, is the basis of the argument in the social research academia; one of such subjects often arises as "identity" and "identity policies".

The matter of identity rebuilds itself (from not being "one") through being defined over the other. Therefore, the identification of societies appears as a problem.

As we know, language is one of the indicative criteria, similar to many discriminative features such as religion and race etc, in the classification of individuals into "ethnic" groups and/or "nation" groups. Language has the power to structure and restructure in the existing socio-cultural and economic systems as much as its use.

Language, as Humboldt (1971) also claimed, is "the external manifestation of the minds of people. Their language is their soul, and their soul is their language" (p. 24). Therefore, even the attitudes towards any language, give us an idea about people's perceptions and world view. It also presents as a substantial factor in nationalism ideology.

The hypothesis that relates the way people think with their native languages is known as the Sapir-Whorf Hypothesis in the literature. It was first discussed by Sapir (1929) and then became popular in 1950s by the writings of Whorf.

In subsequent decades some of the followers of Noam Chomsky criticized the hypothesis and now linguists believe insubstantially that thought can bear consequences upon language (Kay, & Kempton, 1984).

The Sapir-Whorf hypothesis was based on two assumptions; linguistic relativism and linguistic determinism. According to the first assumption, as claimed by Kay & Kempton (1984), linguistic relativism, the grammatical structure of the language that is spoken moulds people's world view. Then it takes the discussion a step further and indicates the impossibility of sharing the same reality between people who speak different languages. On the other hand, linguistic determinism claims that far from being the active masters of the language that people use, they are, in fact, the passive prisoners of it. Whilst the first assumption states that language influences thought, this extreme version of the hypothesis alleges that culture is determined by language. It then insists on the notion that language is culture and culture is language. Consistent with the second assumption, the structure of a language can intensely influence and can regulate people's world view.

Ennaji and Sadiqi (2008) underlined two fundamental theoretical discussions regarding language and national identity. Quoting from Appel and Muysken (1987), Ennaji and Sadiqi (2008), noted that pursuant to one of the theories, there is no recognition of immediate association connecting language and national or cultural identity. If any did exist, that relation would be coincidental. Another theory defined the language as one of the main tools together with identity, cultural heritage, values, beliefs and assumptions.

Additionally, Kohn (1945), as one of the thinkers who touches on the relationship between nationalism and language of a nation, calls attention to the fact that "language was very rarely stressed as a fact on which the prestige and power of a group depended" (p. 7).

As Safran (1999) also cited, Gellner (1983) has defined nationalism as "primarily a principle which holds that the political and national unit should be congruent" (p. 1) and also drew attention to interrelation between nationalism and language. Interconnection of nationalism and language was highlighted by various thinkers in various time periods. Davis (1846), as one of these thinkers, claimed that "a people without a language of its own is only half a nation" (p.176) and took the argument a step further by stating that "to have lost entirely the national language is death" (p.175).

The relationship between language and nation can also be related to two different meanings as addressed by McLaughlin (2008). One of these can be explained as "relationship of the population" and "sense of belonging" of the people "to a nation-state"; and the other one can be understood within the context of peoples' individual nation-state identity with the world.

Research questions

1. Does the sense of belonging of Turkish Cypriots, their sensitivity towards national identity and their attitude towards the national language differ according to the period in which they were born?
2. Is there any significant correlation between language attitude of the respondents and their sensitivity towards national identity or sense of belonging?
3. Is there any significant relationship between sensitivity towards national identity and sense of belonging of Turkish Cypriots?

1. Nation, National identity and Nationalism

One of the lexical meanings of the term nation is "a politically organized body of people under a single government" (Chen, X. 2010, p. 411) ie a nation is not defined simply as a collection of persons who are inhabiting the same country, but further attaches to this, the requirement

for inhibiting a country which has a single government. However, nation as a term commonly refers to the country, the land, and the soil in which people live (Malkki, 1992). Furthermore, it is a psychological attachment that connects people and also distinguishes them, without awareness, from other people (Connor, 1978). In other words, the measure of a bond to the nation (Carey, 2002), is "a feeling of sameness, of oneness, of belonging, or of consciousness of kind" (Connor, 1978 p. 301). However, Malkki, (1992) claimed that nation is the rooting of people thus, it is perceived as a moral need.

A more detailed definition of "Nation" was devised by Hasting (1997) as a consciously structured concept with unique self-values, identity and control on the land that is accompanied by one or more ethnicities. Moreover, the term nation relates to the identity of a community and its roots (Calhoun, 1993a). The relationship between the culture and nation is claimed by Iriye (1979) in the following way: "a nation, in a word, is a cultural system and international relations are interactions among cultural systems" (p. 115).

Additionally, as cited in De Cillia, Reisigl and Wodak (1999), nationality is a story of people that explains themselves to their social world. However, nationality strongly transmitted from the past however, it is rooted in the construction of identity (Calhoun, 1993b). Emotions, values, common history and shared experiences bond the members of a nation which constitutes that nation's identity (Deaux, 2001, p.5). Similarly, people who are the members of a nation have more things in common than with foreigners (Triandafyllidou, 1998).

Nation is the outcome of the strong feelings towards a nation, called nationalism, that proves its existence only when the members of that nation give meanings to their existence and feel a sense of belonging to that nation (Kinvall, 2004). However, national identity in its meaning, requires difference and its meaningfulness depends on the existence of the different ones who are from the out-group memberships (Triandafyllidou, 1998). Moreover, national identity is a powerful feeling of belongingness towards one's land in that it correlates with a level of positive meaning that a person may attach to their nation (Carey, 2002).

Additionally, nationalism may refer to identity and autonomy of groups in terms of claiming their continuous selves, thus, can be defined as a family kinship (Calhoun, 1993a). In any case, an individual naturally feels at home in one culture, whilst following the membership in a categorically distinct culture that supports nationalism through sense of belonging (Calhoun, 1999). Nationalism, however, as a concept implies a strong connection which inwardly integrates nations with unique histories (Calhoun, 1999). Moreover, a further nationalism can be advanced as a

cultural process culminating in the formation of collective identity (Foster, 1991). As cited by Crain (1990), nationalism is manifested as hegemonic discourses "which attempt to forge a collective will and establish popular identification with the "imagined political community" of the nation" (p. 43). Also, nationalism is explained as communities of common root and shared inheritance (Alonso, 1994).

As Pfaff claimed, nationalism is believed to be a historical phenomenon that creates emotional binding of communities. It is through this that the communities discover historic articulation. Furthermore, "a nationalism which identifies secular triumph with a collective moral justification will remain a powerfully seductive answer to the questions which have to be answered: who and what am I?" (Pfaff, p.16).

In addition to what has been mentioned above, nationalism referred as a treat the nation as united and equal however it emphasize the main entities as constituents of the "self" of self-rule (Calhoun, 1993a). However, as Kinvall (2004) proposed, "the most influential idea behind nationalism thus came to be the notion of the individual self as a united, self-sufficient, and self-contained entity—a "universal self." (p. 758). With another but similar perspective, Triandafyllidou (1998) claimed that nationalism refers to a room in the space that gives a nation the achieved self-values.

2. National identity and Sense of Belonging

Identity can be characterised as the history of an individual, which includes abilities, beliefs, drives and motivations that work in the dynamic gestalt, aiming to organize and form the structure of the self (Marcia, 1980). In his major study of social identity theory, Tajfel (1981) defined social identity as the individuals' conscient group membership which they devote subjective meanings to their memberships (Tajfel, 1982). However, human socialization occurs through the identification of the self within the meaningful interactions with others (Ashforth and Mael, 1989). Moreover, the communication of the self with the environment comes to light through the constructed social identities (Ashforth and Mael, 1989). The authors claimed that social identity is a perception of being an individual in a group of individuals with shared values and motivations (Ashforth and Mael, 1989). There are different types of groups in every society that vary in size, aim and values. However, nations, as a large group of individuals, are defined in terms of shared will and culture that two conditions are merged for the political representations (Gellner, 2006). Furthermore, nation is a psychological attachment that connects people and also distinguishes them, through unconscious thought from other people (Connor, 1978). In other words, the degree of a bond to the nation (Carey, 2002), is measured through the level of "a feeling of sameness, of oneness, of belonging, or of consciousness of kind" (Connor, 1978 p. 301).

The concept of identity covers one side of the 'core self' (see for example Erikson 1968) and, conversely, the notion of identification of persons contingent upon neutral measures such as their first language or their place of birth (Anthias, 2008). The concept of the self also covers "identification processes with others, or groupings of others, and relates to the construction of collectivities and identity politics, both of which insert the politics into the arena of identity formation" (Anthias, 2008:5). Moreover, as Tajfel (1972) stated, social identity is the notion of belongingness of individuals to the groups that have shared values and emotions with other members of the groups (Hogg and Terry, 2000). From a similar perspective, political identity has an important regard to the nation as communities that are formed through cultural characteristics (Smith, 2008). However, national identity is an affective representation of a community of nation (Smith, 2008). Furthermore, the sense of national identity is important for individuals' origins and their bases in particular, and it is important for a community's history and its future in general (Smith, 2008). Carey (2002) explained national identity as powerful feelings of belongingness towards one's land. Therefore it can be claimed that "national identity relates to an individual's intensity of positive attachments to his/her nation" (p. 391).

As Rogers and Lea (2005) claimed, where there are shared values in the group, there is a heightened ability for persons within the group to feel belonginess. The culture that a group of people share naturally makes the members feel at home, which is the symbol of a high sense of belonging to that culture (Calhoun, 1999). As Bond (2006) claimed whereas "inclusion and citizenship have been premised on the ideal of shared 'belonging' to a single polity, nation and culture, the more radical plurality of contemporary national states raises questions about the nature of this belonging" (Bond, 2006). However, within any national context, Bond added that "an individual who can claim national belonging on the basis of all three conditions of residence, birth and ancestry, will almost certainly have a straightforward claim to this identity" (Bond, 2006).

According to the above definitions of Bond (2006), individuals are born and reside in their great families' lands and through this process they realize their socialization within this environment. There is a theory of group socialization claiming that learning is highly context-specific (Harris, 1995). Socialization occurs in the situations that individuals identify their selves through symbolic interactions and they transfer symbols with their constructed social identities (Ashforth and Mael, 1989). However, as a symbol of a culture, language plays a key instrumental role for this socialization that make human to belong to that land (Suleiman, 2003). It is believed that there is a crucial link between identity and the language as they reciprocally constituted (Valentine, Sporton and Nielsen, 2008). Furthermore, language is generally accepted as a signifying agent for a

nation's identity (Suleiman, 2003). Valentine et al. (2008) propose that through the symbolic expressions of the self in varying situations, language itself can play a vital part in identity. There is a reciprocal relationship between the self and the language of the society; language helps individual to take part in the society. However, society itself affects the self's existence through the shared language (Stets and Burke, 2003)

3. Ethnicity and Nationalism: language and Identity construction

> Language is the "most salient way we have of establishing and advertising our social identities"
>
> (Lippi-Green 1997, 5)

In order to understand nation, as claimed by Hasting (1997), it is essential to be familiar with some other concepts which can be accepted as the probable "raw material" of the nation. Ethnicity, briefly, as one of these concepts, is a group of persons with common cultural identity and language.

Though it is possible to find various definitions of ethnicity in the literature, all of the approaches in the field of anthropology concur to the fact that it is related to the classification of people and group relations (Eriksen, 2002:4).

However, since there is no clear distinction between 'nationality' and 'ethnicity', Miller (1995) stated that the misperception of them is more likely, as both address a group of people that are tied together via common cultural characteristics and recognition. Hence, they are bound to each other, which make it essential to investigate the ethnic identities of people to understand their national identities.

Miller (1995) talks about five features of nationalism and national identity. The first feature is that nationalism or nationality should not be assumed to be a collection of people that are differentiated by their physical and cultural peculiarities. The second feature explains nationality as "an identity that embodies historical continuity" (p. 23). The third feature of nationality or national identity highlights the activeness of the identity. In short, Miller describes nations as "communities that do things together, take decisions, achieve results, and so forth" (p.24). According to the fourth feature, nationalism "connects a group of people to a particular geographical place…" (p.24). Finally, in the last feature, Miller declared that nationality or national identity indispensably needs that "people who share it should have something in common. A set of characteristics that in the past was often referred to as a 'national character'" (p.25) and he clarified this as 'common public culture'.

It is known that with the growth of print capitalism, in particular, the standardization of 'vernacular languages' transpired and spread

the conditions for the formation of a national consciousness. It also determined that a vernacular language was deemed the 'national language', laying foundations for the materialization of a new envisioned national community. Within this framework, the concepts of nation and language can be assumed to be inevitably tied to each other.

In common with many other political concepts, "nationalism" has various definitions. The lexical meaning of the term, would be enough to comprehend the sensitiveness of the issue under the human socialization. Most common meanings are a) "love of country and willingness to sacrifice for it", (b) "The doctrine that your national culture and interests are superior to any other", (c) "The aspiration for national independence felt by people under foreign domination" or (d) "The doctrine that nations should act independently (rather than collectively) to attain their goals" (Chen, 2010, p.411).

Handler (1988:6), who considered nationalism to be an ideology regarding the individuated presences, claimed that "it is an ideology concerned with boundedness, continuity, and homogeneity encompassing diversity. It is an ideology in which; social reality conceived in terms of nationhood, is endowed with the reality of natural things".

On the other hand, Hechter (2000) takes the definition of nationalism a step further and categorizes the term into four groups; as peripheral nationalism, irredentist nationalism, stated-building nationalism and unification nationalism, through taken their normative differences for granted.

Pérez-Agote (2006) defines Hechter's Peripheral nationalism as: people living in a specific part of a state's region having two coexisting social identities. Hechter (2000), himself, defines it as a type of nationalism which emerges once culturally distinctive regions struggle with integration into a growing state, or with their endeavors in separating and forming their own administration. It is also claimed that this type of nationalism occurs where there is culturally a lack of division of labor and where "culturally distinctive groups are not spatially concentrated" (Hechter, Kuyucu and Sacks, 2006:84).

Irredentist nationalism, which is the second group of nationalism, is defined as the effort of a particular state to expand its existing borders through the integration of territories of a neighboring state to its state areas, often inhabited by co-nationals (Hechter, 2000).

According to Hechter (2000), the attempt of nationalism to integrate or combine culturally characteristic areas in a certain state is defined as state-building nationalism. This is a consequence of the intentional attempts of authoritarians in making culturally homogeneous multicultural populations.

The final group is unification nationalism which includes the union of a culturally homogeneous territory that is politically divided into one state. The aim of this nationalism idea is to reduce limits of both cultural and governance consistent with the new state's establishment which will include the members of the nation.

Moreover, nation is clearly defined as the conventional regulation of a community's agents, which arise as an outcome of a political and ideological process called nationalism (Blommaert, 2006).

National identity, which can be briefly explained as one's sense of belonging to a specific nation or country and associated with how an individual identifies himself/herself, in consideration with the aforementioned, is closely related with how a people identify themselves. Its lexical meaning is "a sense of a nation as a cohesive whole, as represented by distinctive traditions, culture, and language" (OxfordDictionaries.com, 2017).

As Blommaert (2006) claimed, all the pioneering authors, such as Anderson (1983), Gellner (1983), Greenfeld (1992), and Hobsbawm (1990) note how, in the construction of a nation, language is of significance. However, for some authors it is accepted that language and identity construction are mutually constituted (Valentine, et al., 2008). Furthermore, the social identity is a form of social practice for a child to understand the social order that is formed through interactions between confirmed behaviors and attitudes and the symbols of the place (Ochs, 1999). Furthermore, the values and the norms of a place affect people's use of language, heightening the feeling of belonginess in forming their lives together with their identities (Valentine, et al., 2008). As noted by other authors, identity is parallel with the behaviors and attitudes of an individual that are the outcome of particularly constructed language forms (He, 2004; Ochs, 1999). However, concerning the "identity construction is intricately linked with heritage language learning" (He, 2004, p.199), language is an important determinant of social identity for members who interact on a regular basis (Ochs, 1993) which was supported by He (2004); "social identities come to be created through language and interaction" (p. 201).

Ethnicity is the root for the formation of nations with the help of the relationships that the members have in the community (O'Brien, 1993). However, he claims, there is no difference between nationality and ethnicity. In relation to this, nationalism is considered as the essential and necessary concern of holding a real and distinctive identity in relation to having an original culture (Smith, 1996). Calhoun (1999) mentions that nationalism, as a proposed concept, strongly connected and inwardly integrated nations with unique histories. In consideration of this, language is a significant factor in the culture of communities, in their use of their set of symbols to transfer their values and stories to the young generations to

form a history for their nations. However, the language of nations is the tool for constructing an identity that has a place in the history.

4. Brief information about the Cyprus issue and periods that made their mark in Cyprus's history

The present study is focused on the island of Cyprus, which is divided into two parts and shelters two communities, as well as nations. These two communities share certain periods of the past. In particular, certain time periods are very important for both of the nations in terms of construction or development of identities, language and sense of belonging as well as defining the "other" of the island.

As a direct consequence of the conflicts in 1963 and 1974, Cyprus, was affected in various ways (Papadakis, 2008). One could possibly argue that identity and belongingness are the foremost significant determinant factors that affected people psychologically. Mavratsas (1999) claims that the events and the tension in particular, yet the conflict in general, had an impact on people's lives on a personal as well as collective level. Notwithstanding the aftermath and impact of confrontation on the island, before everything started, "the Greek and Turkish Cypriots have had a history of coexistence in mixed villages and towns as well as a history of conflict and separation" (Hadjipavlou, 2007, p. 359).

As is mentioned in the above literature with Hechter's (2000) claim, one of the categories of nationalism, state-building nationalism, proposes the unification of two cultures into one unique nation, in order to create a multicultural nation. This could not be accomplished in Cyprus. In relation to this, despite the intentions made in the 2003 referendum in both communities, the outcome was unsuccessful and the two communities continued to live in their own separated areas, with their own governments.

The age groups of the present study were divided up according to the historical and social settings in the community. The present study aims to investigate the possible effects of the conflict - as well as the changes in social settings and the environment – on identity construction, development of sense of belonging and language attitudes of different age groups among the residents of North Cyprus.

The first generation of the study, participants who were born after 1983, haven't had any experience of sharing a neighbourhood with Greek Cypriots. The only information they have about the conflict in Cyprus is from the history textbooks. Furthermore, during the growing-up process of this generation, there were some attempts towards finding a solution to the Cyprus issue. They witnessed many social-political changes while they were growing up. The second generation of the study, participants who were born between 1974-1982, is the age group that were born right after

the "operation" and the division of the island. This group of participants have also had no experience of sharing the neighbourhood, yet they were told the stories of their families who experienced the war and the division itself. The third generation of the present study was born prior to the conflict. The majority of these participants had experience of sharing the neighborhood much more so than the other younger generations.

Additionally, they possibly remember the 1974 events since the member within the group identified as being the oldest, was 11 years old at the time. The last generation of the present study are the ones who were born before 1962. Due to the social setting of the time and the environmental conditions, the participants from the last generation of the present study have had experience of close relationships, either positive or negative, with Greek Cypriots. They have, at least, shared a history with Greek Cypriots, which makes this generation different from the other age groups.

5. Method

5.1. Participants

Of the participants, consisting of 461 Turkish Cypriots, (53.1%) were female and 46.9% (n=181) were male. The age range of the respondents was between the ones born in "1983 and after" and in "1963 and before". 51 % respondents (n=235) belong to "born in 1983 and after" age group, 26.7 % (n=123) "1982 and 1973", 13.9 % (n=64) who born between "1974-1962"; 8.5 % (n=39) "born in 1963 and before". Of the 461 respondents, 49.7 % (n=229) identified themselves as "Cypriot", 40.8 % (n=188) as "Turkish Cypriot"; 5.6% (n=26) as "Turk" and 3.9 % (n=18) identified themselves as "other".

As it pertains to the level of education of the participants; 47.5% (n=219) held a "university degree"; 11.9 % (n=55) were graduated from "high school or less"; 30.8% (n=142) held "graduate degrees"; 9.8 % (n=45) held "PhD". 47.9%of the respondents (n=221) were "married"; 38.6% (n=178) were "single"; 8.2 % (n=38) were "engaged" and 5.2 % (n=24) were "divorced or widowed".

92.0% (n=424) of the participants indicated their "language" as "Turkish", 6.9% (n=32) as "Cyprus/Cypriot Turkish) and only 1.1% (n=5) declared their language as "other".

In relation to the respondents income level, 160 participants (38.6 %) earned the amount identified as the minimum wage in North Cyprus, or less; 151 (36.5 %) earned between "1-2 times the basic salary"; 100 (24.9 %) earned "double or more basic salary".

The survey participants were selected through a recruitment process in which they voluntarily engaged with a link posting to an online survey.

The survey was available online for a period of nine months, from February 2016 to November 2016. In the instructions for the online survey, respondents were informed that the study was regarding interrelation between language, national identity construction and sense of belonging. In addition, anonymity of their responses was guaranteed.

5.2. Measurement

Sense of Belonging Instrument(SOBI): The Sense of Belonging Instrument (SOBI) (Hagerty & Patusky, 1995), while it contains 27-items, consists of two separate tests which are used to evaluate the sense of belonging in two main fields. These are the psychological sense of belonging (SOBI-P), and antecedents to sense of belonging, which measures the motive in a person's feeling of belonging (SOBI-A). In the present study SOBI-P, which was used for the purpose of the study, utilizes a Likert-style system of scoring. The five options utilized range from 1 (Strongly Disagree) to 5 (Strongly Agree). The SOPI-P questions were formulated negatively, with scoring of 4, for example, correlating with a participant's low level of belonging. Scores on the SOBI-P ranged from 18-90 with a mean of 38.96 and a standard deviation of 12.38, in a sample of Turkish Cypriots. Cronbach Alpha is reported as 0.89.

Language Attitude Survey (LAS): The questions in this study have been collected and adapted by The First Peoples' Cultural Council. The Council, a Crown Corporation, was formed in 1990 by British Columbia for the purposes of governing the First Peoples' Heritage, Language and Culture Program. As is mentioned in their official reports, this survey is inspired from Chickasaw Nation, Cherokee Nation, and Washoe Tribe of Nevada & California and Hinton's work. The survey consists of a total of 18-items and exploits a system of scoring that is in Likert-style containing five options which span from 1 (Strongly Disagree) to 5 (Strongly Agree). Scores on the LAS varied bwteen 18-72 with a mean of 45.04 and a standard deviation of 10.50, in a sample of Turkish Cypriots. Cronbach Alpha is reported as 0.84.

National identity scale: The scale, which was developed by Luhtanen and Crocker (1992), contains 16 items. In the present study the response format is set as a 7-point Likert scale in order to receive diverse responses from the participants ranging across strongly agree, agree, somewhat agree, neither agree or disagree, somewhat disagree, disagree and strongly disagree. A higher score indicates stronger national identity. Cronbach's alpha reliability is a=0.87. The separate scores are also computed for the four components or subscales of the National Identity Scale. The Cronbach's alpha coefficients for respective subscales are given as Membership identity (Cronbach alpha= 0,73), Private identity (Cronbach alpha=0,77), Public identity (Cronbach alpha=0,81), Personal Identity (Cronbach alpha=0,77).

5.3. Statistical analysis

The present study analyzed the collected data by using SPSS 21.0 for Windows. Descriptive statistics and Pearson product-moment correlations were undertaken to evaluate the relationships and differences at a significance level of 0.05.

6. Findings and Discussion

6.1. Distribution of Sense of Belonging in compliance with demographic variables and identifying themselves.

Data indicates that 82% of females and 84% of male respondents have low sensitivity towards language. In other words, the majority of both male and female Turkish Cypriot respondents have low sensitivity towards the language that they use as a nation.

According to the statistical data, 87% of the respondents born in and after 1983, 74% of the respondents born between 1982-1973, 87.5% of the respondents born between 1974-1962 and 78% of the respondents born in and after 1963, have low sensitivity towards their mother tongue. In other words, the year of birth of the Turkish Cypriot respondents, contrary to what one might assume, does not highlight itself as a significant factor at the level of attitudes towards language.

Moreover, it is noted that 84% of high school (and less) graduated, 88% of university graduated, 81% of master graduated and 67% of PhD graduated Turkish Cypriot respondents' sensitivity towards language is low.

This would suggest that neither age, gender nor level of education of the respondents has any significant impact on their attitudes towards the mother tongue.

6.2. For which factors does the level of education of the respondents play a significant role?

According to the statistical findings of the research, it is noted that for some factors, such as '*attitudes towards language*', at construction of '*national identities*', '*personal identities*' and '*private identities*', '*education level,*' as one of the independent variables, plays a significant role.

The correlations between '*education level*' and '*attitudes towards language*', '*national identity*', '*personal identity*' and '*private identity*', indicates a positive correlation amongst '*education level*' and '*Language attitude*' [r = .099*, n =461, p = .034]; a positive correlation between '*education level*' and '*national identity*' [r = .099*, n =461, p = .034]; a positive correlation between '*education level*' and '*personal identity*' [r = .120**, n =461, p = .010] and a positive correlation between '*education*

level' and '*private identity*' [r = .109*, n =461, p = .019].

The results indicate that the sensitivity of the participants towards their language and national identities increased as with their level of education, and their private and personal identities improve more.

6.3. Interrelation between how the respondents identify themselves, their attitude towards language and their national identity.

One of the independent variables of the research; '*how do respondents identify themselves*' plays a significant role in relation to two of the dependent variables; *attitudes towards language* and *development of national identities*. The data gathered indicates that it has a negative relationship with both of the dependent variables.

For the purpose of the research a Pearson product-moment correlation coefficient was implemented as a means of evaluating the relationship between *how do respondents identify themselves* and their *sensitivity towards the language* that they use. The results noted that there was a weak but negative correlation amongst the two variables [r = -.099*, n = 461, p = .033]. The relationship between *how do respondents identify themselves* and *development of their national identities* was also computed and same results obtained ie a weak but negative correlation [r = -.099*, n = 461, p = .033]

Therefore, it is reasonable to assume that the greater a person's tendency to identify themselves through geographic location, not "nation" [*Cypriot* instead of *Turkish Cypriot* or *Turk*], the weaker their attachment is towards their *national identity and the language that they use.*

6.4. Factors that are significantly correlated with attitudes towards language.

The data collected for the purpose of the research shows that the issues of "how do respondents identify themselves", their sense of identity, membership identity, private identity and public identities, are correlated to each other.

Pearson's product-moment correlation coefficient was calculated to assess the correlation amongst respondents' "attitudes towards language" and "how do they identify themselves". A negative but weak correlation amongst the two variables, r = - .099, n = 461, p = 0.033 was noted. Moreover, it is noted that there was a positive correlation between "attitudes towards language" and sense of identity [r = 0 .624, n = 461, p = 0.000]; "attitudes towards language" and "membership identity" [r = 0.456, n = 461, p = 0.000]; "attitudes towards language" and " private identity" [r = 0.639, n = 461, p = 0.000] as well as "attitudes towards language" and "public identity" [r = 0.496, n = 461, p = 0.00].

6.5. Frequency of National Identity in compliance with demographic variables and identifying themselves.

Data indicates that the national identities of 68% (n=167) of females and 63% (n=137) of male respondents are highly developed. In other words, the majority of both male and female Turkish Cypriot respondents have highly developed national identities.

Additionally, according to the results 68% (n=161) of the respondents born in and after 1983; 61% (n=75) of the respondents born between 1982-1973; 65.5% (n=42) of the respondents born between 1974-1962 and 66.7% (n=26) of the respondents born in and after 1963 have highly developed national identities. In other words, the year of birth of the Turkish Cypriot respondents, unlike what might be assumed, is not a factor that substantially affects the level of national identities.

The national identities of 72.7% of high school (and less) graduated; 67% of university graduated; 65% of master graduated and 55.6 % of PhD graduated Turkish Cypriot respondents are highly developed. 62% of the respondents who identified themselves as "Cypriot", 72.3% of the respondents who identified themselves as "Turkish Cypriots" and 76.9% who identified themselves as "Turk" have also highly developed national identities. Only 55.6% of respondents who defined themselves as "other" have low developed national identity. Therefore, it is possible to conclude that clarity and sharpness of the identification in terms of "nationalism", strengthens the development of "national identities".

6.6. Correlation of age, gender, date of birth, identifying self and their personal identity, membership identity, private identity and public identities.

As a means of evaluating the relationship between respondents' "age" and sense of "personal identity"; "membership identity"; "private identity" and "public identity", Pearson's product-moment correlation coefficient was calculated; and it is accounted that only at the level of "public identity" ($r = 0.100$, $n = 461$, $p = 0.032$) was a significant relationship noted. Likewise "genders" of respondents ($r = .110$, $n= 461$, $p = 0.018$), date of birth ($r = .100$, $n= 461$, $p = 0.032$) have a significant relationship only with "public identity". However 'how do respondent identify themselves' have no significant relationship with either personal identity nor membership identity, private identity or public identities.

6.7. Is there any correlation between belongingness of Turkish Cypriots and their attitudes towards their mother tongue?

For assessing the correlation amongst Language Attitude of Turkish Cypriot participants and their Sense of Belonging, a Pearson product-

moment correlation coefficient was determined. A positive, although not strong, correlation can be noted between the two variables [r = 0.175, n = 461, p = 0.000].

A Pearson product-moment correlation coefficient was computed as a means of evaluating parallels amongst between the Language Attitude score of the participants and their National Identity. A very strong positive correlation can be identified between these two variables, r = 1,000, n = 461, p = 0.000.

6.8. Correlation between belongingness of Turkish Cypriots and their attitudes towards Language

Additionally, the notion of whether there is any relationship between Language Attitude of Turkish Cypriot participants and their sense of belonging, was computed and the results indicated a positive correlation existing amongst the two variables [r = 0.332, n = 461, p = 0.000]. Overall, while there was a positive correlation between attitude towards national language and sense of belongingness of the respondents, this was not identified as being strong.

6.9. Relationship between belongingness and national identities of Turkish Cypriots

In addition to this, it was questioned whether a relationship exists between national identity of Turkish Cypriots and their sense of belonging. According to the statistical data, a positive relationship can be identified in these two variables [r = 0.175, n = 461, p = 0.000].

Moreover, an independent-samples t-test was undertaken to analyze differences amongst sense of belonging of respondents in “highly developed” and “weakly developed” national identities. A significant difference was noted in the scores for “highly developed” (M=36, 79, SD=11, 34) and “weakly developed” (M=43, 16, SD=13, 25) national identities; t (459) = - 5, 39, p = 0,000. These findings suggest that level of national identity does have an effect on sense of belonging. Specifically, our results indicated that as people’s national identities develop, their sense of belongingness is strengthened.

7. Conclusion and Further Suggestions

7.1. Conclusion

As demonstrated above, language appears to be a building-block in the formation of “nationalism”, hence “the national identity”. Thus, the individuals that are known in the nationalism and ethnicity are connected via language. According to the outcome of various research, there is a relationship between the national identities and sensibility of individuals towards their mother tongue.

Such findings as the starting point of study, lead to research to identify whether there is any relationship between the "national identity", "sense of belonging" and "attitudes towards native language" among the Turkish Cypriots living on the island of Cyprus, which is known with the political deadlock.

As indicated before, certain periods in Cyprus's History have played a significant role in terms of the disputes between the Turkish Cypriots and Greek Cypriots; consequently the birth period of participants was taken as a basis in the research, rather than their ages. Therefore this study analysed whether any significant relationship exists between the sensibilities for national identities, language and sense of belonging among the individuals with the potential to live political, social and implicit economic conflicts with the Greek Cypriots due to the related period. The outcomes indicated that the ages or period in which they were born, coupled with their experience or witnessing of conflicts among individuals, did not cause any variance in their attitude towards the language and did not have any impact on their sense of belonging. In other words, the possible experienced "traumas" or "things learnt" about the past do not create any impact on the individuals.

Additionally, it was not only the period that the individuals were born in that had no impact, but also none of the demographical feature significantly impacted on "national identity", "language attitude" and "sense of belonging". However, there is a negative correlation between how participants identify themselves, their national identities and attitudes towards language. This indicates a tendency among the Turkish Cypriots to define their identities through their geographical location.

Similar to the results of other research, there is a poor sense of belonging to the "mother language" among the Turkish Cypriots, yet the significant correlation between the sense of belonging and national identities indicates that the Turkish Cypriots have a tendency to define their identities through geographical location rather than nationalism. In other words, a new definition for "national identity" emerges. Turkish Cypriots have the tendency to "nationalise" the identity that they formed within their space or social group, which can be defined with the use of "civil" rather than "national", in the identity policies.

7.2. Further Suggestions

In order to take this study to a further level, it may be of value to examine the attitudes of Greek Cypriots towards their language and the relationship between the national identity and sense of belonging. This may help generate some proposals to break the political "deadlock", which has existed over many years, as well as answering some questions

accordingly. In parallel to this, a bi-communal comparative study would also be beneficial within the research on the Cyprus issue. Similar studies might be conducted to analyse the relation between conflict-settlement in other multi-national countries.

Additionally, analysis of the 'religion factor', which was not included as an independent variable but might have a possible relation, is recommended in terms of sense of belonging and national identity.

Analysis of the distinction or integrity between the religious identity and national identity may help clarify some problems and issues.

In terms of methodology, the following studies can be conducted with in-depth interview techniques that would allow more in-depth analysis.

Additionally, studies on the other ethnical groups of Cyprus would provide some general information on the existing ethnical groups and nations within Cyprus.

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Chapter 13

SYMMETRICAL REVIEW OF MOBILE APP ICONS AND THEIR EFFECT ON USER PREFERENCES[1]

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1. Introduction

Advances in science and technology have become a necessity for societies to meet the needs of the age. With the widespread use of mobile phones, mobile applications, which are used in different areas of life, have gained a great place in education. It is also seen that the use of technology in education has become widespread in recent years. Today's understanding of education has gone beyond the classic teacher-student-board triangle. Schooling can be done with more than one method and technique. Among the educational applications developed especially for exams in the education system, applications developed for solving questions or lecturing are among the most preferred by users. One of the most important factors among the reasons for the increasing number of education applications in application centers of mobile phones with different operating systems is the aesthetic appearance of the icons of the applications.

Mobile education is a method of reaching the desired information with various devices at any time and from anywhere. In other words, it's a learning activity without being tied to a class or lecturer [1]. Mobile application is a program designed for users to perform certain operations on mobile devices such as tablet phones and watches [2, 3].

Figure 1. *Application Icons.*

Graphical icons are better suited for smaller and functional areas, such as small screens on hand-held devices. With the rise of mobile phones and tablets, the market for mobile apps has grown enormously, and graphical icons are frequently appearing on smartphone devices [4, 5]. User icons play an important role in tablets and smart devices as a result of increased user interest and touch intentions. Designing the app icon is as critical as the product packaging, but designing icons is difficult and time consuming.

Therefore, the appearance of the icons in the application markets may change for different users. For example, the icons can contain different pictures according to the user profile [6, 7, 8].

The word of icon comes from the Greek word “eikon” and it means picture. It is also defined as a religious totem in the dictionary. Icons are derived from signs that express some concepts in a sense or some way for someone [9].

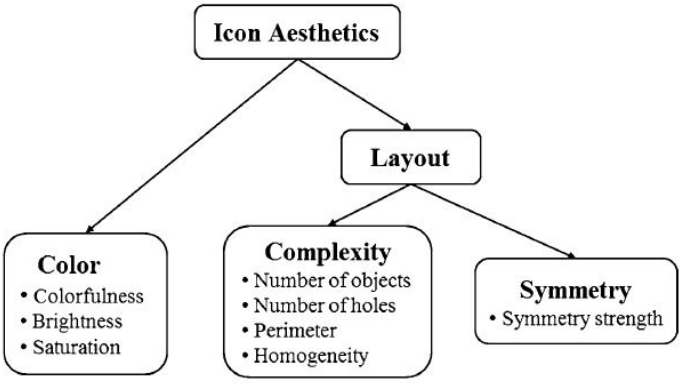

Figure 2. *Icon Aesthetics [10].*

Lavie and Tractinsky (2004) [11] and Moshagen and Thielsch (2010) [12] stated that classical aesthetics originated from simplicity and consisted of visual configurations such as regularity of openness, homogeneity, grouping, balance and symmetry.

Symmetry is an internal phenomenon that occurs both naturally and man-made in the world around us. It is attractive as a clue directing both aesthetic and visual attention. Symmetry is naturally found in the structure of our world in many different scales and in many different forms. It is evident in the shape and appearance of many natural and man-made scenes. Humans have an innate ability to perceive symmetries in objects and images [13-14].

The two most common types of symmetry are rotational and mirror (reflection) symmetry. Reflection, rotation and translation symmetries have been the subject of numerous detection methods in recent years. Of the three, reflection symmetry is the most common as in the real world [15,16].

In this study;

-We investigated whether the apps’ preference by the people increases as the symmetry of the icons of the apps’ increases.

-We focused on reflection type of symmetry and used Mathworks MATLAB 2015 software for image processing.

-We restricted our study with 10 most downloaded education app icons about the Public Personnel Election Exam (aka. Kpss) held annually for public employment in Turkey.

-We did a survey which based on giving a credit point between 1 to 5 for every app's icon, among the 172 students of Korkut Ata University Economics and Administrative Sciences Faculty.

-We compared the symmetry values of icons obtained from matlab software which is between 0-1 with the survey results of the icons between the 1-5 by the binary logistic regression method.

2. Related Works

There are many studies on the symmetrical and aesthetic evaluations of pictures with image processing method.

Wang and Li (2017) [17] proposed a multi-step aesthetic analysis model to investigate the effects of the aesthetics of app icons on the number of downloads of apps. In their model they evaluated the effects of the aesthetic design on the number of downloads with the various formulas, which developed on the features like app icon's complexity, symmetry and simplicity etc.

Cornelius ve Loy (2006) [18] worked on a symmetry detection algorithm which combines the SIFT descriptor with several different feature detection methods such as hessian-affine and Harris affine detectors, an intensity extrema-based detector (IBR) and an edge based region detector (EBR).

Shi et al. (2018) [19] used root-mean-squared-error (RMSE) for detecting the symmetry in the shapes of the leaves by splitting their images into parts in the matlab.

Widynski et al. (2014) [15] 's approach is used Ribbon Detection method to find the regional symmetries by extracting the linear lines of the objects in the image to draw the lines of the image itself. Their approach also proposes a sequential Monte Carlo method, a particle filter application, to extract part of the structure at once.

3. Methodology

In this study, a matlab-based symmetry evaluation method was revealed on the horizontal and vertical axes, based on the previous literature studies Cornelius and Loy (2006) [8], and matlab codes were written.

Icon images of the first most preferred 10 kpss exam application, downloaded from the Google Play Store in .jpeg, .png format on December 12, 2018 (ranking of the applications may have changed). The images turned into pixel format in Mathworks Matlab 2015 software.

Since method we proposed in this study is based on the detection of white pixels, we turned every images of the icons into black and white pixels with one of the Matlab's edge detection method called "canny". Our method works around the axes that are considered to pass right through the middle of the picture in horizontal and vertical directions.

The applications whose icons we are worked on are named as "Application 1, … ,10" according to the number of their downloads.

Algorithm 1 Symmetry Analysis in Horizontal and Vertical Dimension

1: **Read** Image

2: ***I*** <---- (Readed Image)

3: **Convert** Image to grayscale Format

4: **k** <---- **I** //k is the grayscale format of the image

5: **Detecting** the edges of the grayscale format of the image with "canny" method

6: **m** <--- **k** //m is the black and white format of the image

7: **Mesuring** the size of the **m** // in terms of rows and columns m[row, column]

8: **VerticalSymmetryCounter** <--- 0

9: **HorizontalSymmetryCounter** <--- 0

10: **for** b ∈ {(columnsizeofimage) , . . . , (columnsizeofimage)/2} **do**

11: **for** s ∈ {1 , . . . , (rowsizeofimage) } **do**

12: **for** i ∈ {1 , . . . , (columnsizeofimage)/2} **do**

13: **if** m(s,i) **and** m(s,b(i)) pixels are white **then**

14: **HorizontalSymmetryCounter** <--- **HorizontalSymmetryCounter** + 1

15: **end for**

16: **end for**

17: **end for**

18: **end for**

19: **for** b ∈ {(rowsizeofimage) , . . . , (rowsizeofimage)/2} **do**

20: **for** s ∈ {1 , . . . , (columnsizeofimage) } **do**

21: **for** i ∈ {1 , . . . , (rowsizeofimage)/2} **do**

22: **if** m(i,s) **and** m(b(i),s) pixels are white **then**

23: **VerticalSymmetryCounter** <--- **VerticalSymmetryCounter** + 1

24: **end for**

25: **end for**

26: **end for**

27: **end for**

28: **TotalWhitePixelCounter** <--- 0

29: **for** s ∈ {1 , . . . , (columnsizeofimage) } **do**

21: **for** i ∈ {1 , . . . , (rowsizeofimage)} **do**

22: **if** m(s,i) pixel is white **then**

23: **TotalWhitePixelCounter** <--- **TotalWhitePixelCounter** + 1

24: **end for**

25: **end for**

26: **VerticalSymmetryoftheImage** <--- **VerticalSymmetryCounter/ TotalWhitePixelCounter**

27: **HorizontalSymmetryoftheImage** <--- **HorizontalSymmetryCounter/ TotalWhitePixelCounter**

28: **TotalSymmetroftheImage**<--- (**VerticalSymmetryoftheImage** + **HorizontalSymmetryoftheImage)** /2

Matlab Codes

I=**imread**(‘(image folder address)’);

k=**rgb2gray**(I);

m=**edge**(k,’canny’);

[row, column]= **size**(m); **//Detection of the size of the image**

diagonal = 0; **//Diagonal symmetry Counter**

vertical=0; **// Vertical symmetry Counter**

```
k=column:-1:column/2; // Diagonal Symmetry Counter Cycle
  for s=1:+1:row
     for i=1:+1:column/2
        if m(s,i)~=0 & m(s,k(i))~=0
        diagonal = diagonal + 1;
        end
      end
   end
end

figure,imshow(m) //Drawing Diagonal Symmetry Lines
hold on
for s=1:+1:row
     for i=1:+1:column/2
        for k=column:-1:column/2
            if m(s,i)~=0 & m(s,k)~=0
            p1 = [s,s];
            p2 = [i,k];
            line(p2,p1,'Color','g','LineWidth',1)
          end
        end
    end
end
t1=[1,row];
t2=[column/2,column/2];
line(t2,t1,'Color','r','LineWidth',2)

k=row:-1:row/2; // Vertical Symmetry Counter Cycle
   for s=1:+1:column
      for i=1:+1:row/2
          if m(i,s)~=0 & m(k(i),s)~=0
          vertical = vertical + 1;
```

```
            end
        end
    end
end

figure,imshow(m) //Drawing Vertical Symmetry Lines

hold on
k=row:-1:row/2;
    for s=1:+1:column
        for i=1:+1:row/2
            if m(i,s)~=0 & m(k(i),s)~=0
                p1 = [i,k(i)];
                p2 = [s,s];
                line(p2,p1,'Color','g','LineWidth',1)
            end
        end
    end
end

t1=[column/2,column/2];
t2=[1,row];
line(t2,t1,'Color','r','LineWidth',2)

total = 0; //Detecting total white pixel number

for s=1:+1:row
    for i=1:+1:column
        if m(s,i)~=0
            total = total + 1;
        end
    end
end
```

In figure 3 and 4, our algorithm for detecting symmetry has been described by showing pixels of an images as squares. For detecting white pixels which have same distance to the middle row and column in horizontal and vertical dimensions, our algorithm starts searching from opposite sides which are showed in figures at the same time.

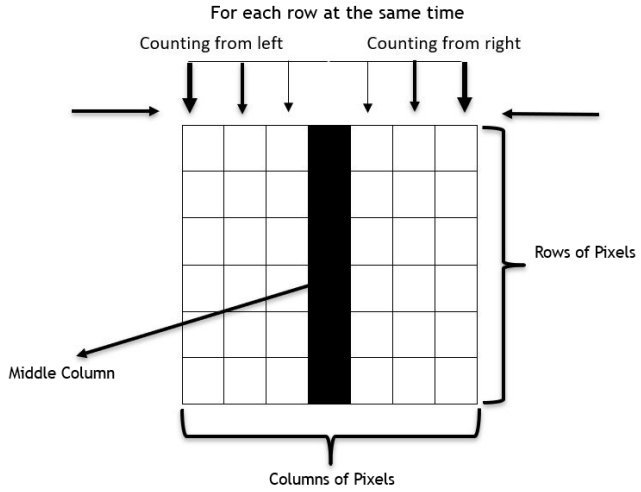

Figure 3. *Measuring the Horizontal Symmetry.*

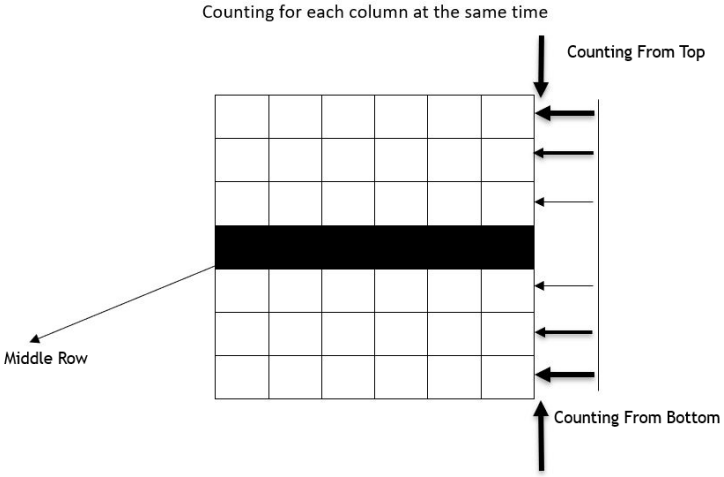

Figure 4. *Measuring the Vertical Symmetry.*

In Figure 5, application of our method's firs chapter about turning image into black-white pixel form with matlab's "canny" method is shown on one of the app's icon image we examined in this study.

Figure 5. *Turning Icon Image into Black and White Pixel Form.*

In Figure 6, the red straight vertical line drawn in the matlab program, which we accept as the horizontal symmetry axis passing through the center of the icon is shown.

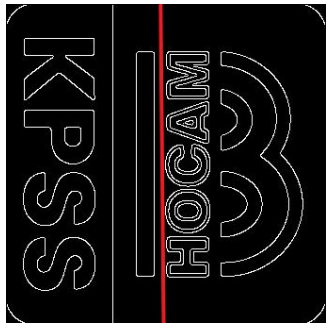

Figure 6. *Drawing the Horizontal Symmetry Axe.*

In Figure 7, white pixels that are equidistant from the axis in the same plane are shown by matching the green lines from the parts where this axis is divided equally into two.

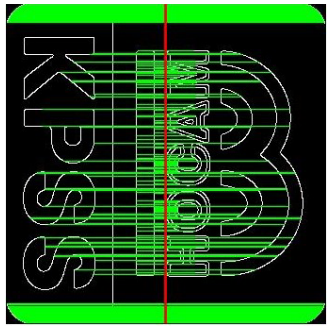

Figure 7. *White Pixels Equal Distance to the Symmetry Axis on the Horizontal Axis.*

The horizontal symmetry ratio which is between 0 and 1, was determined with dividing the number of matching white pixels by the total number of white pixels in the picture.

The application of the same process on the horizontal axis is shown in Figure 8 and 9.

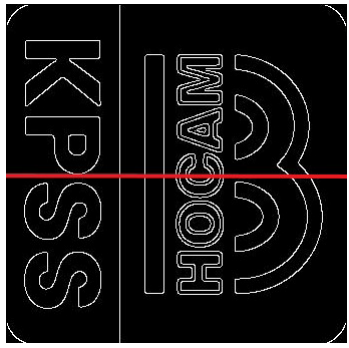

Figure 8. *Drawing the Vertical Symmetry Axe.*

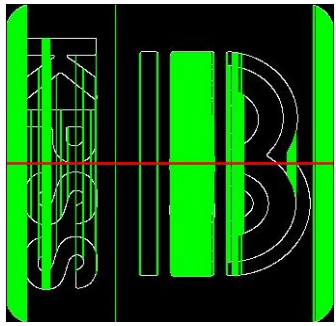

Figure 9. *White Pixels Equal Distance to Symmetry Axis on Vertical Axis.*

By taking the average of the horizontal symmetry and vertical symmetry ratios, the general symmetry ratio of the picture was found between 0-1.

Survey

A survey which is shown in the figure 10 has been applied to the students of the Korkut Ata University Faculty of Economics and Administrative Sciences. Participants were asked to score the app icons on which we are working on a scale numbered from 1 (Very Bad) to 5 (Very Good).

By dividing the total scores of the icons from the survey by the number of participants, an average survey score between 1 and 5 was obtained for each icon.

ICON	VERY BAD(1)	BAD(2)	NEUTRAL(3)	GOOD(4)	VERY GOOD(5)
	□	□	□	□	□
	□	□	□	□	□
	□	□	□	□	□

Figure 10. *Rating the Icons.*

Evaluation of the Results

Icons with a general average or above of the values obtained from the survey are classified as "AESTHETIC" and icons that are below the general average are classified as "NOT AESTHETIC". Survey values accepted as a dependent variable in the binary logistic regression.

The method used is statistics management that has one or more arguments and is used to determine a result. Logistic regression includes data encoded as binary 1 or 0 [20]. For this reason, this method was preferred in terms of its suitability for our study.

Matlab values were divided into two groups as the general average or above and those below the general average. Matlab values accepted as an independent variable.

In accordance with the classifications, sensitivity analysis was made over the "odds" values extracted from the confusion matrix by placing the icon numbers that meet the appropriate conditions in the 2x2 confusion matrix in Figure 11.

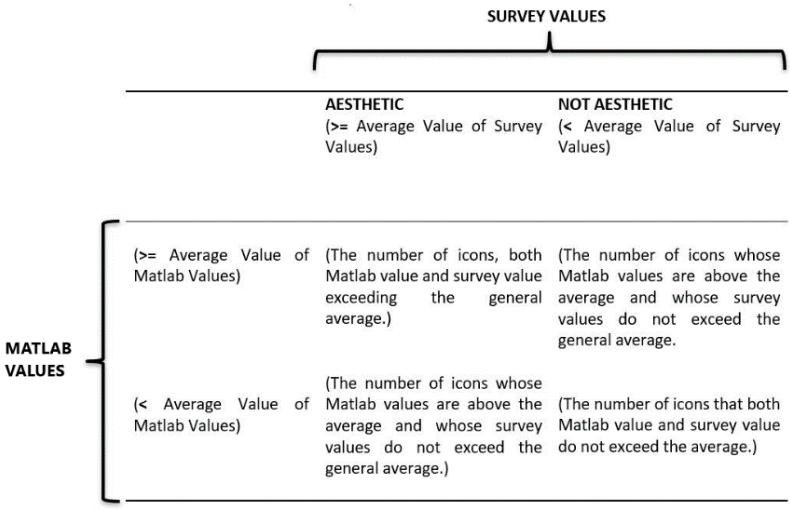

Figure 11. *Confusion Matrix (2x2).*

4. Results

4.1. Results of Application Number 1

App Name: Kpss Kontrol Sende

Number of Download: 1 Million +

Google Play Point: 4,6

Horizontal Symmetry Value: 0.11

Vertical Symmetry Value: 0.07

Total Symmetry Value: 0.09

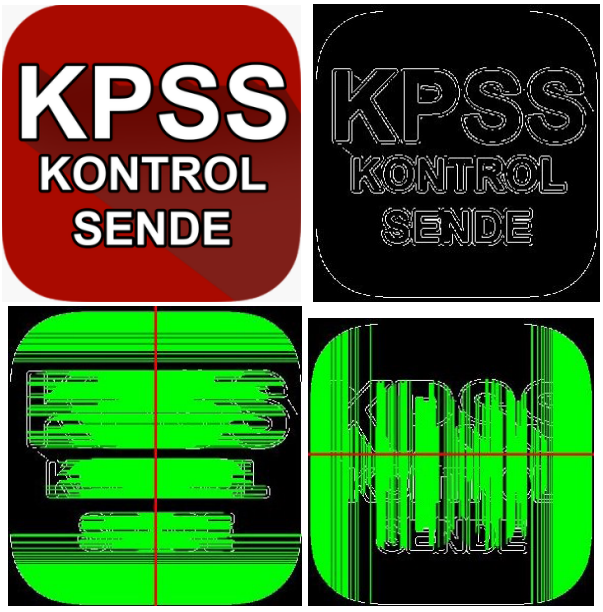

Figure 12. *Image Processing Results of Application 1.*

Figure 12 shows the image processing steps of the application 1 icon. Density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was found to be 0.11. The density of the matching white pixels on the vertical axis was observed occasionally and the vertical symmetry value was determined as 0.07. The total symmetry value was determined as 0.09.

4.2. Results of Application Number 2

App Name: Benim Hocam Mobil

Number of Download: 100.000+

Google Play Point: 4,8

Horizontal Symmetry Value: 0.18

Vertical Symmetry Value: 0.06

Total Symmetry Value:0.12

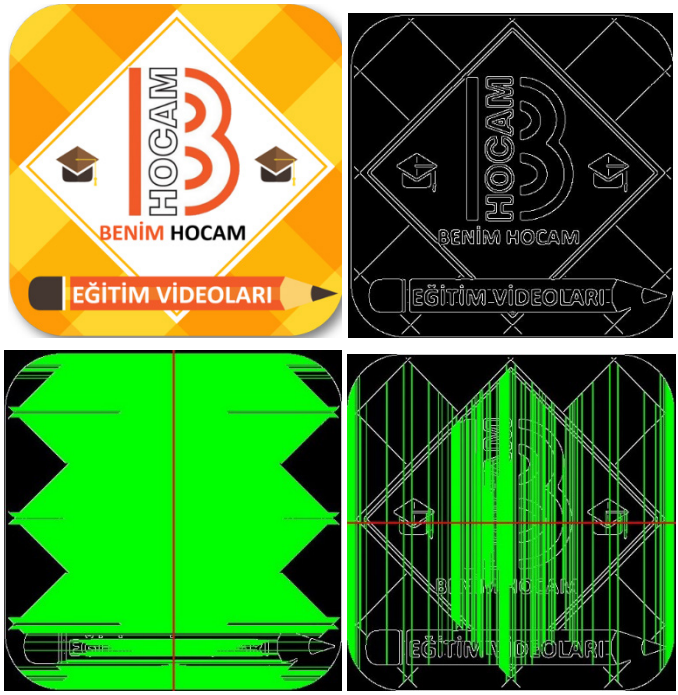

Figure 13. *Image Processing Results of Application 2.*

Figure 13 shows the image processing steps of the application 2 icon. The density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.18. The same density was not observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.06. The total symmetry value is determined as 0.12.

4.3. Results of Application Number 3

App Name: KPSS'ye Hazırlanıyorum

Number of Download: 100.000+

Google Play Point: 4,5

Horizontal Symmetry Value: 0.03

Vertical Symmetry Value: 0.03

Total Symmetry Value: 0.03

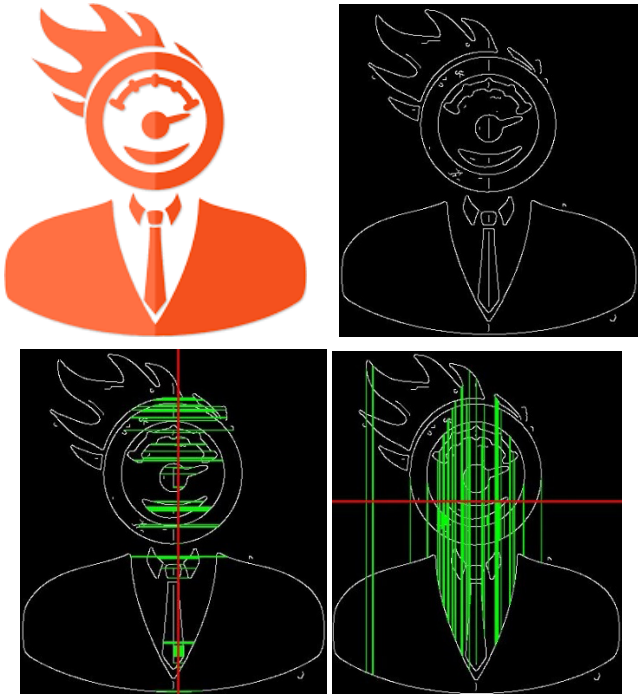

Figure 14. *Image Processing Results of Application 3.*

Figure 14 shows the image processing steps of the application 3 icon. Low density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.03. The same low intensity was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.03. The total symmetry value was determined as 0.03.

4.4. Results of Application Number 4

App Name: KPSS Cebimde 2019

Number of Download: 100.000+

Google Play Point: 4,5

Horizontal Symmetry Value: 0.05

Vertical Symmetry Value: 0.04

Total Symmetry Value: 0.045

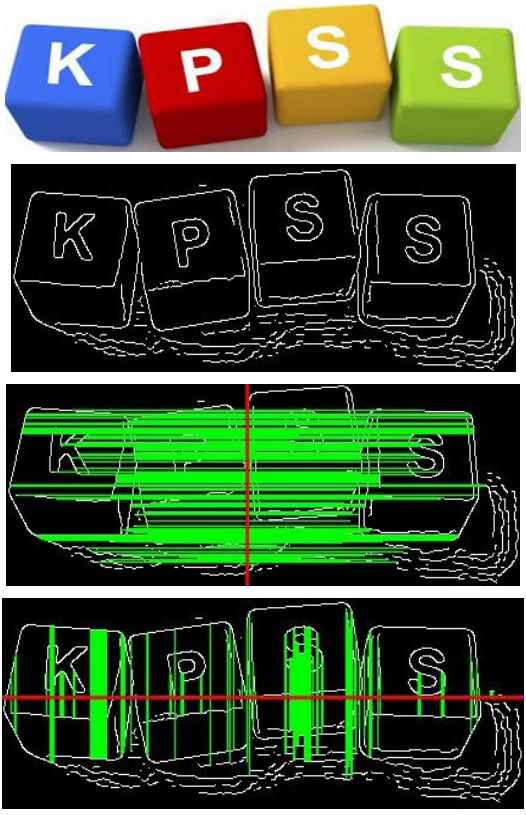

Figure 15. *Image Processing Results of Application 4.*

Figure 15 shows the image processing steps of the application 4 icon. Density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.05. Low density was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.04. The total symmetry value was determined as 0.045.

4.5. Results of Application Number 5

App Name: KPSS Cafe

Number of Download: 100.000+

Google Play Point: 4,0

Horizontal Symmetry Value: 0.04

Vertical Symmetry Value: 0.02

Total Symmetry Value: 0.03

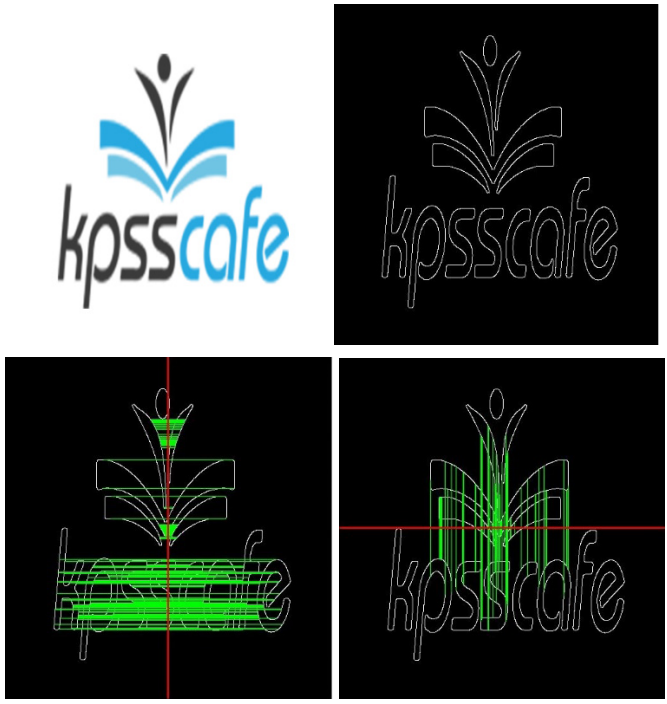

Figure 16. *Image Processing Results of Application 5.*

Figure 16 shows the image processing steps of the application 5 icon. Low density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.04. Low density was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.02. The total symmetry value was determined as 0.03.

4.6. Results of Application Number 6

App Name: KPSS Milyoner

Number of Download: 50.000+

Google Play Point: 4,1

Horizontal Symmetry Value: 0.22

Vertical Symmetry Value: 0.12

Total Symmetry Value: 0.17

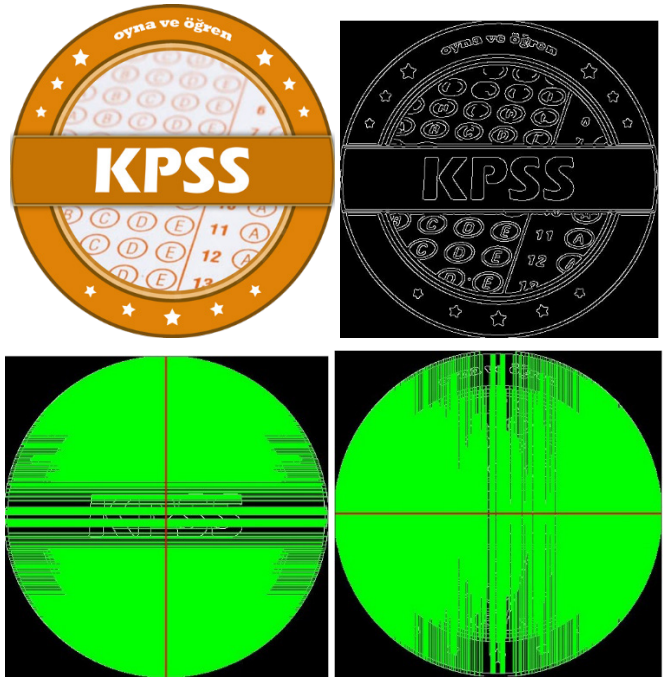

Figure 17. *Image Processing Results of Application 6.*

Figure 17 shows the image processing steps of the application 6 icon. Excessive density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined to be 0.22. Excessive density was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.12. The total symmetry value was determined as 0.17.

4.7. Results of Application Number 7

App Name: KPSS Aşkım 2019

Number of Download: 50.000+

Google Play Point: 4,8

Horizontal Symmetry Value: 0.06

Vertical Symmetry Value: 0.03

Total Symmetry Value: 0.045

Figure 18. *Image Processing Results of Application 7.*

Figure 18 shows the image processing steps of the application 7 icon. Partial density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.06. Sparse density was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.03. The total symmetry value was determined as 0.045.

4.8. Results of Application Number 8

App Name: Kpss Son 10 Yıl Çıkmış Sorular 2006-2017

Number of Download: 50.000+

Google Play Point: 4,0

Horizontal Symmetry Value: 0.09

Vertical Symmetry Value: 0.05

Total Symmetry Value: 0.07

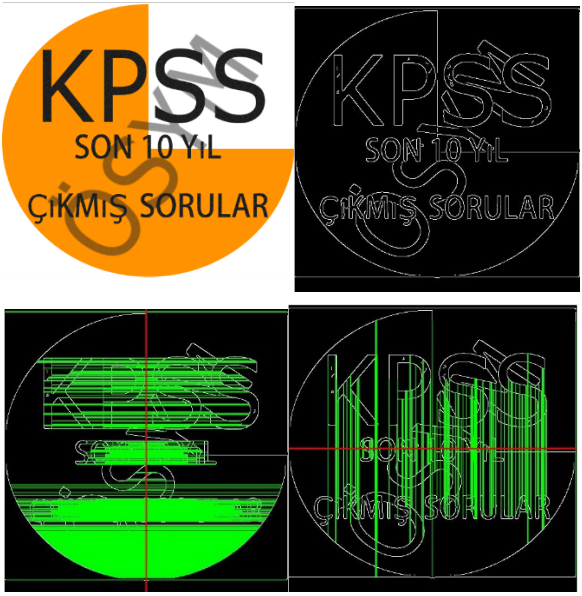

Figure 19. *Image Processing Results of Application 8.*

In Figure 19 image processing steps of the application 8 icon are shown. Partial density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.09. Sparse density was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.05. The total symmetry value was determined as 0.07.

4.9. Results of Application Number 9

App Name: Şifreli Hoca

Number of Download: 47.000+

Google Play Point: 4,7

Horizontal Symmetry Value: 0.10

Vertical Symmetry Value: 0.02

Total Symmetry Value: 0.06

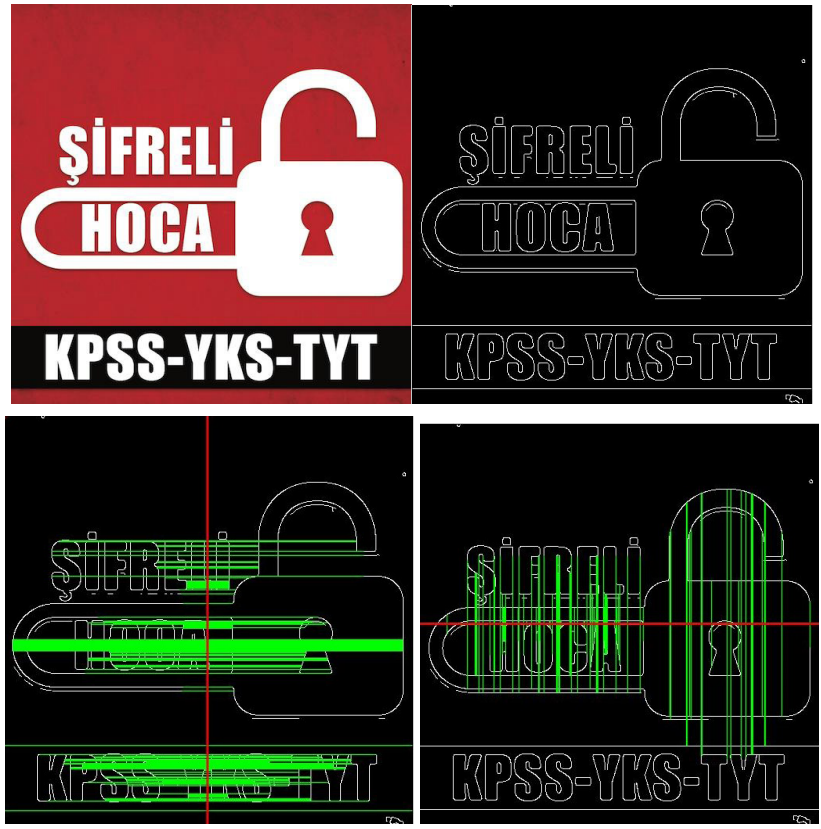

Figure 20. *Image Processing Results of Application 9.*

In Figure 20 image processing steps of the application 9 icon are shown. Image processing steps of application 9 icon are shown in Picture 19. Sparse density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.10. Sparse density was observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.02. The total symmetry value was determined as 0.06.

4.10. Results of Application Number 10

App Name: KPSS Genel Kültür Yarışması 2018

Number of Download: 10.000+

Google Play Point: 4,2

Horizontal Symmetry Value: 0.20

Vertical Symmetry Value: 0.12

Total Symmetry Value: 0.16

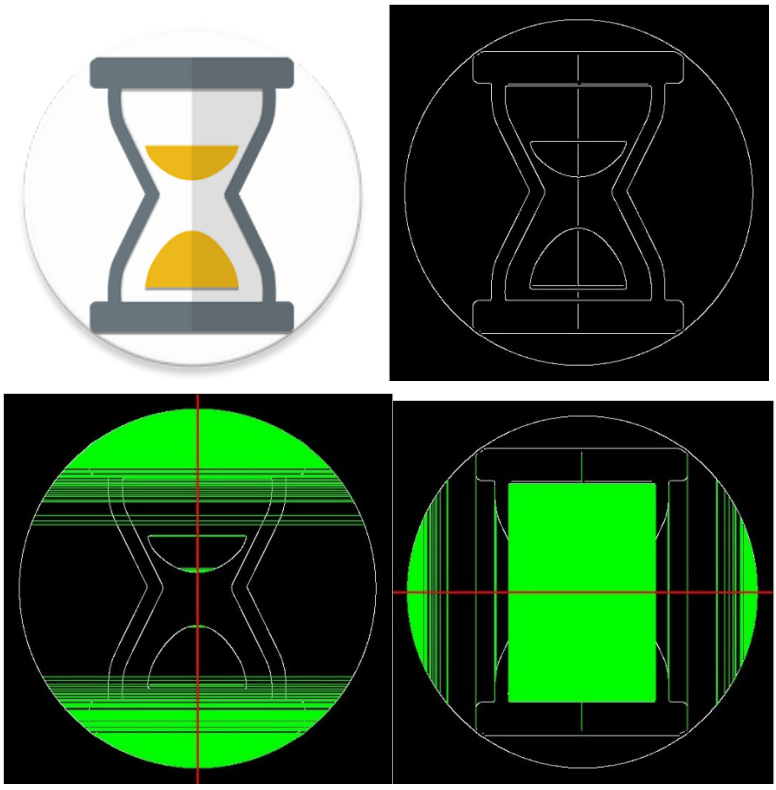

Figure 21. *Image Processing Results of Application 10.*

In Figure 21 image processing steps of the application 10 icon are shown. Excessive density was observed in the number of matching white pixels in the horizontal plane and the horizontal symmetry value was determined as 0.20. Excessive density was also observed in the number of matching white pixels on the vertical axis and the vertical symmetry value was determined as 0.12. The total symmetry value was determined as 0.16

Table 1. Matlab and Survey Values of App Icons.

	ICON	MATLAB VALUE	SURVEY VALUE
1		0,09	2,96
2		0,12	3,37
3		0,03	3,05
4		0,04	3,24
5		0,03	2,52
6		0,17	3,22
7		0,04	2,23
8		0,07	3,15
9		0,06	3,16
10		0,16	2,77

In Table 1 avarage points of icons from survey added to the matlab points of icons.

4.11. Results of Binary Logistic Regression

Table 2. Result of Confusion Matrix.

	AESTHETIC (>= 2.9)	NOT AESTHETIC (>= 2.9)	
(>= 0.08)	3	1	4 (% 75)
(< 0.08)	4	2	6 (% 33)
	7	3	(% 50)

Table 2 shows the grouping of 10 icons according to their data and limit values. From the collected data, the general average of Matlab data was found to be 0.08 and accepted as the grouping limit value for Matlab values. The general average of the survey values was found to be 2.9 and accepted as limit value for grouping.

In the 2x2 confusion matrix created for the binary logistic regression analysis, there were 3 icons with both matlab value and survey value exceeding the average, and 1 icon with matlab value exceeding the average but the survey value not exceeding the average. There were 2 icons with both the matlab value and the survey value not exceeding the average, and there were 4 icons whose matlab value could not exceed the average, but the survey value exceeded the average.

5. Discussion

According to the data obtained from the confusion matrix, the sensitivity of our prediction model for positive cases is 75%. Our model showed high precision in predicting positive results. However, for negative situations, the sensitivity rate of our model remained at 33%. Our model showed low sensitivity in compensating for negative results. The total sensitivity rate of our model was found to be 50%.

It has been observed that the icons whose symmetry values we measure on the computer exceed the general average also exceed the general average value at a high rate in the survey values, but in the opposite case, the same high rate does not appear for the icons below the average. It has been observed that some icons whose symmetry values are below average can also be liked by the respondents. The thesis that “the more symmetry value increases, the more aesthetic taste increases”, which we created by taking the road from previous similar studies, was partially correct.

6. Conclusions

In addition to many previous image processing techniques proposed for symmetry ratio determination, a new model is proposed in this study by revealing the white pixels of the picture with the "canny" method, one of the features of the matlab program, and calculating the equidistant ones around the axes. More comprehensive models can be created by adapting the models and codes we proposed to languages with programs such as R, Python and libraries for image processing such as the OpenCv.

In addition to the SIFT Detector method used by Cornelius and Loy (2006) [8], the numerical values of the symmetry can be extracted as well as the symmetry determination in 3D pictures by adding Matlab codes we used.

Numerical values can also be deduced in addition to the symmetry determination with adding our matlab codes to symmetry study which is proposed by Shi et al. (2018) [12], made over a line passing through the center of gravity of the shape formed based on transferring the contours of the picture to the x and y plane in the Matlab program.

When the Ribbon Detection method proposed by Widynski et al. (2014) [14] is similar to the "canny" method we use to draw the outline of a picture which is used to extract the linear lines of the objects in the picture to find regional symmetries combined with the method we proposed, a useful model might be created for the calculation of individual symmetry values of objects in different parts of the picture.

In order to guide the future studies on aesthetics and symmetry, an aesthetic detection model is proposed in this study. These findings, which are found only for mobile application icons, show us that the symmetry in designs such as book cover, video cover photos (thumbnail), commercial company logo, product packaging etc. can create an aesthetic perception and contribute positively to marketing.

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Chapter 14

USING TECHNICAL INDICATORS TO PREDICT STOCK PRICE INDEX MOVEMENTS BY MACHINE LEARNING TECHNIQUES

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1. Introduction

Predicting the direction of stock prices is one of the most challenging tasks that a modeller undertakes. Researchers and practitioners from various fields such as finance, the stock market, statistics, and computer sciences are interested in estimating the true trend of the stock price index. Attaining accurate predictions of the stock price movement can be extremely useful for individual and institutional investors to gain a significant profit and to hedge against possible losses (Kumar & Thenmozhi, 2006; Leung, Daouk, & Chen, 2000). In practice, it is more important to maximise the accuracy of predicting the direction of any stock, rather than minimising the forecasting error of the price of the concerned stock; this is because the lower forecasting error with the wrong direction of future price causes the investors to take the wrong position when deciding whether to buy or hold. However, a model with a higher forecasting error of the price but the right prediction of the direction may lead to profitable trading and may improve the returns of any investment. Stock markets have the characteristics of being non-linear, non-stationary, non-parametric, and they have high uncertainty and complexity levels, which make them difficult to analyse (Guresen, Kayakutlu, & Daim, 2011; Qiu & Song, 2016; Tay & Cao, 2001).

There has been an ongoing debate among academicians, researchers and practitioners regarding the predictability of the stock market. The debate is based on the efficient market hypothesis (EMH) (Fama, 1970). The hypothesis states that all new information about any stock on the market will be immediately included in the price of that stock. Accordingly, there is no way to buy undervalued stock or to sell overvalued stock to obtain superior returns because the hypothesis assumes that stocks are traded at their fair market values. Supporters of the EMH believe that the only way of getting higher returns is to undertake a risky investment, and it is a waste of time to estimate the trend of a market by exploiting technical or fundamental analysis. However, the proponents of the opposite view argue that there are opportunities in the market from which investors and fund managers may benefit to achieve high profits. They claim that the price of a stock can differ largely from its fair value without a solid reason, simply due to extreme pessimism or optimism in the market, for example, in the case of stock market crashes and asset bubbles. Moreover, some papers in the literature prove the possibility of the partial predictability of the behaviour of stock prices by providing successful applications (Enke & Thawornwong, 2005; Huang, Nakamori, & Wang, 2005; Malkiel, 2003).

To analyse the price of any security, especially of a stock, in the hope of identifying trading opportunities, researchers generally follow two opposite strategies. One of them is the fundamental analysis which attempts to determine the fair value of a stock by considering the impacts of macroeconomic and microeconomic factors on the stock, such as

earnings, return on equity, cash flow, interest rates, inflation, and industrial production. The fundamental analysis aims to compare the fair value of a stock with its market price to see whether profitable trading opportunities exist. The other approach involves the technical analysis of the trends and patterns in historical data to form a trading strategy. Technical analysis assumes that the past trading activities and the price changes of a stock can help investors to forecast and trade future prices as valuable indicators. Because technical analysis claims that all fundamentals which affect a stock's intrinsic value have already been priced into the stock, there is no need to take them into account. When a trend has started in past, it is likely to continue its movement and repeat itself, which can be identified by using the price and volume movements of the stock. In this study, we preferred technical analysis to predict the trend in the daily Borsa Istanbul (BIST) 100 index.

A large number of modelling techniques have been employed with the intent of predicting stock price movements. These techniques try to capture the trend of the stock in question to generate buy or sell trading signals. The aim is to determine correctly the true class of the future prices which can be categorized as 1 and -1, indicating an increase or a decrease in the price of a stock, respectively. Among the most used models, machine learning techniques exhibit superiority over the classic models (Huang et al., 2005; Leung et al., 2000). For this purpose, we employed Support Vector Machine (SVM), Random Forest (RF), K-Nearest Neighbours (KNN), Logistic Regression (LR), and Naïve Bayes (NB) in the scope of this study. Also, a hard voting (majority voting) ensemble as a simple combining method is exploited to determine the final class label by using the most frequent class predicted among the classification models at hand.

The contribution of this study to the relevant literature is to consider the different number of past observations used to calculate technical indicators. It is a known fact that the effect of the input window length for technical indicators on the prediction performance changes with respect to the forecast horizon examined (Shynkevich, Mcginnity, Coleman, Belatreche, & Li, 2017). The time frame for computing technical indicators should be approximately equal to the horizon to obtain a higher prediction performance. In this study, we compute each of the technical indicators seven times by differing the input window length. Hence, the selected window sizes reflect the effect of the indicators, which are calculated in the short, medium, and long term, based on the trend movements. In this way, it will be possible to determine which technical indicator works well in the most appropriate window length and that the information gathered from different periods is included in the pool of the technical indicators. For this purpose, the ten most frequently used technical indicators are varied by seven input window lengths to build the pool of the technical indicators. After that, a feature selection algorithm is performed on the variable pool to determine the most important ones in

the movement of the relevant stock index. The obtained results indicate the effectiveness of this method, and the superiority over the buy-and-hold strategy, especially using KNN, RF, and SVM techniques.

The rest of the study is organised as follows. Section 2 deals with the related literature on the prediction of direction with machine learning techniques. The details regarding the machine learning techniques used in this study are given in Section 3. Section 4 presents the information about the data, the formulation of the technical indicators, and the hyper-parameters tuned in the analysis. Section 5 contains the obtained results. Finally, some concluding remarks are discussed at the end of the study.

2. Literature Review

The study by Kara et al. (2011) garnered much attention regarding the suggested technical indicators in comparing performances of artificial neural networks (ANN) and SVM using the Istanbul Stock Index (ISE) National 100 index, the previous name of the BIST 100 index. The obtained results demonstrated that both models achieved significant performances in predicting the direction of the index, but the ANN model was slightly better than the SVM model. Oliveira et al. (2013) applied the ANN model to predict the price and direction of Petrobras stock PETR4 traded in BM&FBOVESPA, Brazil by exploiting the variables selected from both the fundamental and technical analysis. They claimed that it is possible to obtain a high degree of forecast accuracy using the proposed methodology. Gunduz and Cataltepe (2015) proposed a new method to predict the direction of the BIST 100 index with the help of news articles and price data. The proposed method took the feature selection for imbalanced data into account to increase the macro-averaged f-measure. It is shown that the proposed feature selection method resulted in fewer features and higher performances compared to two traditional feature selection methods. Ballings et al. (2015) conducted a comparative study of single classifier models against ensemble methods on yearly data from a wide range of European companies for stock price direction prediction. They indicated that ensemble methods should have been included in the modeller's toolbox, especially since the RF among them led to considerably better results than others.

Another study by Patel et al. (2015) was put forward to discretise the ten technical indicators to follow the trend more closely using ANN, SVM, RF, and Naïve Bayes. This discrete representation made the technical indicators produce +1, meaning up movement, and -1, meaning down movement in the trend of the two stock price indices. It was observed that the RF outperformed other models and the discrete representation improved the accuracy of all models investigated further. Qui and Song (2016) analysed the daily price of the Nikkei 225 index by employing two different lists of technical indicators; one of them mostly preferred indicators and the other selected fewer from

previous studies. The researchers concluded that the list that selected fewer indicators could generate superior accuracy in predicting the direction of the index. Shynkevich et al. (2017) attempted to determine empirically the input window length depending on the forecast horizon when calculating technical indicators. For this purpose, 50 stocks selected randomly from the S&P 500 stock market index were used in the analysis to ascertain the relationship between the forecast horizon and the input window length. This study gave evidence that the effect of the window size on the forecasting price movements was very strong, and the best performances were reached under the combination of the window length being almost equal to the forecast horizon. Alsubaie et al. (2019) conducted a comprehensive investigation into the widely used technical indicators used by researchers to exploit them in various machine learning models with the help of five feature selection methods. After examining the results of 100 daily time series, it was observed that a cost-sensitive fine-tuned Naïve Bayes classifier produced the best performances and, at least ten technical indicators were necessary to achieve high performance. Mallqui and Fernandes (2019) exploited some feature selection techniques to identify the input attributes to predict the direction and future prices. The result was that SVM attained the best results compared with ANN and ensemble methods based on k-means clustering and recurrent neural networks.

Basak et al. (2019) compared the prediction performances of tree-based classifiers, RF, and gradient boosted decision trees, with LR, SVM, and ANN on the randomly selected ten stocks from the S&P 500 index. They observed that tree-based classifiers, specifically RF, outperformed the other machine learning techniques examined. Hasan et al. (2020) made use of a larger set of technical indicators to predict the future direction of the BIST 100 national index using the deep neural network, SVM, RF, and LR classification techniques. The results showed the superiority of deep neural networks according to various performance metrics. Ismail et al. (2020) used four machine learning models, namely LR, ANN, SVM and RF, with persistent homology to provide useful extracted features in predicting the next day direction of the prices for the Kuala Lumpur Composite Index, the Kuala Lumpur Industrial Stock Exchange and the Kuala Lumpur Technology Stock Exchange. With the proposed methodology, SVM was the best machine learning model and produced promising results for future analysis. Ampomah et al. (2020) applied principal component analysis as a feature extraction method on 45 predictors consisting of 40 technical indicators plus OHLCV variables. They examined the classification performances of tree-based ensemble machine learning models and single machine learning models on the randomly selected eight stock data from the NYSE, NASDAQ, and NSE indexes to predict stock price direction. It was concluded that the Extra Trees classifier exhibited superiority over all models considered.

3. Machine Learning Techniques

3.1. Naïve Bayes

The Naïve Bayes (NB) algorithm belongs to a group of Bayesian classifiers based on applying Bayes theorem to supervised learning under the assumption of class conditional independence. The algorithm led to satisfactory results in predicting the direction of stock prices in some papers (Gunduz & Cataltepe, 2015; Imandoust & Bolandraftar, 2014). The advantage of using the NB classifier comes from its simplicity to build, working efficiently in a high dimension, robust to outliers, needing a small amount of data, and less prone to overfitting compared to more sophisticated classification techniques.

Assume that $x_1, x_2, \cdots, x_n$ represent the features and y is a class variable. According to Bayes theorem, and considering conditionally independent among features:

$$P(y/x_1, x_2, \cdots, x_n) = \frac{P(y)P(x_1, x_2, \cdots, x_n/y)}{P(x_1, x_2, \cdots, x_n)} = \frac{P(y)\prod_{i=1}^{n} P(x_i/y)}{P(x_1, x_2, \cdots, x_n)} \quad (1)$$

For all observations in the dataset, $P(x_1, x_2, \cdots, x_n)$ remains the same as a constant. Hence, it can be removed, and the final classification rule is obtained as follows:

$$P(y/x_1, x_2, \cdots, x_n) \propto P(y)\prod_{i=1}^{n} P(x_i/y) \quad (2)$$

$$\hat{y} = \text{argmax}_y\, P(y)\prod_{i=1}^{n} P(x_i/y)$$

3.2. Logistic Regression

Logistic regression (LR) is one of the most widely used statistical classification models; it is in linear form and can provide the probability of each class for a sample. LR was exploited to model stock price direction by researchers (Ballings et al., 2015; Hasan et al., 2020). The target variable for LR models is categorical and consists of two or more levels, while the input variables can be a categorical or numerical form of independent or weakly dependent features.

Let $y_j \in \{0,1\}$ represent the binary target variable and x_{mi} is the m th feature. The estimated logistic regression model can be described as follows:

$$Logit(\hat{p}_i) = log(\frac{\hat{p}_i}{1-\hat{p}_i}) = \hat{\beta}_0 + \hat{\beta}_1 x_{1i} + \cdots + \hat{\beta}_m x_{mi} \quad (3)$$

where $\hat{p}_i$ is the predicted probability of i th observation, $i = 1,2,\cdots,N$. The coefficients of logistic regression are estimated by the maximum likelihood method. The predicted probability is calculated as follows:

$$\hat{p}_i = \left\{1 + exp\left[-(\hat{\beta}_0 + \hat{\beta}_1 x_{1i} + \cdots + \hat{\beta}_m x_{mi})\right]\right\}^{-1} \qquad (4)$$

After finding $\hat{p}_i$ value, it can be employed to determine the class of i th observation according to a threshold value, for example, 0.5 in Equation (5).

$$\hat{y}_i = \begin{cases} 0, & if\ \hat{p}_i < 0.5 \\ 1, & if\ \hat{p}_i \geq 0.5 \end{cases} \qquad (5)$$

3.3. K-Nearest Neighbours

The K-Nearest Neighbours algorithm (KNN) is easy to implement, calculated quickly, and does not require any assumptions about data. It is preferred as a classification technique by many researchers and practitioners in the analysis of the stock market due to its ease of use and promising performances (Nayak, 2015). The KNN algorithm is based on a similarity measure that provides information regarding the class of an observation. The most significant parameter on the accuracy of the algorithm is the number of neighbours, K, to construct clusters. After a new sample arrives, its similarity according to the existing clusters is calculated and its class is determined. The most frequent class with the minimum distance is assigned to the new sample. The accuracy of the algorithm depends on the training data.

Suppose $X^i = (x_1^i, x_2^i, \cdots, x_m^i)$ is the i-th input vector, where m denotes the number of features and n represents the size of the training set. When a new sample $X^{n+1} = (x_1^{n+1}, x_2^{n+1}, \cdots, x_m^{n+1})$ arrives, the KNN algorithm uses the Euclidean distance to calculate the similarity measure, as follows:

$$D\left(X^i, X^{n+1}\right) = \sqrt{\sum_{j=1}^{m}\left(x_j^{n+1} - x_j^i\right)^2} \quad , i = 1,2,\ldots,n \qquad (6)$$

3.4. Random Forest

Random forest (RF) is one kind of ensemble learning method which was intentionally developed by Breiman (2001) to deal with the problem of overfitting that frequently occurred in decision trees. A decision tree is a simple, efficient, and non-parametric technique of machine learning for regression and classification. Random forest is composed of n decision trees, each of which works independently on randomly selected training data with replacements and with randomly selected features to avoid overfitting by increasing the diversity in sample space. After building decision trees, the random forest is ready to make its prediction through

the use of majority voting when a new sample arrives. Recently, the inclusion of RF into the analysis to predict the returns and directions of stock markets has become more common (Ampomah et al., 2020; Kumar & Thenmozhi, 2014). Figure 1 depicts simplified processing in a random forest.

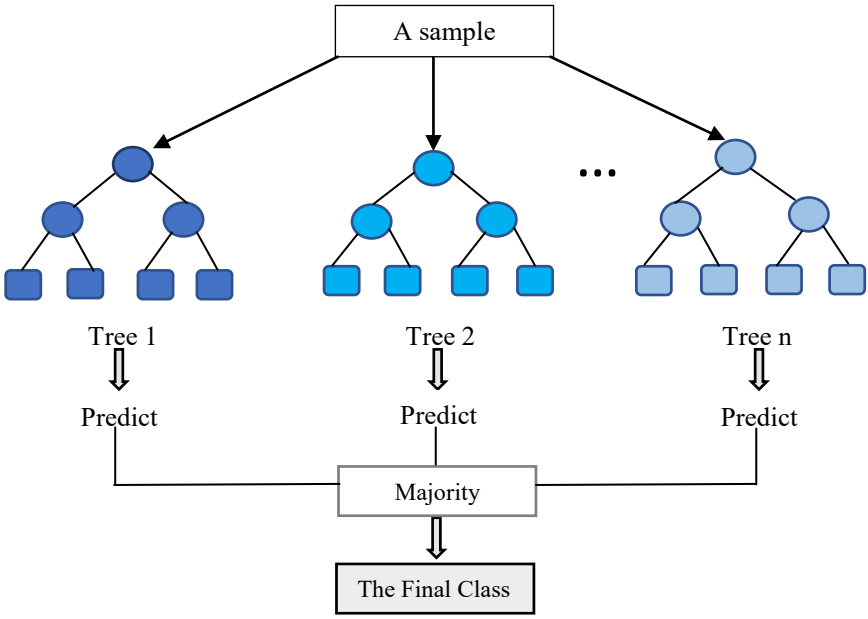

Figure 1. A simplified visual processing in a random forest.

3.5. Support Vector Machines

Support vector machines (SVM) are based on the idea of mapping original data, which is not linearly separable, to a higher dimensional feature space with the help of a kernel function where the patterns can be separable linearly in the transformed space. It is one of the most frequently utilised machine learning techniques in both classification and regression problems. The aim is to find the optimal hyperplane by determining the maximum margin hyperplane between the decision boundaries and training samples closest to it. SVM with the property of resistance to overfitting has been a popular choice to predict the closing price and direction of stocks (Dash & Dash, 2016; Lee, 2009).

The decision boundary in high dimensional feature space can be described in Equation (7). N is the size of the training set, $x_i \in R^d (i =$

$1,2,\cdots,N$) is the input vector associated with class labels, $y_i \in \{1,-1\}$, b is the intercept term, and $K(x_i, x_j)$ corresponds to the kernel function.

$$f(x) = sgn\left(\sum_{i=1}^{N} y_i \alpha_i \cdot K(x_i, x_j) + b\right) \quad (7)$$

To find the values of α_i, the following quadratic programming problem is solved:

$$Maximize \sum_{i=1}^{N} \alpha_i - \frac{1}{2}\sum_{i=1}^{N}\sum_{j=1}^{N} \alpha_i \alpha_j \cdot y_i y_j \cdot K(x_i, x_j) \quad (8)$$

$$Subject\ to\ 0 \le \alpha_i \le c$$

$$\sum_{i=1}^{N} \alpha_i y_i = 0, \qquad i = 1,2,\cdots,N$$

where c is the regularization parameter representing the trade-off between misclassification error and the simplicity of the decision surface.

The most used kernel function is the radial basis function given in Equation (9):

$$K(x_i, x_j) = \exp(-\gamma \|x_i - x_j\|^2) \quad (9)$$

where γ is the kernel coefficient specified correctly.

4. Data Description and Methodology

The data used for the analysis is composed of the daily open, closing, highest, and lowest prices and trading volume of the Borsa Istanbul 100 (BIST 100) index from 26th June 2018 to 29th June 2020. It is publicly available at Investing (2020), consisting, in total, of 500 data points. Figure 2 demonstrates the time plot of closing prices for the BIST 100 index. As can be seen from the figure, the prices are very volatile and have non-stationary characteristics. There are some periods where sudden increases are followed by sudden falls. Specifically, the effect of COVID-19 on the prices is observed, which causes a very sharp and sudden fall, but around April 2020, it seems to be starting to give losses back. Hence, predicting the trend of the prices as accurately as possible will provide huge opportunities for investors to build profitable trading strategies. As a target variable, the change of the daily closing price is labelled as "-1" or "1", representing a decrease or increase in the BIST 100 index respectively.

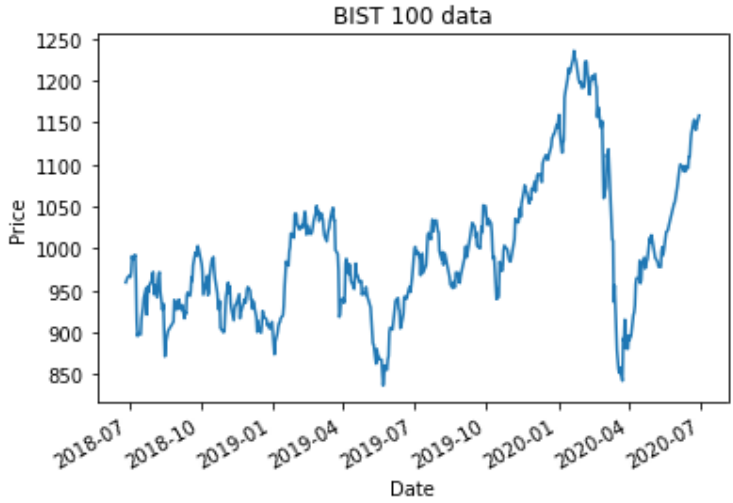

Figure 2. Time plot of BIST 100 index.

To evaluate the robustness of the analysis, the dataset is divided into ten subsets, each of which has its own training and test sets. This rolling-window scheme is formed as 250 days for in-sample data, approximately one year, and the next 25 days for out-of-sample data, approximately one month. After obtaining the forecasts for the relevant out-of-sample data, the analysis is repeated by moving in time by a length of 25 days. All the models in this process were re-estimated ten times. Periods for training and test sets constructed in the scope of this study are presented in Table 1.

Table 1. Time periods for the training and test sets.

Periods	Training	Test
Period 1	27/06/2018- 27/06/2019	28/06/2019- 02/08/2019
Period 2	01/08/2018- 02/08/2019	05/08/2019- 12/09/2019
Period 3	12/09/2018- 12/09/2019	13/09/2019- 17/10/2019
Period 4	17/10/2018- 17/10/2019	18/10/2019- 22/11/2019
Period 5	22/11/2018- 22/11/2019	25/11/2019- 27/12/2019
Period 6	27/12/2018- 27/12/2019	30/12/2019- 03/02/2020
Period 7	01/02/2019- 03/02/2020	04/02/2020- 09/03/2020
Period 8	08/03/2019- 09/03/2020	10/03/2020- 13/04/2020
Period 9	12/04/2019- 13/04/2020	14/04/2020- 21/05/2020
Period 10	21/05/2019- 21/05/2020	22/05/2020- 29/06/2020

Table 2 presents the labels in the training and test sets for all periods considered. It is understood from this table that the number of increases is generally more observed than the number of decreases. Hence, the data is slightly imbalanced. Period 5 and 10 are the most imbalanced cases

among test sets. When imbalanced data occur, the modeller should take this situation into account before attempting to model data. The majority class on data will dominate the minority class, and this forces the machine learning technique to over-learn the majority class. Because of this over-learned class, the model tends to make its predictions as the label of the prevailing class. As a result, the generalisation performance calculated on the test set may not be as good as desired. A common way to cope with this problem is to balance the data through sampling techniques before learning starts. There are two general sampling methods for this purpose: over-sampling and under-sampling. Over-sampling produces new instances from the minority class while under-sampling deletes the existing instances in the majority class in a dataset to balance classes in a dataset. Each sampling method has advantages and disadvantages over each other (Luengo, Fernández, García, & Herrera, 2011). For this study, random over-sampling, which generates new samples from the minority class in the training set by randomly sampling with replacement, is exploited for balancing.

Table 2. The number of cases in the training and test sets.

	Training				Test			
Periods	Increase	%	Decrease	%	Increase	%	Decrease	%
Period 1	135	54.0	115	46.0	14	56.0	11	44.0
Period 2	132	52.8	118	47.2	15	60.0	10	40.0
Period 3	135	54.0	115	46.0	9	36.0	16	64.0
Period 4	130	52.0	120	48.0	13	52.0	12	48.0
Period 5	131	52.4	119	47.6	17	68.0	8	32.0
Period 6	136	54.4	114	45.6	14	56.0	11	44.0
Period 7	132	52.8	118	47.2	10	40.0	15	60.0
Period 8	128	51.2	122	48.8	13	52.0	12	48.0
Period 9	127	50.8	123	49.2	14	56.0	11	44.0
Period 10	135	54.0	115	46.0	18	72.0	7	28.0

There is a large variety of technical indicators proposed by researchers to reflect the current state and past behaviour of the prices as input variables in predicting the direction of the stock price index. Some technical indicators convey the same information about prices while some of them are very diverse in terms of representing different characteristics of the time series. The selection of the accurate and dissimilar sets of indicators as far as possible for the analysis can have a crucial effect on the performances, and there is active research being conducted on this area. After reviewing the literature, the ten indicators employed by Shynkevich et al. (2017) were selected for this study. These indicators were selected because they are the preferred indicators used by most researchers, and the study conducted by Shynkevich et al. (2017) carries some similarities with this study. They tried to find out the effect of input window length on the forecast horizon by varying the number of past observations to calculate the indicators. The main differences between this study and theirs are that the forecast horizon is one day, the direction of the

next day, and each of the indicators is calculated seven times by varying the number of input window length as 3, 5, 7, 10, 15, 30, and 50 to construct the pool of candidate indicators to select the important ones among them. For a selection from the pool of candidate indicators, the linear support vector classification (Linear SVC) was employed to discard unimportant indicators, considering their coefficients in the constructed model. The formulas for the used technical indicators are given in Table 3. The summary statistics regarding all indicators, including on different time windows, are provided in the Appendix.

Table 3. The used technical indicators.

Indicator Name	Formula
Simple Moving Average (SMA)	$SMA_n = \frac{1}{n}\sum_{i=0}^{n-1} C_{t-i}$
Exponential Moving Average (EMA)	$EMA_n = \sum_{i=0}^{n-1} w_i C_{t-i}$
Average True Range (ATR)	$ATR_n = EMA_n(\max(H_t - L_t, \lvert H_t - C_{t-1}\rvert, \lvert L_t - C_{t-1}\rvert))$
Average Directional Movement Index (ADX)	$ADMI_n = 100 * (DI_n^+ - DI_n^-)/(DI_n^+ + DI_n^-)$
Commodity Channel Index (CCI)	$CCI_n = \left(M^t - SMA_n(M^t)\right) \Big/ \left(0.015 \sum_{i=1}^{n} \lvert M_{t-i+1} -$
Price rate-of-change (ROC)	$ROC_n = (C_t - C_{t-n})/C_{t-n}$
Relative Strength Index (RSI)	$RSI_n = 100 - 100/\left(1 + EMA_n(DM^+)/EMA_n(DM^-)\right)$
William's %R	$R_n = 100 * (H_n - C_t)/(H_n - L_n)$
Stochastic %K	$\%K_n = 100 * (C_t - LL_n)/(HH_n - LL_n)$
Stochastic %D	$\%D_n = EMA_3(\%K_n)$

C_t, L_t, H_t are the closing, lowest, and highest prices of the BIST 100 index at time *t,* and *n* is the length of the input window. DI_n^+ and DI_n^- represent the indicators of the positive and negative directional movements. $DM^+ = \max(C_t - C_{t-1}, 0)$ and $DM^- = \min(C_t - C_{t-1}, 0)$ represent positive and negative directional movements. $M^+ = H_t + L_t + C_t$ is the sum of the highest, lowest, and closing prices at time *t.* HH_n and

LL_n are computed over n days by taking the mean of highest high and lowest low prices.

To measure and compare the performance and robustness of the classification techniques in the study, three evaluation metrics have been utilised. Two of them, accuracy and f-measure, are derived from the confusion matrix. The confusion matrix is the traditional way to analyse the performance of classifiers. Its rows and columns indicate the number of instances from actual and predicted classes. Table 4 shows the constructed confusion matrix for a two-class problem in the analysis. The abbreviations for true positive, false negative, false positive, and true negative are denoted by tp, fn, fp, and tn, respectively. With the help of the confusion matrix, the calculations for accuracy, precision, recall, and f-measure are performed according to Equations (10-13). Accuracy is the most chosen metric for a balanced dataset, but it may not appropriate for an imbalanced dataset because of higher values. Recall shows the performance of a classifier in detecting all positive instances, while precision denotes that the performance of a classifier does not predict negative instances that are actually positive. F-measure (also called f-score or f1 score) is computed via precision and recall. It is the harmonic mean of recall and precision, and a more trusted measure, even in the case of an imbalanced dataset.

Table 4. The confusion matrix.

Actual/Predicted	Positive	Negative
Positive	tp	fn
Negative	fp	tn

$$Accuracy = \frac{tp+tn}{tp+tn+fp+fn} \tag{10}$$

$$Precision = \frac{tp}{tp+fp} \tag{11}$$

$$Recall = \frac{tp}{tp+fn} \tag{12}$$

$$F\text{-}measure = \frac{2\times precision\times recall}{precision+recall} \tag{13}$$

From the point of practical applications, the accuracy of the classification of price movements does not necessarily mean that it will lead to a profitable trading strategy. An accurate prediction on the

of the models used from a trading point, a metric called return per trade is utilised in this study. When a prediction system generates a buy signal built on an increase in the trend, the relevant stock is bought and held during the investment horizon. After the investment horizon ends, it will be sold; thus, the return is calculated as follows:

$$R_{t,s} = (C_{t+s} - C_t)/C_t \quad (14)$$

where C_t is the closing price at time t, s is the length of the investment horizon, and $R_{t,s}$ is the return at the end of the investment horizon.

When a prediction system generates a sold signal built on a decrease in the trend, the relevant stock is sold and bought back at the end of the investment horizon. Hence, the obtained return is calculated according to Equation (15).

$$R_{t,s} = (C_t - C_{t+s})/C_t \quad (15)$$

The most critical factor that significantly affects the prediction performance of any machine learning technique is the values of hyper-parameters. Hyper-parameters are set before learning and do not change until the end of the learning process. To find good values of hyper-parameters, the grid search methodology with a k-fold cross-validation technique is employed in this study. It should be noted that the Gaussian Naïve Bayes, one type of Naïve Bayes method used for the analysis, does not require any hyper-parameter. Hence, it is not included in the analysis of hyper-parameter optimization. To cope with the overfitting problem, the number of the fold is chosen as 10. The names of hyper-parameters to be fine-tuned and their possible values under investigation for all models are presented in Table 5.

Table 5. The list of the hyper-parameters for the machine learning models.

Model	Hyper-parameter	Values
SVM	C	[10000, 1000, 100, 10, 1, 0.1, 0.01, 0.001]
	γ	[0.1, 0.01, 0.001, 0.0001, 0.00001]
	Kernel	Radial basis function
RF	The number of trees.	[100, 300, 500]
	The minimum number of samples required to split an internal node.	[2, 5, 7, 10]
	The minimum number of samples required to be at a leaf node.	[1, 3, 5, 10, 15, 30, 50, 100]
	Criterion	Gini impurity
KNN	The number of neighbours	[1, 3, 5, ….,195,197, 199]
	Distance metric	[Manhattan, Minkowski]
	Weight function	[Uniform, Distance]
Logistic Reg.	Penalty	[L1 Norm, L2 Norm, Elastic-Net]
	Solver	[newton-cg, lbfgs, liblinear, sag, saga]
	C	[10000, 5000, 1000, 500, 100, 1, 0.1, 0.01, 0.001]

5. The Results and Analysis

The analysis was carried out in two different ways to exhibit the benefits of exploiting the feature selection technique on reaching better prediction performance. The first way is to use all candidate indicators consisting of 70 technical indicators in modelling the daily direction of the BIST 100 index; in other words, to use 70 input variables for all the models in the analysis. The second way is to perform a feature selection algorithm built on Linear SVC to identify the important indicators of prediction performance before the modelling step. In this way, it will be possible to observe the effects of the combination of different technical indicators and different input window lengths on the investigated periods. Figure 3 demonstrates the frequency graph according to the most and least selected technical indicators by the feature selection algorithm. Due to the existence of ten time periods in the analysis, the maximum number of selections for an indicator can be 10. This is achieved by the average directional movement index (ADX) two times with a different number of input windows, by 5 and 15. As can be seen from the figure, the ADX and CCI indicators stand out from others to provide more information regarding the movement of the BIST 100 index. Additionally, there is a tendency to select the smaller input window lengths for the forecast horizon, which is the next day. This finding is in line with the empirical evidence found by Shynkevich et al. (2017).

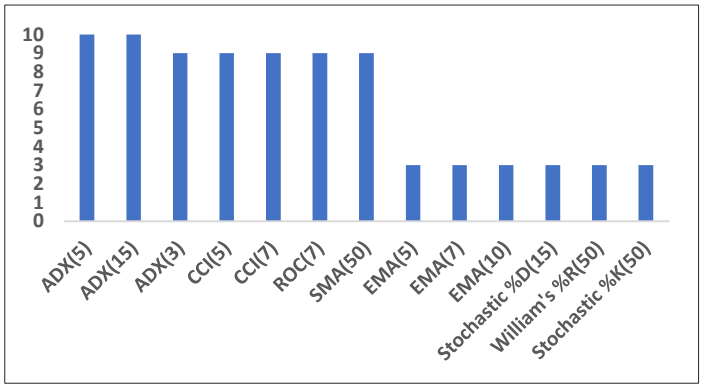

Figure 3. The most and least selected technical indicators by the selection technique.

Table 6, which provides the accuracy results of all models for the periods considered, is composed of two parts. The upper part includes the scores of accuracy when all indicators are taken as inputs for the models without any process of feature selection. The lower part presents the scores of the accuracy of the models when performing the feature selection algorithm. Also, the last column of the table gives the results of the simple ensemble with a hard-to-beat method: majority voting (hard voting). The best performing model in each row is represented in bold fonts. In the first part of the table, it is observed that LR, RF, and SVM

are the most frequently selected models three times over. In the second part of the table, it is seen that the most frequently selected models are RF, SVM, and hard voting four times. Also, when we compare the general results of two parts, the accuracy score above 0.70 is two for the first part but seven for the second part. This reflects the positive effect of employing the feature selection technique on the technical indicators. Table 7 indicates the result of the f-measure in the same design as the previous one. Similar interpretations can be made for Table 7. It points out the advantage of discarding unimportant indicators on the predictions.

Table 6. The accuracy scores of the models.

All Technical Variables						
Periods	Naïve Bayes	Logistic Reg.	KNN	Random Forest	SVM	Hard Voting
Period 1	0.44	0.44	0.48	0.48	**0.56**	0.48
Period 2	0.40	0.32	**0.48**	0.20	0.40	0.32
Period 3	0.56	0.36	0.52	0.52	**0.64**	0.52
Period 4	0.52	0.52	0.56	**0.60**	0.40	0.48
Period 5	0.44	**0.68**	0.52	0.32	0.64	0.56
Period 6	**0.56**	**0.56**	0.48	0.52	**0.56**	**0.56**
Period 7	0.36	**0.60**	0.48	0.48	0.40	0.48
Period 8	0.48	0.52	0.56	**0.68**	0.60	0.60
Period 9	0.64	0.60	0.52	**0.72**	0.64	0.64
Period 10	0.68	0.52	0.72	0.40	0.64	**0.76**
The Subset of the Technical Variables						
Period 1	0.44	0.44	0.48	0.48	**0.60**	0.48
Period 2	**0.40**	0.36	0.32	**0.40**	0.36	0.32
Period 3	0.56	0.36	0.48	0.52	0.60	**0.64**
Period 4	0.60	0.56	0.60	**0.68**	0.60	0.60
Period 5	0.44	**0.68**	0.52	0.32	0.64	0.56
Period 6	**0.56**	**0.56**	0.48	0.52	**0.56**	**0.56**
Period 7	**0.56**	0.48	0.52	0.52	0.48	0.52
Period 8	0.28	0.52	0.64	**0.68**	0.44	0.44
Period 9	0.68	**0.72**	0.68	**0.72**	**0.72**	**0.72**
Period 10	0.64	0.64	**0.72**	0.48	**0.72**	**0.72**

Table 7. The f-measures of the models.

Periods	Naïve Bayes	Logistic Reg.	KNN	Random Forest	SVM	Hard Voting
All Technical Variables						
Period 1	0.00	0.00	0.24	0.24	**0.72**	0.24
Period 2	0.00	0.11	0.43	0.00	**0.52**	0.00
Period 3	0.35	**0.53**	0.14	0.45	0.31	0.33
Period 4	0.57	**0.68**	0.62	0.55	0.44	0.61
Period 5	0.30	**0.81**	0.67	0.00	0.73	0.65
Period 6	**0.72**	0.59	0.55	0.57	**0.72**	**0.72**
Period 7	**0.50**	0.00	0.43	0.32	0.40	0.38
Period 8	0.00	0.68	0.48	0.67	**0.72**	**0.72**
Period 9	0.74	0.71	0.67	**0.79**	0.74	0.74
Period 10	0.81	0.54	0.83	0.40	0.77	**0.86**
The Subset of the Technical Variables						
Period 1	0.00	0.00	0.24	0.38	**0.74**	0.24
Period 2	0.00	**0.11**	0.00	0.00	**0.11**	0.00
Period 3	0.35	0.53	0.13	0.50	0.55	**0.57**
Period 4	0.67	0.62	0.69	**0.71**	0.67	0.67
Period 5	0.30	**0.81**	0.67	0.00	0.73	0.65
Period 6	**0.72**	0.59	0.55	0.57	**0.72**	**0.72**
Period 7	0.59	0.43	0.40	0.45	0.32	0.45
Period 8	0.10	0.68	0.67	**0.71**	0.00	0.59
Period 9	0.76	**0.79**	0.78	**0.79**	**0.79**	**0.79**
Period 10	0.76	0.76	**0.84**	0.61	**0.84**	**0.84**

The sum of the returns obtained from each trading day in the test data is presented in the rows of Table 8 for all the models. The total rows in the two parts show total returns, which are the bold font, reached during all test set periods, nearly 200 trading days. From this table, it is understood that the total returns reached by Naïve Bayes, LR, and hard voting with all technical indicators are better than the total returns of the same models with the selected indicators. It means that selecting the subset of the technical indicators cause the returns to worsen. However, for KNN, RF, and SVM the positive effect of selecting more significant indicators is obvious. The total returns attained by these models after feature selection are dramatically superior to those of the same models with all variables. It is interesting to see the performance decrease in hard voting after feature selection. The possible explanation for this may be due to poor performances caused by Naïve Bayes and LR. Especially for the more complex models such as RF and SVM, total returns are improved significantly.

Table 8. The sum of the returns per trade in percentage (%) for each time period.

Periods	Naïve Bayes	Logistic Reg.	KNN	Random Forest	SVM	Hard Voting
			All Technical Variables			
Period 1	-2.47	-2.47	-2.66	1.57	2.47	-2.66
Period 2	-4.51	-11.02	-4.89	-13.03	-5.32	-10.30
Period 3	7.89	-4.26	-0.31	5.44	5.61	4.49
Period 4	3.44	6.96	4.82	2.81	-2.47	3.21
Period 5	-5.96	8.59	-1.53	-8.59	-1.44	-3.62
Period 6	6.46	-0.66	-5.30	-1.31	6.46	6.46
Period 7	-15.87	18.37	5.10	7.38	-6.43	8.61
Period 8	1.43	-1.43	6.59	18.49	13.28	13.28
Period 9	2.48	1.19	0.19	3.03	2.48	2.48
Period 10	11.41	1.14	10.42	-4.60	8.72	12.95
Total	**4.30**	**16.40**	**12.43**	**11.20**	**23.37**	**34.90**
			The Subset of the Technical Variables			
Period 1	-2.47	-2.47	-3.18	0.04	3.80	-3.18
Period 2	-4.51	-7.95	-10.30	-4.51	-7.95	-10.30
Period 3	7.89	-4.26	-1.13	4.70	15.61	15.51
Period 4	5.97	4.32	3.75	6.80	5.97	5.97
Period 5	-5.96	8.59	-1.53	-8.59	-1.44	-3.62
Period 6	6.46	-0.66	-5.30	-1.31	6.46	6.46
Period 7	5.26	-7.22	11.58	8.90	7.38	8.90
Period 8	-31.41	-1.43	18.05	21.65	1.24	-14.79
Period 9	2.82	3.03	6.21	3.03	3.03	3.03
Period 10	9.30	9.93	12.41	4.91	12.41	12.41
Total	**-6.65**	**1.88**	**30.56**	**35.62**	**46.51**	**20.40**

The last part of the analysis is related to compare the results of predictions based on technical analysis with a standard benchmark method. For this purpose, a buy-and-hold strategy is applied. The buy-and-hold strategy is a method with properties of simplicity, risk reduction, and cost savings. At the beginning of the investment period, an investor buys a stock and holds it until the end of the investment period. Although it is a simple strategy, it is a method that is hard to beat. Because the prices tend to increase in the long term, profits can be generated by applying the buy-and-hold investment strategy. Table 9 gives the results of all evaluation metrics used in the study for the buy-and-hold strategy. From this table, it is concluded that the total return obtained by the buy-and-hold strategy is significantly less than those of the KNN, RF, and SVM models with the feature selection technique. Specifically, the amount of the total return of the SVM model after applying the feature selection algorithm is considerably higher, more than twice the ones of the buy-and-hold strategy.

Table 9. The prediction results for the buy-and-hold strategy.

	Accuracy	f-measure	Returns per trade
Period 1	0.56	0.72	2.47
Period 2	0.60	0.75	4.51
Period 3	0.36	0.53	-4.26
Period 4	0.52	0.68	6.96
Period 5	0.68	0.81	8.59
Period 6	0.56	0.72	6.46
Period 7	0.40	0.57	-18.37
Period 8	0.52	0.68	-1.43
Period 9	0.56	0.72	4.63
Period 10	0.72	0.84	12.41
Total	-	-	**21.98**

CONCLUSIONS

Predicting the direction of stock prices more accurately, to see if there will be an upward or downward movement in the level of prices, is crucial for investors to construct their trading strategies in making profits. However, this task is very difficult to accomplish due to the complexity of the problem, uncertainty, and the partly efficient market hypothesis. Recently, the approach of applying machine learning techniques to predict the trends of stock price indexes has become popular. For this purpose, the widely used machine learning techniques, Naïve Bayes, LR, KNN, RF, and SVM, were employed in the scope of this study to predict the daily movements on the BIST 100 index. The analysis was based on the technical indicators that are mostly preferred by researchers. The ten selected indicators were varied by using seven different numbers of past observations to calculate them. This enables us to include different information that existed in the short, medium, and long term into the pool of technical indicators. To select the significant ones among all technical indicators, 70 in total, a feature selection algorithm based on the Linear SVC model was implemented.

The obtained results show that some technical indicators such as ADX and CCI carry more information about predicting price directions than others, and the indicators with smaller input window lengths are more often selected for the prediction of the next day. The positive effect of the feature selection technique on the evaluation metrics has been observed, especially for the more complex learning models. From the point of returns that give some clue regarding the possible profits, in reality, the study calculated the total returns per trade for all test periods. The total returns attained by the KNN, RF, and SVM models are improved significantly with the help of the feature selection. As a benchmark, the buy-and-hold strategy is employed. The results indicate that the best

performing SVM model with the proposed methodology leads to the total return, which is greater than twice the model in the buy-and-hold investment strategy. It should be noted that for simplicity, this study ignores some costs associated with trading, such as transaction and/or income tax that may occur. However, the obtained results illustrate the potential profitability of the proposed methodology in a real trading environment.

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APPENDIX

Table A1. *The summary statistics for the indicators under investigation.*

	Min	Max	Mean	Q1	Median	Q3	Standard deviation	Skewness	Kurtosis
SMA(3)	845.3	1229.7	998.5	938.1	982.9	1034.2	84.3	0.868	0.339
EMA(3)	847.5	1227.3	998.5	938.7	981.7	1035.2	83.9	0.883	0.346
ATR(3)	9.1	71.4	19.7	15.0	17.2	21.0	8.7	2.765	9.606
ADX(3)	12.2	98.1	55.7	42.0	54.1	68.5	17.7	0.289	-0.580
CCI(3)	-100.0	100.0	8.6	-83.0	32.0	94.8	81.4	-0.191	-1.670
ROC(3)	-13.0	8.6	0.2	-1.3	0.4	2.1	2.8	-0.797	1.947
RSI(3)	1.1	99.7	55.3	32.8	57.7	80.1	27.4	-0.203	-1.155
William's %R(3)	-100.0	0.0	-46.7	-74.7	-45.2	-17.3	32.0	-0.119	-1.331
Stochastic %K(3)	0.0	100.0	53.3	25.3	54.8	82.7	32.0	-0.119	-1.331
Stochastic %D(3)	2.5	98.3	53.2	31.0	54.7	74.0	24.8	-0.151	-1.128
SMA(5)	850.4	1227.2	998.1	938.2	981.5	1033.2	83.5	0.897	0.384
EMA(5)	852.9	1223.4	998.1	938.5	981.2	1032.5	82.8	0.928	0.403
ATR(5)	10.2	64.1	19.7	15.2	17.6	20.9	7.8	2.635	8.454
ADX(5)	13.3	86.4	43.6	31.5	42.0	55.0	15.7	0.511	-0.305
CCI(5)	-166.7	166.7	11.6	-78.6	35.1	95.3	97.1	-0.231	-1.306
ROC(5)	-16.3	8.1	0.3	-1.9	0.7	2.7	3.7	-0.981	2.194
RSI(5)	5.1	97.2	55.0	39.3	55.8	72.3	21.9	-0.194	-0.829
William's %R(5)	-100.0	0.0	-45.0	-74.0	-39.9	-14.8	32.2	-0.195	-1.355
Stochastic %K(5)	0.0	100.0	55.0	26.0	60.1	85.2	32.2	-0.195	-1.355
Stochastic %D(5)	2.0	98.3	54.9	28.4	58.2	80.0	27.5	-0.214	-1.321
SMA(7)	855.4	1223.0	997.7	938.4	979.8	1030.4	82.6	0.930	0.439
EMA(7)	858.1	1219.3	997.7	937.7	980.0	1030.6	81.6	0.973	0.468
ATR(7)	10.9	58.6	19.8	15.5	17.8	21.0	7.2	2.535	7.686
ADX(7)	11.7	73.8	37.5	26.8	35.5	46.5	13.8	0.550	-0.287
CCI(7)	-214.7	228.6	15.8	-74.4	41.5	100.6	101.8	-0.256	-1.095
ROC(7)	-21.4	10.0	0.4	-2.1	0.8	3.3	4.4	-1.084	2.816
RSI(7)	9.9	93.3	54.6	42.4	54.7	69.4	18.9	-0.180	-0.648
William's %R(7)	-100.0	0.0	-43.8	-72.9	-37.7	-13.7	31.9	-0.251	-1.312
Stochastic %K(7)	0.0	100.0	56.2	27.1	62.3	86.3	31.9	-0.251	-1.312
Stochastic %D(7)	1.7	98.8	56.1	29.1	60.2	82.5	28.3	-0.259	-1.321
SMA(10)	859.9	1218.7	997.1	937.4	978.6	1028.3	81.4	0.982	0.531
EMA(10)	863.8	1212.2	997.3	938.0	978.2	1028.2	79.9	1.037	0.573
ATR(10)	11.5	52.4	19.8	15.8	17.8	21.4	6.6	2.378	6.619
ADX(10)	13.2	64.2	31.8	22.8	29.1	39.4	11.7	0.650	-0.384
CCI(10)	-238.5	250.8	18.5	-67.1	36.3	103.2	104.4	-0.322	-0.871
ROC(10)	-23.8	12.5	0.5	-2.3	1.1	4.0	5.3	-0.991	2.488
RSI(10)	15.7	87.8	53.9	43.1	53.6	66.3	16.1	-0.160	-0.497
William's %R(10)	-100.0	0.0	-42.8	-69.6	-37.3	-15.1	31.1	-0.322	-1.199

Stochastic %K(10)	0.0	100.0	57.2	30.4	62.7	84.9	31.1	-0.322	-1.199
Stochastic %D(10)	1.2	99.1	57.1	31.7	60.9	83.2	28.6	-0.309	-1.255
SMA(15)	865.9	1213.1	996.3	937.4	977.9	1028.0	79.4	1.065	0.685
EMA(15)	873.5	1206.3	996.6	938.6	975.9	1025.6	76.9	1.131	0.756
ATR(15)	12.2	45.3	19.9	16.4	17.9	21.5	5.8	2.124	5.058
ADX(15)	11.2	51.4	26.0	18.7	24.1	32.9	9.4	0.660	-0.476
CCI(15)	-280.7	236.8	20.7	-61.4	34.5	110.1	109.2	-0.349	-0.738
ROC(15)	-25.7	16.4	0.7	-3.1	1.0	5.6	6.6	-0.793	1.516
RSI(15)	19.1	82.0	53.0	44.7	52.8	62.4	13.3	-0.151	-0.380
William's %R(15)	-100.0	0.0	-41.7	-67.2	-37.3	-12.8	30.7	-0.325	-1.189
Stochastic %K(15)	0.0	100.0	58.3	32.8	62.7	87.2	30.7	-0.325	-1.189
Stochastic %D(15)	1.0	98.7	58.2	32.8	62.5	85.0	29.0	-0.314	-1.267
SMA(30)	893.2	1206.5	994.7	941.3	982.3	1019.0	73.0	1.268	1.120
EMA(30)	898.3	1191.5	995.7	949.3	980.2	1016.4	68.9	1.299	1.187
ATR(30)	13.8	35.2	19.9	16.8	18.1	21.8	4.5	1.542	2.151
ADX(30)	10.0	40.9	19.3	13.3	17.8	23.6	6.8	0.780	-0.011
CCI(30)	-386.0	316.2	12.1	-67.2	25.0	104.7	116.9	-0.442	-0.196
ROC(30)	-30.3	18.2	1.0	-4.4	0.5	8.5	9.4	-0.640	0.694
RSI(30)	26.9	72.2	51.5	46.1	50.4	58.8	8.9	-0.128	-0.316
William's %R(30)	-100.0	0.0	-41.7	-67.4	-38.8	-13.4	30.5	-0.297	-1.206
Stochastic %K(30)	0.0	100.0	58.3	32.6	61.2	86.6	30.5	-0.297	-1.206
Stochastic %D(30)	2.0	98.8	58.2	32.3	60.6	87.7	29.7	-0.262	-1.293
SMA(50)	917.7	1178.0	994.3	948.0	980.5	1014.3	65.2	1.330	1.170
EMA(50)	919.3	1169.6	996.1	951.6	986.0	1009.0	60.5	1.314	1.264
ATR(50)	14.9	29.8	19.7	17.3	18.1	21.8	3.4	1.128	0.541
ADX(50)	7.0	27.2	15.1	11.3	14.6	17.5	5.3	0.531	-0.365
CCI(50)	-382.4	264.1	11.1	-67.7	18.1	105.4	114.0	-0.375	-0.178
ROC(50)	-29.9	30.1	1.0	-6.2	0.9	8.9	11.6	-0.126	-0.147
RSI(50)	33.5	66.9	50.6	46.4	49.9	55.7	6.5	0.042	-0.328
William's %R(50)	-100.0	0.0	-41.3	-64.6	-42.4	-13.6	29.4	-0.224	-1.177
Stochastic %K(50)	0.0	100.0	58.7	35.4	57.6	86.4	29.4	-0.224	-1.177
Stochastic %D(50)	1.6	99.2	58.5	35.7	56.6	86.7	28.9	-0.194	-1.253

Chapter 15

CONCEPT OF WORK ACCIDENT IN TURKISH SOCIAL SECURITY LAW

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1. Introduction

Before examining occupational accidents legally, some important concepts should be known. In this part of the study, legal technical terms and some legal approaches related to occupational accidents are examined.

The concept of accident can be explained as a chain of events or events that cause material damage, death or injury (Dilik, 1991). There is no clear definition of the accident in our national legislation. The opinions in the doctrine about the accident are used.

In the framework of the law of liability, an accident can be defined as an unintentional act of a person that causes damage to the property or person, or an event that occurs as a result of a sudden effect from nature, material environment, people, in short, from the outside world (Karayalçın, 1960).

According to another view in the doctrine, the concept of accident is evaluated in two ways as broad and narrow interpretation. In a broad sense, an accident is a combination of causes that cause sudden and unintended damage. In addition to the violation of body integrity and death, damage to property is also evaluated within this scope. In a narrow sense, accident is evaluated only on the basis of the bodily integrity and death of a person. In the Turkish legal system, only a narrow interpretation of accident is important in terms of work accidents. Damage to property is not accepted as work accident. According to another opinion, an accident is a chain of causes that causes damage at an unexpected speed (Karaca, 2013).

In Turkish law, an accident is considered as the death of a person or damage to his or her body. Damage to belongings is not considered within the scope of accident. At this stage, it is necessary to open a separate bracket for artificial limbs such as prosthetic legs, prosthetic arms, glasses used by people to see properly. Although these are essentially objects, they are evaluated within the scope of body completeness after they are used in the person's body. As a result, their damage is also considered an accident.

2. Factors of Accidents

At this moment, it will be useful to state that accident is interpreted in a narrow sense in the Turkish legal system. Therefore, in the following part of the thesis, when accident is mentioned, its narrowly interpreted form is meant. In line with these explanations, we can list the elements of the accident as follows: Appropriate causal relation, damage, sudden event, external event, unwanted event.

2.1. Appropriate Causal Relation

Causal relation is cause-effect relationship between event and consequent damage. In order for an event to be considered as an accident, damage occurred must occur as a result of that event.

For example, it is not considered as an accident for the patient to run off the road and hit a power pole while taking a patient with a heart arrested before to the hospital in an ambulance. Because there is no appropriate causal link between the event and the death of the person. The person died beforehand, not as a result of hitting a power pole. The appropriate causal link is of great importance for the emergence and scope of the responsibility.

Determining the causal link is important in determining the responsibilities of the parties. In order for the employer to be liable for an accident, a causal link should be established between the damage caused and any act or attitude of the employer. In work accident cases, the existence of this link is primarily investigated.

In order for the employer to be responsible for the work accident, there must be two causal links, both between the damage and the accident and between the work and the accident. This situation is a distinctive feature of whether the employer or the SSI is held responsible for the work accident. If the causal link between the work and the accident is absent or broken, the responsibility of the SSI will continue while the employer's responsibility is removed.

At this stage, it should be mentioned briefly that the causal link is also one of the elements of fault responsibility. In some of the decisions of the Supreme Court, there are cases where a work accident is accepted because the incident took place at the workplace or under the authority of the employer, even if there is no causal link between the accident and the damage, based on the principle of perfect responsibility.

Supreme Court of Appeals 21. HD 30.03.2015, 2014/10913 E., in its decision numbered 2015/6672 K.

"... to determine whether the plaintiff's illness was caused by the incident that occurred on 2.8.2004 or because of a pre-existing illness, to investigate whether the plaintiff had received any treatment for the illness in question, and according to the present findings and documents, to obtain a new report that examines whether it is a result or a disease that occurs over time, determines whether there is a suitable causal link between the incident and the failure of the plaintiff, evaluate all the evidence together and decide according to the result ...

Supreme Court of Appeals 21. HD 23.12.2014, 2014/24245 E., 2014/28129 K. in another decision, questioned the link of causalities.

Contrary to this decision of the Supreme Court, it considers the accident at the workplace as a work accident pursuant to article 13/1-a of the SSGSSK. As it is frequently stated, this difference of opinion about the definition of work accident that the Supreme Court even experienced within itself causes inconsistency.

".. In the concrete case; It is determined that the plaintiff came to Bodrum to work in the construction business of the defendant employers, and the incident occurred on 22.06.2007, outside of working hours, while the plaintiff was under alcohol. Considering that the accident subject to the case did not occur due to the work carried out by the employer, that there is no appropriate causal link between the work done and the injury incident, the fact that the incident occurred in the workplace is not sufficient to be considered a work accident, it should be accepted that the case is not a work accident, while the court should decide to dismiss the case. , making a result with wrong evaluation and interpretation is against the procedure and the law and it is the reason for violation .. "

In another decision of the Supreme Court 21. HD 15.09.2014, 2013/22371 E., 2014/17350 K. stated that the causal link should be investigated.

".. In the concrete case; Whether the plaintiff's illness occurred due to the incident that occurred on 11/09/2008, 12/09/2008 and 13/09/2008 or because of a pre-existing illness without any doubt, the plaintiff's occupational accident detection It was inaccurate to reach a conclusion without investigating whether he had received any treatment for the subject disease before, and therefore, without determining whether there is a suitable causal link between the incident that took place on 11/09/2008, 12/09/2008 and 13/09/2008 and the disease of the plaintiff. ... "

The Supreme Court of Appeals General Assembly accepted the request of the relatives of a worker who died due to a heart attack in the workplace to be considered as a work accident in a decision numbered 20.3.2013, 2012 / 21-1121 E., 2013/386 K. decided that it should be given.

"The case is about the request for material and moral compensation arising from the work accident. In the dispute, it was understood that the insured was assigned as the chief operating officer, he died before being taken to the hospital as a result of a heart attack when he got sick and was taken to the hospital after repairing the malfunctions in the electricity lines in the land, and when he was taken to the hospital, he decided to determine that the death of the insured as a result of a heart attack was a work accident and the decision was approved and finalized. . Whether the employer is defective or not, the defect rate, if any, can only be determined and proved by a defect report to be prepared by expert experts, and it

is inaccurate to make a decision by the court without a defect report on the grounds that the muris died as a result of a heart attack. It should be decided by obtaining a defect report from the expert committee, which will include a cardiologist who is an expert in workplace medicine, workforce health and occupational safety. "

The Turkish legal system's point of view regarding occupational accidents can be criticized. Despite the principle of perfect responsibility, in practice the courts and the Court of Cassation apply the fault liability principles in their decisions. This situation naturally causes confusion and dilemma.

2.2. Damage

One of the elements of the accident is the damage caused by the event. In the Turkish legal system, in terms of occupational accidents, what we need to understand when it comes to harm is that the person is physically or spiritually affected negatively. Damage to machinery and equipment is not considered as an accident in occupational health and safety law. It should be reminded that the concept of damage mentioned in all of this study is evaluated in a narrow sense according to the framework of occupational health and safety law; It is the form that does not include any items such as machinery, equipment, tools. The damage of a worker as a result of a work accident is evaluated in terms of both labor law and law of obligations. If the employee was injured in an accident or died after the accident, his / her relatives can benefit from the allowance and benefits according to SSKSSK numbered 5510, and according to the TBK numbered 6098, he / she obtains the right to request material and moral compensation from the defective person.

Harm can occur in many different ways in a person. The degree of severity is of no importance for the validity of the harm. Likewise, it does not make any difference whether it is permanent or temporary. While it is harmful for the person working in the construction to fall from a height and die; It is also harmful if a splinter gets into your hand while working in the carpenter's workshop. The harm is not always the result of a direct physical impact on a person. It may be considered harmful if a pregnant employee is excited and gives birth prematurely as a result of being exposed to severe stress in the workplace or insulting the employer. Harm is the physical or mental negative impact of an event on a person.

The damage to the person may not always be physically visible. Just as people's physical health can be impaired, so can their mental health. Situations such as pressure, stress and fear experienced by an employee in the workplace can harm that person's mental health. Person depression, anxiety disorder etc. viable. In addition to these, situations that affect a

person's social relations such as extreme sadness, grief, and shame due to an event can be considered harm.

The moment the damage occurs is also not important. Damage may occur immediately after the event, or after a certain period of time, the damage related to that incident may manifest itself. The Supreme Court of Appeals 10th HD, T. 04.06.1974, E. 3244, K. 3890 stated that although the death of a worker occurred after a certain period of time, not at the time of the accident, due to the injury of a worker who was injured by sticking a nail in his hand at the construction site, it He accepted.

It is mentioned that the damage can occur physically or spiritually. A question that may come to mind in this regard may be the following: Will the result change if the items that the person uses instead of limbs such as prosthetic legs and arms are damaged as a result of the event? According to the doctrine, in such an organ deficiency, the items used instead of a limb or to increase the quality of life of the person are evaluated within the body integrity. Damage to these is considered a violation of body integrity (Tuncay and Ekmekçi, 2011).

2.3. Sudden Event

Perhaps the most distinctive feature that distinguishes a work accident from an occupational disease is the sudden and unexpected occurrence of the work accident. The proverb "I don't say accident is coming" summed up this situation very well. The situation that is meant to be stated when saying sudden event is not that the event takes place in the blink of an eye. It is meant that the event takes place unexpectedly, all at once.

In addition to incidents such as falling from height, finger breakage, electric shock, burr from the grinding machine, death by burning in a fire at the workplace, poisoning due to a harmful gas, sunstroke, freezing and freezing in a cold storage, etc. evaluated within the scope. The important criterion here is that the event takes place in integrity at once.

In its decision numbered 21st HD 04.03.2004, 2003/11566 E., 2004/2007 K., the Supreme Court disrupted the decision of the local court, which did not consider the death of the worker as a work accident as a result of sunstroke at the construction site:

"... While it is clear that the event that occurs in the environment that is considered to be a workplace due to the execution of the work and its nature should be considered a work accident, the decision to dismiss the case on the grounds that are not appropriate is contrary to the procedure and the law and the reason for the disruption."

The Supreme Court of Appeals 21.HD 25.06.2012, 2010/14218 E., 2010/12082 K. Considering the death of the worker who left work at 12.30

in the noon and came home at 14.30 and died because of this, he considered this situation as an occupational accident.

2.4. External Event

What is meant by means of external events is that the damage that may occur on the person must be caused by external factors. Damages caused by the worker's own physiological condition and without any external trigger are not considered as an accident element. But at this stage, it is very important to make the following reminder: In the Turkish Occupational Health and Safety Legal System, the external incident factor is no longer taken into account. Because this element creates a gray area by producing results that are not in favor of the worker; This element is always ignored since the principle of "interpretation in favor of the worker" is taken into account in accordance with the social state understanding and labor law and cannot be evaluated within the framework of the work accident definition in the SSGSSK.

In its decision numbered 21.11.2002, 2002/9004 E., 2002/10005 K., the Supreme Court declared that the paralysis of a construction site night watchman in the workplace as a result of a cerebral hemorrhage was an occupational accident:

"... The dispute is about whether the paralysis caused by the cerebral hemorrhage of the plaintiff will be regarded as an occupational accident or not. In this respect, the legal basis of the case is Article 11-A of Law No. 506. According to the aforementioned article, a work accident is an event that causes physical or mental damage to the insured immediately or later. In other words, according to the articles 11-A-a and b of the aforementioned Law, it is clear that if the damaging insurance incident is at the workplace of the insured and occurs at the employer's disposal due to the work carried out by the employer, it is clear that there is a legal obligation to be considered a work accident. The case in question occurred while the plaintiff was serving as a night watchman and was at work, and the plaintiff was paralyzed as a result of a cerebral hemorrhage. While it is clear that there is a legal obligation to consider the incident as a work accident in this case, by the court; The decision to dismiss the case by showing the Forensic Medicine report taken as a reason is against the procedure and the law and is the reason for the reversal. "

In another decision of the Supreme Court 21. HD 03.11.2004, 2004/8871 E., 2004/9254 K., the death of the ship captain due to an internal cause of a heart attack on the ship was considered an occupational accident and said:

"... it is clear that if the damaging insurance incident occurs at the employer's disposal due to the employee's workplace and the work carried

out by the employer, it is obvious that there is a legal obligation to be considered a work accident."

Court of Appeals HGK 13.10.2004, 2004 / 21-529 E., 2004/527 K. in order to fix the electrical failure in the workplace, he said the situation of the person who died of a heart attack as a work accident:

"... To put it more clearly; The death of the insured due to a heart attack while working in the workplace is an event shown in sub-clause (a) of paragraph (A) of Article 11 of the Social Insurance Law No.506, as it is an event appropriate to the occurrence of the insured while he / she is in the workplace, and is included in paragraph (b) of the same article. It is also suitable for the state of occurrence due to the work carried out by the employer; should be counted as a work accident. " In addition to the decision, the following was stated: "... the fact that an incident is not considered as an occupational accident for the institution or the employer, whether it emerges due to external factors or suddenly, will not necessitate that the incident should not be considered a work accident in the face of the clear provision of the law. Because, as clearly stated in the law, it is necessary and sufficient that the damaging insurance incident took place in any of the cases and situations listed in the law. ... Since no other condition or restriction is included in the article, it is not possible to impose a restriction that is not in the law through interpretation. "

Supreme Court 21. HD 26.04.2010, 2009/6341, similar E. 2010/4758 K. decree, carrying cargo to Tirana in Albania from Turkey to rest for the night of the truck driver remains the hotel room where he stated in counting the work accidents suffered a heart attack die:

"... the aforementioned cases, the plaintiffs Murie of 22.10.2002 Since 03.10.2006 death until the date the defendant employer workers as the work of the Authority reported the insured event day tasks required to Albania night break in Tirana on 03.10.2006 to deliver the overseas cargo loaded from Turkey He had a heart attack and died at around 01:30 while he was taken to rest on his own in the hotel room where they left to leave in the morning, and the defendants should be regarded as an occupational accident in terms of the SSI and employer according to the aforementioned article. The fact that it is not accepted as an occupational accident on the grounds that there is no causal link between the death incident is against the procedure and the law and is a reason for disruption."

There is no dispute about the Supreme Court's acceptance of this event and the like as an occupational accident in terms of SSI. However, the same consistency is not seen for the employer. There are many decisions of the Supreme Court that does not accept heart attacks and similar incidents as occupational accidents on the grounds that there is no suitable causal link between the work and the accident.

Supreme Court 21. HD. 08.02.2011, 2010/9728 E., 2011/801 K. also considered the employee's heart attack at work as an occupational accident and stated the following:

"The file of records and the documents, plaintiffs Murie of the respondent Turkey Agricultural Credit Cooperatives worked as an inspector since 1988 at the General Directorate 10/16/1996 date at about 19.00 hours of heart attack by passing the dead, event processing causality of being considered as a work-related accidents by inspectors Authority on the grounds that no, In the case of discrimination (...) It is understood that the death of the plaintiff's murderer as a result of a heart attack was determined as an occupational accident with the decision of the Labor Court dated 08.07.2009 and numbered 2009/540 E., 2009/468 K. and that the decision was approved and finalized by our Office. "

Aydınlı's (2006) opinion on the decision of the Court of Cassation HGK on having a heart attack in the workplace is as follows:

"In other words, the external impact should cause a heart attack. This effect can be stress, as well as the effect of excessive noise, fatigue, irritability, nervousness, or something eaten. Internal effect may be a hereditary condition, or it may occur as chronic heart failure, such as blood clotting completely dependent on body structure or the failure of the heart valve to function. The determination of these situations can be determined by an expert report from an expert board. First of all, it should be noted that the occurrence of such a heart attack in the workplace should not be counted as a work accident, since a heart attack due to internal effects is not considered as an accident in the narrow sense. However, regardless of whether the external effects mentioned above are caused by working conditions in the workplace or not, heart attack in the workplace should be counted as a work accident. Because the regulation in SSK 11-a is an obvious provision that cannot be interpreted. For example, a heart attack that occurs at the workplace as a result of the worker's annoyance as a result of a fight at the workplace or due to excessive fatigue or stress caused by the work, or a sudden explosion in the workplace or the effect of the noisy environment or the inappropriateness of a meal provided by the workplace should be considered as a work accident. In our opinion, there is no obstacle, as required by positive law, for a heart attack caused by such external factors, which also originate from outside the workplace, to be considered a work accident. For example; The insured's having a heart attack in the workplace due to annoyance and having a fight with his spouse outside the workplace for family reasons should also be considered a work accident. The important thing is that an external heart attack occurs in the workplace. Again, the occurrence of a work accident (such as death) in the workplace in the hospital or ambulance does not prevent it from being a work accident. "

Uşan (2005) also states the following about the external event element:

"... The event that causes bodily and spiritual damage or death of the insured must occur due to an external factor. Therefore, in the event that the insured suffers a discomfort due to his personal qualifications without an external event, even if the result is in the workplace, in our opinion, there is no occupational accident. "

The following views of Ulusan (1990) about the externality of the accident are important:

"... Internal events arising from the organic nature of the injured person do not fall within the definition of work accident. For example, if the worker had a traffic accident that was not related to his work and was subjected to a concussion in that accident, and he had a hemorrhage in the workplace three to five days after this event, it would not be possible to interpret this event as a work accident. Because in the event that brought about death, there is not an external factor at that time, but a reason arising from the organic structure of the worker. "

2.5. Unwanted Event

Another condition for an incident to be considered as an accident is that the situation or the damaging effect that will occur as a result of that situation is not desired. In other words, the accident should not occur intentionally, intentionally or intentionally. Situations where the unwanted event element is in question are predominantly suicide cases in the workplace.

The Supreme Court of Appeals stated in its decision numbered 29.03.1979, 1978/8413 E., 1979/2759 K. that even if the person committed suicide at the workplace, the situation would be considered as a work accident: . " He further stated that temporary incapacity allowance and permanent incapacity income will not be given to the insured who suffered an occupational accident intentionally. In summary, although the incident was considered a work accident, the usual earning rights as a result of the work accident were not given to the insured. As stated before, it is aimless to consider an event as a mere occupational accident and not to find its results in line with rights and equity. This situation means emptying the concept of work accident beyond creating contradiction.

In another decision of the Supreme Court No. 10 HD 05.07.2004, 2004/4465 E., 2004/6425 K.:

"If the suicide action took place at the workplace, even if the incident occurred only at the workplace, the incident was still an occupational accident, although it was related to the work seen by the insured person who committed suicide and was not caused by the fault of the employer.

However, in this case, the employer and his successors cannot be held liable to the Institution since there is no causal link between the events and the employer.

He described the incident as a work accident, but stated that it would not result.

Contrary to the decisions of the Supreme Court in the doctrine, Ulusan's (1970) example about the undesirable incident is also important:

"... if the worker dies a poisonous liquid with the intention of committing suicide in the workplace, it should not be considered a work accident, because of the deficiency in this element."

Eren (1974) also stated that the will and desire is against the nature of the concept of accident in general terms, and the temporary incapacity allowance and the permanent incapacity income will not be given or reduced in relation to the intention or fault of the insured in the Social Insurance Law. It states that 22 is suitable for this.

SSGSSK m. According to 22,

"Temporary incapacity allowance or permanent incapacity income in the event that the insured suffers work accident or occupational disease due to the following reasons, becomes sick, prolonged treatment period or incapacity to work;

a) Except for those who do not have criminal liability and those who have an acceptable excuse, if the insured's failure to comply with the measures and recommendations notified by the physician due to work accident, occupational disease, illness and maternity causes prolongation of the treatment period or an increase in the incapacity rate, the prolonged treatment period or One fourth of it is reduced by the Institution based on the increasing incapacity rate.

b) Except for those who do not have criminal liability, up to one third of the insured who suffered from work accident, occupational disease or became sick due to his / her serious fault shall be deducted by the Institution based on the degree of fault.

c) Half of the amount is paid to the insured who suffered an occupational accident due to a deliberate act, had an occupational disease, got sick or did not accept the proposed treatment despite the written notification of the Institution.

d) Temporary incapacity benefit shall not be paid to the insured, who works without obtaining a document from the physician to whom the treatment is terminated and that he / she is able to work, and the paid ones shall be taken back in accordance with the provisions of Article 96 as of the date of inappropriate payment.

In the event that the work accident is not notified to the Institution by those specified in sub-clause (b) of paragraph two of Article 13, the incapacity allowance to be made to the insured is paid as of the date of notification.

The procedures and principles regarding the implementation of this article are regulated by a regulation to be issued by the Authority. "

The explanations of Ekmekçi (2011) about the undesirable event in the light of the above law are as follows:

"In our opinion, this article is a provision that does not consider the intentional acts of the insured as work accident, but rather punishes the insured who acts deliberately by depriving him of a certain amount of benefits. For this reason, suicide, for example, is not considered a work accident, since it is based on a voluntary act, even in the workplace. Nevertheless, giving a contrary meaning to the aforementioned provision, to evaluate even suicide in the workplace as a work accident would be to expand the concept of work accident to uncertain dimensions. Because in the case of suicide, the cause of the incident is not the work done, but the will of the insured. In German law, it is accepted that the causal link between work and death is cut in suicide. In other words, the accident cannot be willpower. Therefore, even if it occurs at the workplace, suicide is not considered a work accident. In addition, for example, the worker who gets caught in the machine and injured himself in the workplace even to attract the attention of the female worker he loves is not considered to have had a work accident. This person can only benefit from sickness insurance."

3. Workplace Concept

The concept of workplace, which is legally in contact with many legislative provisions, is considered as the place where employees are together as a whole. In this context, the concept of workplace has been taken into account while establishing many rules regulating working conditions. Many issues, from taking safety precautions in the workplace to the regulation of working periods, are evaluated within the framework of the workplace organization (Yenisey, 2007).

For occupational health and safety law, the workplace is important because it indicates the place where these legal rules are implemented. Therefore, the concept of workplace refers to a concrete, material and spatial field (Mollamahmutoğlu and Astarlı, 2014). Workplaces are organizational structures. Within this organization, the employer aims to produce goods or services with a specific method (Tunçomağ and Centel, 2016). When the concept of workplace is examined, it can be seen as the place where the worker fulfills his duty to work and entrusts his personality and body integrity to the employer (Yenisey, 2007).

In another definition, the workplace is a production unit that gathers workers who have interests they look after together due to their common lives under the authority of an employer or employer's representative, but does not have economic and legal autonomy (technically independent) (Mollamahmutoğlu and Astarlı, 2014). Briefly, the workplace is the unit where goods or services are produced. This unit consists of concrete elements such as structure, equipment and materials, as well as abstract elements such as trademarks, patents, receivables and labor, to form an organized organization. The critical point here is that this organization is continuous (Süzek, 2017). The size of the workplace is not a criterion, the workplace can be a small grocery store or a huge construction site (Tunçomağ and Centel, 2016).

In order for a place where goods or services are produced to be considered a workplace, workers must be employed in accordance with the Labor Law No. 4857. But there is no requirement for the number of workers. It makes no difference whether the workplace belongs to the public or private sector and whether it is an open or closed place (Sümer, 2017). Housing for janitors; vehicles for drivers; For seafarers, ships are workplaces. Places such as barber shops, pharmacies and law offices where self-employment activities are carried out are also considered from the workplace. The important thing here is that at least one worker works in that place.

In HR 4857, the concept of workplace is explained as follows:

"The unit in which material and non-material elements and workers are organized together by the employer to produce goods or services is called a workplace. Places (places affiliated to the workplace) that are connected to the goods or services produced in the workplace by the employer in terms of quality and organized under the same management, and other additions and tools such as resting, nursing, eating, sleeping, washing, examination and care, physical and vocational education and courtyard. counted from the workplace. The workplace is a whole within the scope of the work organization created with the places connected to the workplace, add-ons and tools."

Workplace definition in the OHSK numbered 6331 is as follows:

"The places where material and non-material elements are organized together with the employee in order to produce goods or services, that are connected to the workplace in terms of quality with the goods or services that the employer produces in the workplace and organized under the same management, and resting, child feeding, eating, sleeping, washing, examination and care refers to the organization that includes physical and vocational training places and other additions and tools such as courtyards. "

The definition of workplace in the Tax Procedure Law No. 213 is as follows:

"Workplace in commercial, industrial, agricultural and professional activities; such as shops, offices, administrative offices, clinics, workshops, branches, warehouses, hotels, coffee houses, entertainment and sports places, fields, vineyards, gardens, farms, livestock facilities, dalyan and voli areas, mines, quarries, construction sites, steamboat kiosks. It is the place allocated or used for the performance of a commercial, industrial, agricultural or professional activity."

When it comes to the material elements of the workplace, all movable and immovable goods used to produce goods or services come to mind. Everything that we can exemplify, such as the office building, the land established on it, the equipment used, the raw material consumed as input, are considered within the scope of the material element.

The intangible elements of the workplace are abstract concepts that are part of the organized structure established to achieve the technical purpose of the workplace. Examples such as the production method carried out in the workplace, customer portfolio, corporate memory and experience, and the brand value of the workplace can be considered as intangible elements.

Perhaps the most fundamental element of business life is labor. What is meant by labor here is the worker himself. The worker takes a place in this organization with the effort he makes in line with the goal of the workplace.

For the technical purpose, it can be called the main reason for the existence of that workplace. The technical purpose of a pharmaceutical factory is to produce the desired drugs. For technical purpose, it can also be called the nature of the work done. Technical purpose distinguishes the concept of workplace from the concept of enterprise. While there is an economic target in the concept of enterprise; The workplace includes the technical purpose related to the way the work is done (Centel and Demircioğlu, 2016).

The organizational element of the workplace is the most legally examined feature, especially after work accidents. This factor makes the workplace no longer a fixed and specific place. Apart from the workplace, it can be ensured that labor is spent for technical purposes or that goods or services are produced.

HR No. 4857 has considered some units other than the places where the work is carried out within the framework of the workplace, and accepted each part consisting of places, add-ons and tools connected to the workplace as a single work order. In addition, as stated in the article justification of

the law, it has been determined that the provision of goods or services in line with economic and technological developments goes beyond the place where the workplace is established and that organizations throughout the province and even the country are needed. Article Justifications of the Draft Law No. 4857, Art. In accordance with the principle of uniqueness in the 2nd; Where work is done, affiliates, add-ons and tools make up a single workplace.

The main workplace is where goods and services are produced. The place where the technical purpose mentioned above is realized is the actual workplace. In other words, it is the place where the worker performs the act of doing work.

According to the Labor Law No. 4857:

"The places where the goods and services produced by the employer in the workplace and where the jobs that depend on the quality are performed and organized under the same management are counted from the workplace."

That is, if a place in a structure that can be considered as a separate workplace is dependent on the actual work done in terms of quality and execution, both work areas are considered as a whole and a single workplace. For example, even if the rearing and slaughtering section in a chicken production facility is separate, they are considered a single workplace together.

It is desirable to have a technical and legal relationship together so that the affiliated places established under the same management structure and that are committed to the main job in terms of quality can be considered as a single workplace (Demir, 2016). For example, if a factory producing shirts has its buttons made by a different employer in a different workplace, even if it serves the same technical purpose, a single workplace cannot be accepted as there is no legal commitment. For affiliated workplaces like this to be considered a single workplace, they must definitely be organized under the same employer.

According to the Labor Law No. 4857,

"Rest, breastfeeding, eating, sleeping, washing, examination and care, physical and vocational education places and other additions such as courtyards"

counted from the workplace.

Add-ons are not directly related to the production of goods or services, but are places indirectly related to the workplace. In the law, these add-on places are not counted in a limited number but are kept wide. Add-ons do not need to be on the same site to be counted from the workplace.

Functionally, its relevance to the workplace will be examined. For example, if the employer leases an apartment separate from the construction site as a shelter for the workers working on the construction site and allocates it to the workers, this apartment will be considered as an add-on.

As stated by the Labor Law, vehicles are also counted from the workplace. All kinds of vehicles, vehicles, construction equipment that contribute to the performance and execution of the work are considered within the scope of workplace. It doesn't matter who owns these vehicles or whether they are located within the boundaries of the workplace. The important thing is that these tools are under the authority of the employer. The Supreme Court has counted the service vehicles provided by the employer for the commuting and working hours of the workers. The controversial issue here is: does the service vehicle provided by the subcontractor count as that workplace or is it considered a separate workplace? While some authors in the doctrine consider the service vehicles belonging to the sub-employer as a separate workplace (Mollamahmutoğlu and Astarlı, 2014), some authors state that the transportation vehicles used in that workplace will be evaluated under the roof of a single workplace since they are used in the same workplace. 2016).

In terms of vehicles, it is important to have a point of view in determining the work accident. Accepting vehicles as workplaces, while investigating the existence of a work accident, SSGSSK m. It should be cautious to evaluate according to the 13/1-a clause. Because at the point of employer's vehicles, it is necessary to take the b clause as a basis when evaluating the work accident. These vehicles are the b-clause that counts the damaging incident that occurs during the time elapsed when the insured, who is assigned outside the workplace, goes to and returns to the place where he / she is assigned, as a work accident. There is no difference of opinion regarding the positioning of vehicles such as construction machines within subparagraph a.

4. Work Accident Definition

It is important how the boundaries of occupational accidents are drawn according to the Turkish legal system. What the work accident is is explained in two places in our legislation. The first of these is the Social Insurance Law numbered 5510 and the second is the OHSK numbered 6331. In addition to these, the Court of Cassation needed to specify in some of its decisions what the work accident was.

According to the Turkish legal system, it is sufficient to comply with the conditions listed in the SSGSSK or the definition in the ISGK in order to determine whether there is an occupational accident or not. However, it should not be forgotten that the existence of an occupational accident and the responsibility of the employer or the SSI for it have different conditions. In short,

it cannot be said that the employer or the SSI is responsible for compensation for the damage caused by every work accident. The responsibility of the employer is eliminated while the responsibility of the SSI continues to be reduced from a work accident that occurs with the intent of the employee.

4.1. Work Accident Definition According to the Social Insurance and General Health Insurance Law No.5510

Law No. 5510 was accepted on 31.05.2006 and entered into force after being published in the official gazette on 16.06.2006. The purpose and scope of the law is to secure people in terms of general health and to regulate the procedures and principles regarding these insurance transactions. The text of the law is generally written in a complex and difficult to understand language. There is no emphasis on work accident or even occupational health and safety within the scope and purpose specified in the first two articles of the Law.

In the 13th article of the third part of the Law under the title of "Short Term Insurance Provisions Subject to Insurance Holders Working Independently On Their Behalf and Account On Service Contract", a description of work accident is made rather than a definition. As it can be understood from the title, the main purpose here is to talk about the insurance provisions to be applied about the work accident. However, since an occupational accident was not defined by any legislation at the time of the law and before it, a description was made by way of a counting about what the occupational accident was in order to ensure consistency in trials and determine a method.

"Work accident;

a) While the insured is at the workplace,

b) Due to the work carried out by the employer, if the insured works independently on his behalf and account,

c) When the insurance holder, who works under an employer, is sent to another place other than the workplace as an officer, without doing his / her main job,

d) For the breastfeeding female insurance holder within the scope of subparagraph (a) of the first paragraph of Article 4 of this Law, at the times allocated to breastfeed her child in accordance with the labor legislation,

e) During the departure and arrival of the insured to the place of work with a vehicle provided by the employer,

is the event that occurs and makes the insured person physically or mentally disabled immediately or later."

When there is an incident other than the five situations listed in Article 13, the judge will not be able to make a work accident decision about the current situation due to the limited number principle while making an assessment. In such a case, their conscience will be injured, grievances will not be remedied, and damages will not be compensated. This issue was expressed in the decision of the Supreme Court HGK dated 13.10.2004 and numbered 2004 / 21-529 E:

"... Work accident is not defined in the law; However, the circumstances and situations in which an accident is considered to be a work accident are specified by limiting the place and time conditions. It is an event that immediately or later causes bodily or psychological damage to the insured... The circumstances listed are not exemplary but limiting... any of these situations must and is sufficient... "

In addition, due to the use of the concept of "insured" in Article 13, the short-term insurance provisions of the SSGSSK numbered 5510 and the provisions regarding work accident and occupational disease in this context will not be applicable to public officials. Public officials as insured are not counted in Articles 3 and 4 of the Law. In the case specified in the clause of M. 13/1-e, it is clear that "insured persons" are not included in the scope of occupational accidents on their behalf and independent employees. In addition, considering the subparagraphs a and b together, the person working on his behalf and on his own account will not be accepted as a work accident, as per the provision, a harmful event occurring in a process where he did not perform his main job outside the workplace due to business travel. Because subparagraph c counts the incident that occurs during the time without doing the actual job of the insured due to being sent to another place other than the workplace as an officer and which causes the insured person to become physically or mentally disabled immediately or later, but this provision clearly states the insurance holder who works under the employer. and does not include independent employees (Caniklioğlu, 2006).

Clause d of Article 13 evaluates the accidents that the breastfeeding woman insured during the breastfeeding period within the scope of work accident. The law also gave breastfeeding women the authority to limit this period. The insured woman who is breastfeeding can also spend the breastfeeding period at home if she wishes. In such a case, the injury of the nursing woman as a result of electric shock at home should be considered as an occupational accident as per the provisions of the law. There is no Supreme Court decision yet to express an opinion in a similar situation.

SSGSSK m. As it is clearly stated in 13/1, the occurrence of the damage on the assets will not be considered as a work accident. The lawmaker's assessment of mental harms within the scope of occupational accidents has prevented many discussions to occur. Many mental disorders such

as mental illness, depression, and nervous breakdowns will be evaluated within the scope of occupational accidents, without any discussion.

The statements in the SSI's Circular No. 2011/50 are of great importance. In that:

"The incidents that occurred while the insured was at the workplace should be counted as work accidents regardless of whether they are related to the work done or not. In this respect, the insured people fall while walking in the courtyard, sprained their feet while playing ball in the rest hour, falling while collecting fruit from the fruit tree in the garden, having an accident with a tractor while working in the field, cutting their hands while eating, poisoning from the stove while resting in the recreation room, committing suicide at the workplace, drowning in the pool located within the boundaries of the workplace. his death, accident when he comes to visit his friends in the workplace while he was on paid leave, and accidents that will be experienced by those working with vehicles in these vehicles will be considered as work accidents. "

As can be understood from these expressions, the SSI evaluates the occupational accident in a wide scope and does not look for a causal link between the accident and the work. The existing causal link between accident and damage and in addition, SSGSSK art. The presence of one of the cases listed in the provision 13/1 is sufficient.

SSGSSK m. The purpose of 13/1 is not to provide the causal link between the work and the accident, but to reveal the provisions that provide protection in favor of the worker. It is aimed to provide financial assistance to the victim or his relatives easily and quickly. The legislator has done this because it is a social state, in accordance with the understanding of social security.

4.2. Definition of Occupational Accidents According to 6331 Occupational Health and Safety Law

The OHSK numbered 6331 was published in the official gazette on 30 June 2012 and entered into force six months later. It is the first law with a comprehensive regulation on occupational health and safety.

In subparagraph g of Article 3 of the Law, the definition of work accident is made as follows:

"An event that occurs in the workplace or due to the execution of the business, causing death or causing physical or mental disability in the body integrity."

As can be seen, the occupational accident defined here has been expressed in a simpler, without going into detail, according to the definition in the law no 5510.

When the occupational accident definitions in ISGK and SSGSSK are compared, the situation at 13th m / 1-c in SSGSSK stands out. That is, as

mentioned in clause c, while the periods without doing their main job are considered within the scope of work accident, this situation is not accepted as a work accident according to the occupational accident definition of the OHSB. However, the statements about the relevant article in the ISGK draft remedy this contradiction:

"In the draft, the definition of occupational accidents is similarly made as the events resulting in death or injury at the workplace or due to the execution of the work are occupational accidents and a higher general definition that will also include the definition in Law No. 5510. Thus, the definition of occupational accident in the aforementioned Law or the conditions determining which rights will be provided to the insured as a result of the occupational accident was not restricted and it was ensured that no hesitation in current practices was included. In addition, the expression "due to the execution of the work" has been added to the definition of occupational accident and it has been allowed to be evaluated within the scope of the definition in cases such as sending to another place other than the workplace as an officer, or going to and from the place where the work is carried out with a vehicle provided by the employer. In addition, the same procedure has been adopted in occupational diseases and a general definition has been made based on exposure to occupational risks. "

There is a definition of occupational accident with two different perspectives in two different laws. In one, even the situations that can be considered as work accidents are specified, the other leaves a wide discretionary power to the judges in determining the work accident by drawing only a general framework. When the relevant article of the OHSK justified law is examined, it has been stated that the new definition has a wider perspective, including the situations that are accepted as occupational accidents in the SSGSSK. According to Article 4 of the Draft Law No. 6331, it is still not appropriate to include two different verbal definitions about the same phenomenon in the legislation.

Again, in January [2013] he made the same similar determination for this contradiction:

"... In our opinion, it is not appropriate to make a different definition than the law numbered 5510, and the definition has been written in a manner that may cause discussion and problems in practice.

For contradictory provisions in different law articles, interpretation methods are used in law. MK m.1 / 1 says:

"The law is applied in all matters that it touches with its word and essence."

It is a superficial way of thinking, as it is insufficient to draw conclusions from literary writing without going down to the essence of a law. It should not be forgotten that each law has a spirit, essence and

purpose, and the preparation process accordingly. When commenting on what a judgment means, all this must be observed. In accordance with the principle of "interpretation in favor of the worker" belonging to the labor law, every situation that is included in the definition of work accident in the SSGSSK is also deemed appropriate to the definition in the ISGK.

There may be written rules that conflict with each other within a legal order. In such cases, the place of the rules in the hierarchy of norms, the date they entered into force, whether they are general or special laws are important.

In principle, the new dated special law is preferred to the provisions of the old dated general law. The reorganization of the legal institution or relationship in the general law was required by the legislative rope. Such a situation indicates that the old law is insufficient and that it is accepted by the legislator that it is not suitable for the public interest. New provisions of the law should be implemented both logically and for the benefit of the society (Akipek, et al., 2016).

According to the hierarchy of norms, when the upper law and the lower law provisions conflict, the upper law always prevails. When the laws of the same level conflict, it is accepted that the law that entered into force on the next date over time replaces the contradictory provisions of the previous law. If the next law explicitly abolishes the previous laws, there is no problem. In cases where he does not expressly stated in this way, there is an implied cancellation.

The decision of the Constitutional Court (1966), published in the official gazette, regarding this situation is as follows:

"If there is a conflict between the provisions of the previous and next laws according to the effective date of special laws, or if the next law revises the issue that the previous one has dealt with, the next law implicitly replaces the previous law"

Some prescriptions can be used to investigate the existence of a suitable causal link between the work accident and the work done (Akın, 2011):

- If the accident occurred during the execution of the work,

- If the accident occurred because it violated the employer's obligation to take occupational health and safety measures,

- If the accident occurred within the working period,

- If the accident occurred due to the danger of the work carried out,

Even if these prescriptions are not in sight, the employer may still be responsible for the work accident. The employer can be relieved of responsibility when the causal link cannot be established or cut.

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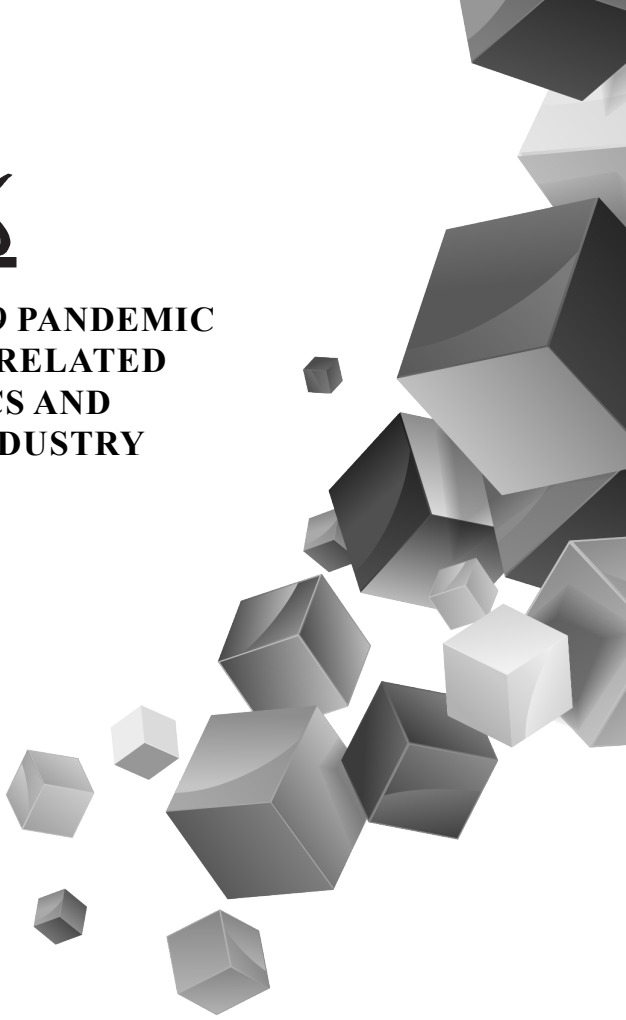
Chapter 16

EFFECTS OF COVID-19 PANDEMIC ON DIGITALIZATION RELATED STUDIES IN LOGISTICS AND TRANSPORTATION INDUSTRY



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1. INTRODUCTION

The COVID-19 pandemic, which started in China in early 2020 and affected the economy, business activities and people (Almeida, et al., 2020) in the whole world, continues to transform by affecting all sectors in different ways. According to the KPMG (2020) report, it will be of great importance to understand the trends that constitute the "new reality" by looking at this pandemic process from a broad perspective, in which we have experienced different stages from the beginning. The current literature argues that pandemic constraints such as social distance intercity travel ban, work from home and curfew accelerate the digitalization that have been attempted to be carried out since the years of ICT technologies appeared (Sokolovskaya, 2020; Barnes, 2020). On the other hand, strategies established by the WHO (World Health Organization) to maintain physical distance and reduce contact, which are determined as one of the main measures in struggle the COVID-19 pandemic, have been created significant challenges in sectors such as wholesale and retail, transport and logistics industries which mainly depend on the success of supply chain managements with a large number of physical contact between employees in production, physical distribution (Končar, et al., 2020). The COVID-19 pandemic process encouraged the whole world to adapt to the "new normal" due to the urgent need in all areas that directly concern human life such as business, education, health, entertainment, online shopping. The need for to adapt to digitalization in a coordinated manner in the world has contributed as quickly as possible to the existing literature while transforming people into the knowledge management research community (Barnes, 2020).

When analyzed digitalization in terms of transportation and logistics industries, in addition to the technology and opportunities that can be used to increase the productivity and efficiency it offers, it has the potential to reach these sectors beyond their traditional boundaries with modern information technologies that can be used to provide a better planning and management systems (Heilig, et al., 2017). Kayıkçı (2018), stated that today most enterprises consider production activities as the main point of digitalization and that concepts such as "factory of the future" and "smart factory" are combined with the term, however, she argues that the concept of digitalization, which promises connected processes and decentralized autonomous management, real-time full transparency from suppliers to customers, small batch sizes and multiple product types will yield successful results when combined with the entire supply chain and logistics processes, not just the production. Accordingly, Strandhagen, et. al. (2017), argued that the digitalization of production and logistics functions together is the only solution to meet the sustainable demands of the enterprises, with the opportunities offered by the Logistics 4.0 concept such as instant information exchange, new business model proposals

and real-time big data analysis. In connection with this, they argued that digitized logistics and transportation processes will contribute to the more efficient operation of all stakeholders in the supply chain. In addition, the current literature argues that in order to achieve sustainable benefits by using the possibilities of Industry 4.0 technologies, a greater vision for digitalization should be developed especially in the logistics sector, and the use of technologies that will enable vertical and horizontal integration among supply chain partners should be emphasized (Kayıkçı, 2018).

In this study, it is aimed to determine whether the contents, subjects and publication frequencies of scientific studies published on digitalization in the field of logistics and transportation are affected by the COVID-19 pandemic process. In this direction, the bibliometric analysis method, which makes it possible to analyze and compare the studies in the literature according to different criteria, has been used in the study. According to the results obtained by examining the academic studies published between the years of 2019-2020 in the Web of Knowledge database, it has been determined that the studies differ on the basis of multiple criteria in the pre-pandemic and post-pandemic periods.

In the second chapter, the literature on digitalization in the logistics and transportation sector is summarized and the framework of the study is formed, the method and the data used in the research have been examined in the third chapter. The findings obtained from the analysis have been discussed in the fourth section and finally evaluations have been made in the last section of this study.

2. LITERATURE

As the COVID-19 pandemic is relatively new in the literature, despite the fact that the importance and geographical prevalence of the subject, it has not been studied extensively in the literature in this short time period. In this part of the study, the literature related with the COVID-19 pandemic process in logistics and transportation industries will be examined briefly.

Cichosz, et. al. (2020) analyzed nine international logistics service providers using literature review and case study methods in their study, which aims to identify the barriers to successful adaptation of logistic service providers to digital transformation. As a result of the study, five criteria that prevent digital transformation of logistics service providers and eight criteria that will ensure the successful realization of digital transformation are determined. According to the analyzes performed within the scope of the study; *"complexity of logistics network and underlying processes, lack of resources including skilled resources, technology adoption, resistance to change and data protection and security breach"* have been identified as barriers that prevent digitalization of logistics service providers. The success factors also defined in the study as; *"leadership, supportive organizational*

culture, employee and partner engagement, aligning business and it strategies, process standardization and data integration, employee training and skills development, agile transformation management and leveraging internal and external (technological) knowledge" (Cichosz, et. al., 2020). By using the literature review method Junge (2019) also aimed to define Industry 4.0 technologies that used in production processes and to determine the possible effects of the use of these technologies on logistics and supply chain processes. As a result of the study, it has been determined that Industry 4.0 technologies such as auto identification, additive manufacturing, and cloud technology have led to improvements in logistics processes, distribution distances in networks and optimizing logistics resources.

Medyakova, et. al., (2020), aimed to analyze the use of digital technologies in the field of transportation in pre-pandemic and post-pandemic processes, stated that digital innovations were gradually included in the real processes for reasons such as cost and time constraints in the pre-pandemic period. The study analyzes the use of digital technologies before and after the pandemic in Russia, one of the largest transportation systems in the world, and suggests that the use of digital technologies and digital transformation in the transportation sector have gained momentum after the start of the COVID-19 epidemic.

Queiroz, et. al., (2020) stated the importance of humanitarian logistics in their study, in which they argued that the COVID-19 epidemic revealed that pandemics and epidemics could seriously damage supply chains worldwide. Arguing that commercial supply chains remain vulnerable during the epidemic, despite the fact that there is a lot of study on humanitarian logistics, the authors aimed to develop a model proposal that would enable commercial supply chains to operate more efficiently during pandemics and epidemics using the literature review method. As a result of the study, they created a model that it would be more efficient to manage the supply chain structure in six stages: adaptation, digitalization, preparedness, improvement, ripple effect and sustainability during epidemic and pandemic periods. The study also emphasizes that scientific studies on the pandemic in the supply chain management literature are insufficient. Another study examining the impact of the COVID-19 pandemic process on supply chains was prepared by Nandi, et. al., (2020). Arguing that it is easier to identify the weak points of traditional supply chains during the pandemic process, Nandi, et. al., (2020) argues that the necessary measures should be taken to evaluate this process as an opportunity and to make supply chains more durable, transparent and sustainable.

Bibliometric analysis method used in this study, to determine whether the contents, subjects and publication frequencies of scientific studies published on digitalization in the field of logistics and transportation are affected by the COVID-19 pandemic process. Detailed information about

the used method and the data that have been used in the study have been examined in the next chapter of this study.

3. METHOD

The bibliometric analysis technique, which has been widely used recently, has become an integral part of the evaluation methodology, especially in scientific and applied fields (Ellegaard and Wallin, 2015). Examination of written studies conducted in any discipline by certain periods is of great importance both in determining the level of development in the field of science and determining which subjects are mainly concentrated on (Hotamışlı and Erem, 2014). Bibliometric analysis technique is the numerical analysis of the publications produced by people or institutions in a specific area and in a specific region and the relations between these publications (Altaş, 2017).

In line with the aim of the study, studies published in Web of Knowledge database collected regarded to their subjects and publishing year. In the classification conducted to analyze whether scientific studies published on digitalization in the transportation and logistics sector differ before and after the pandemic, 2020 was accepted as the post-pandemic period and 2019 as the pre-pandemic period. And, studies that contain "*Digital Transformation*" and "*Digitalization*" in title and "*Logistics*" and "*Transportation*" in topics gathered from the database to analyze. The studies analyzed as 2020 data in the study are limited to the scientific studies being scanned in the Web of Knowledge database as of 13 December 2020. Obtained studies have been classified according to their pandemic periods, types, journals, research methods, keywords, keyword groups and Web of Knowledge research areas. Secondary data used in the study obtained through document analyzes and analyzed via bibliometric analysis method. Microsoft Office Excel software and MAXQDA 2018 package program used during these analysis. Frequencies of all these studies according to keywords/keyword groups can be seen in Table 1.

Table 1: Number of studies available in Web of Knowledge Database according to given keywords

Keyword(s)/Date	Pre-Pandemic Period (2019)		Post-Pandemic Period (2020)	
	F	P	F	P
"*Digital Transformation*" in title and "*Logistics*" in topic	9	31,04	7	30,44
"*Digitalization*" in title and "*Logistics*" in topic	13	44,83	10	43,48
"*Digital Transformation*" in title and "*Transportation*" in topic	1	3,44	2	8,69
"*Digitalization*" in title and "*Transportation*" in topic	6	20,69	4	17,39
Total	29	100	23	100

As a result of the screening, 52 studies were found in the database. According Table 1, when analyzed the last two years' scientific studies, it is seen that more studies have been published in the pre-pandemic period. In the last two years, 23 studies have been published in the fields of digital transformation, digitization and logistics, and these areas constitute the largest group in this sample. In addition, in both periods, the subject of "digitalization" has been studied more than "Digital Transformation" and "Logistics" field has been studied more than "Transportation" field. Results of the study such as, pandemic periods, types, journals, research methods, keywords and keyword groups of the analyzed database' studies are presented in the next section.

4. RESULTS

Publication types, distribution of studies to journals, research methods used in the studies, keywords and keyword groups used in the studies and Web of Knowledge research areas of this studies analyzed according to their pandemic period in this section. Publication types of the studies in pre-pandemic period and post-pandemic period has been demonstrated in Table 2.

Table 2: Publication types of the studies

	2019		2020		Change in 2020
	F	P	F	P	
Conference Proceedings	13	44,82	-	-	-
Articles	16	55,18	23	100	31,25 %
Total	29	100	23	100	-20,68 %

As for the types of scientific publications, it was determined that the number of conference papers and articles was close to each other in the pre-pandemic period, but in the post-pandemic period, although digital conferences continued in accordance with the pandemic rules that defined by World Health Organization (WHO), no conference papers were published on the subjects that examined in the context of this study.

The fact that no conference papers were published in the post-pandemic period caused the number of studies in the field of digitalization/digital transformation and logistics/transportation to decrease in this period. When the number of scientific articles published in the post-pandemic period and the number of scientific articles published in the pre-pandemic period were compared, it was found that the studies published in the post-pandemic period increased by 31.25%.

Table 3: Distribution of studies to journals in 2019

Conferences	F	P
Education excellence and innovation management through vision 2020	3	10,34483
7th CIRP-Global web conference - towards shifted production value stream patterns through inference of data, models, and technology (CIRPE 2019)	1	3,448276
International scientific conference digital transformation on manufacturing, infrastructure and service	1	3,448276
Proceedings of eighteenth Wuhan international conference on e-business	1	3,448278
Proceedings of the 1st international scientific conference modern management trends and the digital economy: from regional development to global economic growth (MTDE 2019)	1	3,448278
International scientific conference digital transformation on manufacturing, infrastructure and service	1	3,448278
4th International conference on smart city applications (SCA' 19)	1	3,448278
IFAC papersonline	1	3,448278
Research. experience. education.	1	3,448278
VPLYV Industry 4.0 na tvorbu pracovnych miest	1	3,448278
Digitalisation and circular economy: forestry and forestry based industry implications	1	3,448278
Journals		
Sustainability	5	17,24138
Amazonia investiga	2	6,896552
Brazilian journal of operations & production management	2	6,896552
Science and innovation	1	3,448276
Benchmarking-an international journal	1	3,448276
Optics communications	1	3,448278
Waste management	1	3,448276
International journal of online marketing	1	3,448276
Global trade and customs journal	1	3,448276
Journal of manufacturing technology management	1	3,448276
Total	29	100

When analyzed the academic conferences that these studies published, the academic conference named as "Education excellence and innovation management through Vision 2020" drew attention with 3 studies, all the other conferences had only one studies in the subject of digital transformation/digitalization and logistics/transportations. The SSCI Journal Sustainability on the other hand, has been identified as the most published journal in both periods with five articles published in the pre-pandemic period on digitalization and logistics subjects. Sustainability journal has been followed by Amazonia investiga and Brazilian journal of operations & production management journals with two articles. Details

about the journals that published about digitalization issues on logistics and transportation industries is given in Table 3.

Table 4: Distribution of studies to journals in 2020

Journals	F	P
International journal of production research	3	13,04348
International journal of business analytics	2	8,695652
Revista inclusions	1	4,347826
International journal of logistics management	1	4,347826
International journal of computer science and network security	1	4,347826
Agricultural and resource economics-international scientific e-journal	1	4,347826
Applied sciences-basel	1	4,347826
Business process management journal	1	4,347826
Journal of enterprise information management	1	4,347826
Journal of transport geography	1	4,347826
International journal of logistics-research and applications	1	4,347826
Central European management journal	1	4,347826
Sensors	1	4,347826
Plos one	1	4,347826
Competition & change	1	4,347826
International review of retail distribution and consumer research	1	4,347826
Sustainability	1	4,347826
Ieee access	1	4,347826
Information	1	4,347826
Open agriculture	1	4,347826
Total	23	100

Approximately 20% of the studies published in business and production related journals in post-pandemic period. 13% of the studies published in the journal named as “International journal of production research” while 8% published in “International journal of business analytics”. In addition to these, the names of the 18 journals published articles regarding the investigated subjects in the post-pandemic period is demonstrated in Table 4.

Table 5: Research methods used in the studies

Research Methods	2019		2020	
	F	P	F	P
Literature Review	9	28,125	4	16
Logistics Regression	3	9,375	3	12
Expert Interviews	4	12,5	2	8
Survey	3	9,375	3	12
Simulation	2	6,25	2	8
Case Study	2	6,25	5	20

Text Analysis	1	3,125	1	4
Bibliometric Analysis	1	3,125	-	-
Interpretative Structural Modelling	1	3,125	-	-
Time Series Analysis	1	3,125	-	-
MDCM Methods (Best worst method, Multivariate multicriteria analysis)	-	-	2	8
SWOT Analysis	1	3,125	1	4
Data envelopment analysis (DEA)	-	-	1	4
Cluster Analysis	-	-	1	4
Not Available	4	12,5	-	-

The details of research methods used in the studies is demonstrated in Table 5. According to the table while the most used method in the studies published in pre-pandemic period is the literature review method aimed at analyzing the target subject by examining the existing resources in detail with scientific methods, on the other hand the most used method in the studies published in the post-pandemic period is found as a case study method, which that aimed to investigate and examine an example related to the subject or situation (usually a successful example) in depth. In both periods, it was found that qualitative and quantitative studies were at similar rates, but especially in the post-pandemic period, interviews based on expert opinions decreased while the use of multi-criteria decision-making methods based on expert opinion increased.

Table 6: Keyword groups used in the studies in 2019

Keyword Groups	2019	
	F	P
Digital Transformation, Digitalization	17	18,086
Logistics and Supply Chain	14	14,894
Digital Technologies (Sensors, Blockchain, AR, VR, Intelligent Robotics, RFID, Learning Factory, ICT)	14	14,894
Sustainability (Fuel consumption, Waste management, Green manufacturing, Sustainable development)	11	11,702
Marketing (Shopping, SMEs, Customer service level)	7	7,447
Productivity	7	7,447
Vehicles and Equipments (Trucking, Heavy-duty vehicles, heavy-duty equipment	4	4,255
Transport	4	4,255
Manufacturing	3	3,191
Corporate Management	3	3,191
Network (Digital network, ecosystem)	3	3,191
Industry 4.0	3	3,191
Internet of things	2	2,128
Data	2	2,128

While the keyword groups determined by the authors of the examined studies were analyzed, the keyword groups have been grouped by the author of this study according to the areas that they are related to as shown in Table 6, and all calculations have been made according to this classification. Accordingly, the most used keyword groups in the studies published in the pre-pandemic period has been determined as "digital transformation and digitalization" in parallel with the study area, and it was followed by studies containing "logistics and supply chain" keyword groups.

Although digital technologies such as Sensors, Blockchain, Augmented reality (AR), Virtual reality (VR), Intelligent Robotics (IR), Radio Frequency Identification (RFID), Learning Factory, Information and communication technology (ICT) are not used in the data collection phase within the scope of the current study, they have been determined as the most used keywords in the studies examined. Key words such as "fuel consumption, waste management, green manufacturing and sustainable development", which are considered within the scope of sustainablility, have come to the fore as words that are widely used in digitalization studies in the pre-pandemic period. In addition to these, it is possible to say that a significant amount of the work done in the pre-pandemic period focuses on marketing and productivity areas.

Table 7: Keyword groups used in the studies in 2020

Keyword Groups	2020	
	F	P
Digital transformation, Digitalization	18	24
Management (Business model, Labor market, Strategic roadmap, Business process management, organizational culture, Vision, Business processes, Unemployment, Priority areas)	10	13,333
Technology (ICT, Physical Internet, UHF, HF RFID, NFC, AI, IT, Blockchain, Industry 4.0, Physical Internet)	13	17,333
Logistics	7	9,333
Markets (Furniture, Grocery, Market structures, Library, Food, SMEs)	7	9,333
Manufacturing	6	8
Transportation (Freight, Public service, electronic tickets, electronic distribution channels)	5	6,667
Smart (City, Library, Culture, Country)	4	5,333
Marketing (Marketing mix, Service marketing)	3	4
Sustainability (Sustainable development)	2	2,667

In the studies published in the post-pandemic period, the most used word groups have been defined as "Digital transformation and Digitalization" like pre-pandemic period. In the second place, studies on management, which had not been studied intensively in the pre-pandemic period, stand out. The word groups "business model, labor market, strategic roadmap,

business process management, organizational culture, vision, business processes, unemployment, priority areas" are gathered under the title of management by the author of this study and constitute approximately 13 percent of the published works in the post-pandemic period. In addition, the significant decrease in the number of studies on sustainability in the post-pandemic period is one of the striking results of the study.

Table 8: Keywords used in the studies in 2019

Keywords	2019	
	F	P
Digital	14	5,19
Digitalization	12	4,44
Logistics	9	3,33
Transformation	7	2,59
Supply	6	2,22
Chain	5	1,85
Data	4	1,48
Manufacturing	4	1,48
Blockchain	3	1,11
Corporate	3	1,11
Duty	3	1,11
Heavy	3	1,11
Industry	3	1,11
Management	3	1,11
Origin	3	1,11
Smart	3	1,11
Sustainability	3	1,11
Waste	3	1,11

When the word frequencies of the keywords used in the studies analyzed, it has been determined that the concepts of "Supply chain, Manufacturing, Smart, Blockchain, Industry, Management and Sustainability" came to the fore apart from the words of digitization and logistics. The frequencies of keywords used in studies published in the pre-pandemic period is demonstrated in Table 8.

Table 9: Keywords used in the studies in 2020

Keywords	2020	
	F	P
Digital	10	4,24
Logistics	7	2,97
Digitalization	6	2,54
Interlocking	4	1,69
Manufacturing	4	1,69

Smart	4	1,69
Transformation	4	1,69
Analysis	3	1,27
Business	3	1,27
Market	3	1,27
Marketing	3	1,27
Mechanism	3	1,27
Service	3	1,27
Technology	3	1,27

In studies published in the post-pandemic period, it has been determined that the concepts of "Manufacturing, Smart, Interlocking, Business, Marketing, Service and Technology" draws attention. One of the prominent results of the study is that the use of manufacturing, business and marketing concepts has increased in the post-pandemic period. Detailed information on the frequency analysis of the studies published in the post-pandemic period is given in Table 9.

Table 10: Web of Knowledge research areas of the studies

Research Areas	2019		2020	
	F	P	F	P
Business & Economics	10	19,231	13	29,545
Other Topics	8	15,385	3	6,818
Engineering	6	11,538	6	13,636
Environmental Sciences & Ecology	6	11,538	1	2,273
Science & Technology	6	11,538	2	4,545
Education & Educational Research	4	7,692	-	-
Operations Research & Management Science	2	3,846	2	4,545
Materials Science	2	3,846	1	2,273
Social Sciences	2	3,846	-	-
Development Studies	1	1,923	-	-
Computer Science	1	1,923	4	9,091
Automation & Control Systems	1	1,923	-	-
International Relations	1	1,923	-	-
Forestry	1	1,923	-	-
Optics	1	1,923	-	-
Agriculture	-	-	2	4,545
Geography	-	-	2	4,545
Chemistry	-	-	2	4,545
Physics	-	-	1	2,273
Transportation	-	-	1	2,273
Instruments & Instrumentation	-	-	1	2,273
Telecommunications	-	-	1	2,273
Information Science & Library Science	-	-	1	2,273
Arts & Humanities	-	-	1	2,273

When the classifications of research areas made by the Web of Knowledge database examined, it has been determined that the field "Business and Economics" was the field with the highest number of publications in both periods. While the rate of the studies published in the field of "Environmental Sciences & Ecology" was 11 percent in the pre-pandemic period, this rate decreased to 2 percent in the post-pandemic period, also the studies published in the field of "Science & Technology" decreased to 4 percent in the post-pandemic period. No studies were found in this field in the post-pandemic period in the field of "Education & Educational Research" while four studies were published in the pre-pandemic period in this field, on the other hand it has been determined that the studies published in the field of "Computer Science" increased in post-pandemic period. Detailed information on the research area classifications regarding the database is demonstrated in Table 10.

5. CONCLUSION

While the current literature argues that the pandemic period has been accelerated the digitalization process of logistics and transportation industry, this study aimed to analyze this argument with the bibliometric analysis of the published studies in the subjects of digitalization in logistics and transportation industry in the pre-pandemic and post-pandemic periods.

According to the initial findings obtained in the study, it was determined that there was approximately 20% decrease in the number of studies published in the post-pandemic period. However, while the studies examined in the pre-pandemic period included both conference papers and scientific articles, no conference papers were encountered in the post-pandemic period. Due to the social distance restriction introduced during the pandemic period, many traditional scientific congresses and conferences have either postponed their dates or decided to organize their activities on digital platforms. In both cases, it is possible to say that the rate of participation in scientific congresses and conferences has decreased in the post-pandemic period. In order to achieve a more realistic result in the study, when the studies published before and after the pandemic were compared with only articles excluding conference papers, it was found that there was an increase of approximately 30% in post-pandemic publications. This result obtained in the study, supports the claim that encountered in the literature, that the pandemic accelerates digital transformation.

Within the scope of the study, scientific journals that publish the most studies in the field in question were also analyzed. In this context, the Sustainability journal has been identified as the journal that gives the place to related literature studies in both pre-pandemic and post-pandemic periods. In addition, approximately 20% of the relevant studies have been published in business and production related journals, especially in

the post-pandemic period. Another important outcome of the study is the changes in the focus of the studies published in the pre-pandemic and post-pandemic period. The outputs obtained in most of the analyzes regarding the pre-pandemic period point to the theme of sustainability. In the pre-pandemic period, the most used keywords were words related to the concept of sustainability such as "*fuel consumption, waste management, green manufacturing, sustainable development"*. While the concepts of the pre-pandemic period defined as the *"supply chain, manufacturing, smart, blockchain, industry and sustainability"* apart from the words of digitization and logistics, the use of manufacturing, business and marketing concepts has increased in the post-pandemic period.

Accordingly, it is possible to say that a significant amount of studies published in the pre-pandemic period focused on marketing, technology and productivity areas. However, when the post-pandemic period is examined, studies published especially in the fields of management and marketing. Likewise, the rate of studies published in the field of "Environmental Sciences & Ecology" in the pre-pandemic period was 11 percent, while it was found to decrease by 9 percent in the post-pandemic period.

This situation is considered as one of the important results of the study. As a possible reason for the change in focus observed in the analyzed studies, it is thought that the digitalization in the management structures may be considered the most important need in the current situation, as businesses need rapid digitalization in the post-pandemic process. However, more detailed and result-oriented studies on the subject are also recommended.

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Chapter 17

CAUSALITY BETWEEN STOCK PRICE AND TRADING VOLUME: A STUDY ON BIST BANKING SECTOR STOCKS

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1. Introduction

The relationship between stock prices and trading volume fluctuations is one of the interesting research themes in economics and finance. Researchers in these areas investigated the association between stock prices and transaction volume fluctuations in different viewpoints. Among the studies conducted to assess the price-volume relationship; the correlation between the number of stocks sold and the stock price changes (Granger & Morgenstern, 1963), the association between the transaction volume and price variations (Crouch, 1970), security price fluctuations and operation volumes (Epps, 1975) and the up and down stock price movements and transaction number in the stock market (Smirlock & Starks, 1988).

Karpoff (1987) states four main motives why studying the relationship among price fluctuations and transaction size is significant. First, their relationship gives a perception about the market organization. Second, the connection between the price and volume is significant when conducting event studies. If the price and volume test results show a similar response to the event, the inferences from the event study may be strong. Third, the interconnection among the price and volume is important to test the distribution of speculative prices empirically. And fourth, price-volume associations have a considerable importance to studies in markets than stock exchanges like futures markets.

One of the important benefits of analyzing the stock price-volume relationships is to test the efficient market hypothesis on its weak form of efficiency. Fama (1970) defined an efficient market as "a market in which prices always fully show available information." According to Fama's explanation of an efficient market, it is impossible to forecast the future prices of securities by analyzing their past price data. The efficient market hypothesis is categorized into three forms such as the weak, semi-strong, and strong forms. The weak form of efficiency can be tested using historical price information. Therefore, the assessment of the price-volume relationship is important to know whether investors can predict future prices by analyzing trading volume or not. In this regard, Kaniel, & Mingelgrin (2001) stated that "individual stocks experience extreme trading volume, relative to their usual trading volume, contain important information about subsequent stock returns." According to their finding, the extensive high trading volume will result in positive abnormal returns while the extensive low trading volume results in an abnormal negative return. Accordingly, assessing the correlation among stock prices and trading volume is worthy to technical analysts.

The purpose of this study is to test the connection between stock prices and trading volume in Borsa Istanbul (BIST) using nine bank stocks listed in the BIST 100 index. The study will investigate whether the transaction

volume is a significant tool to forecast prospect stock prices in the BIST banking sector or not.

This study classified into five sections. The first section covers the introduction of the study, and the second section describes the empirical literature conducted in the study area. The third and fourth sections cover the methodology of the study and the empirical result respectively. The last and fifth part depicts the summary and conclusions.

2. Empirical Literature Review

Since the 1960s, several studies conducted to assess the link between transaction volume and stock price changes. For instance, studies such as Ying (1966); Epps (1975); Hanna (1978); James & Edmister (1983); Richardson, Sefcik & Thompson (1986); Hiemstra & Jones (1994); Chen, Firth & Rui (2001); and Wang & Huang (2012) indicates that there was a substantial correlation among stock prices and transaction volume. In addition to their significant relationship, researchers are interested to know either price changes affect transaction volume or changes in transaction volume affect the stock price. In this regard, studies such as Karpoff (1987), Başci, Özyıldırım & Aydoğan, (1996), Kamath & Wang (2006) and Attari, Rafiq & Awan (2012) indicated that there was a considerable connection between transaction volume and stock prices. Chuang, Liu & Susmel (2012) studied the link among transaction volume and stock price for 10 Asian stock markets. Out of 10 sample stock exchanges, they observed positive volume -price connection in 8 stock exchanges and a negative association in 2 markets.

The transaction volume-price relationship for indexes and listed companies in Borsa Istanbul (BIST) also studied in different perspectives. We summarized some studies conducted to assess the correlation between stock price and transaction quantity in the case of BIS indexes and stocks. Boyacıoğlu, Güvenek & Alptekin (2010) investigated the causality relationship between prices and trading volume in Istanbul Security Exchange (ISE) using the ISE National 100 Index. They used monthly data from 1997 to 2009. Generalized Autoregressive Conditional Heteroscedasticity (GARCH), VAR, and Granger causality test was utilized to examine the cause and effect. The finding shows that there were a lengthy period and opposite causality from transaction volume to price changes.

Gümrah, Çukur & Gümrah (2012) assessed the link between transaction volume and price of Istanbul Security exchange 100 indexes (currently known as BIST 100 index) by collecting 5,388 daily observations for the period from January 2, 1990 to August 17, 2011. They employed Granger causality and VAR testes to analyze the relationship. The finding of the study shows that there was a unidirectional effect from the index

return to transaction volume. More specifically, they state that negative price changes more affect trading volume comparing with positive price changes. Nalın & Güler (2013) examines the link between transaction quantity and stock prices for the BIST 100 index using 6,602 daily prices and volume observations from October 26, 1987, to December 2.2013. To assess the relationship; unit root tests, Johansen co-integration test and Granger Causality test are employed. Their finding indicated that the change in stock price is affected by the transaction volume.

The study conducted by Yılancı & Bozoklu (2014) assessed the relationship among price and transaction quantity for Borsa Istanbul using 5,731 daily observations from 1990, to 2012. They employed the Granger Causality test to analyze and their finding indicated that there was a nondirectional casualty from transaction volume to stock prices and the relationship also changes over time. Büberkökü (2017) examined the link between price and transaction volume for 10 commercial banks listed in Borsa Istanbul. The study period covers between January 1, 2002, and July 8, 2015. Quantile regression and Hatemi-J tests were used to assess the association amongst price and transaction volume. The result of the study shows that the increase in stock return results in increases in transaction quantity for all sample bank shares. Furthermore, they found that when the price of the stock increases, the impact of transaction volume on the share return also increased.

Eyüboğlu & Eyüboğlu (2018) studied the connection among transaction volume and price for selected BIST indexes by analyzing the covering from January 1, 2012, to January 2, 2018. Toda-Yamamoto causality test is applied to assess price-volume the connection. Their finding indicated that there was a unidirectional effect from price to trading quantity for industrial index only.

Most of the literature in BIST regarding price-volume relationships conducted based on indexes and only one study found conducted on commercial banks listed in BIST. The purpose of this paper is to examine the link between transaction volume and prices for 8 banks listed in the BIST 100 index and BIST BANKS index also included in the sample. Accordingly, it is expected to form this paper to contribute to the literature on the banking sector stocks volume-price relationship.

3. Data and Methodology

Sample and Data

To examine the association between transaction volume and price in BIST banking sector stocks, 9 bank stocks which included in BIST 100 index are selected as a proxy of banking sector stocks. The lists of selected bank stocks are displayed below in table 1.

Table 1

Lists of Sample Bank Stocks

No.	Name of the Bank	Stock Symbol
1	Ak Bank	AKBNK
2	Albaraka Türk Participation Bank	ALBRK
3	Turkey Garanti Bank	GARAN
4	Turkey Halk Bank	HALKB
5	Industrial Development Bank of Turkey	TSKB
6	Turkey İş Banka	ISCTR
7	Yapi and Kredi Bank	YKBNK
8	Turkey Vakiflar Bank	VAKBN
9	Şeker Bank	SKBNK

Daily 1,255 closing price and trading volume observations encompassing the time from January 1, 2015, to December 31, 2018, are collected from finance.yahoo.com. Following Ying (1966), Saatcioglu & Starks (1998), Elmas & Yildirim (2010), Boyacıoğlu, M. A., Güvenek, B., & Alptekin, V. (2010) and Gazel (2017), the change in price and trading volumes of selected bank stocks calculated as follows.

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \quad \ldots\ldots\ldots\ldots (1)$$

$$V_{i,t} = \ln\left(\frac{V_{i,t}}{V_{i,t-1}}\right) \quad \ldots\ldots\ldots\ldots\ldots (2)$$

Where: $R_{i,t}$ denotes stock i price return (change) at time t, $\ln$ implies the natural logarithm, $P_{i,t}$ is the prices of stock i at time t and $P_{i,t-1}$ is the prices of stock i at $t-1$, $V_{i,t}$ represents stock i transaction volume change at time t and $V_{i,t-1}$ are the transaction volumes of stock i at time t and $t-1$.

Methodology

In this study, primarily the descriptive statistics of sample bank stocks are summarized. Then, the correlation among price and quantity changes is calculated to determine the link between stock return changes and transaction volume changes in the BIST banking sector stocks. The correlation coefficient test employed to identify whether stock price variations and transaction volume changers are related positively or negatively. The correlation between time series stock returns (R) and transaction volume (V) which had a data set $R = \{R_1. \ldots .R_n\}$ and $V = \{V_1. \ldots .V_n\}$, the correlation coefficient or Pearson correlation coefficient (r) is calculated as:

$$r = \frac{\sum_{i=1}^{n}(R_i - \bar{R})(V_i - \bar{V})}{\sqrt{\sum_{i=1}^{n}(R_i - \bar{R})^2 \sum_{i=1}^{n}(V_i - \bar{V})^2}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where: $\bar{R}$ and $\bar{V}$ are the samples mean value of variable R and V respectively (Klimenko, Mitselmakher & Sazonov, 2002). Pearson's correlation coefficient should be between ± 1 and $+1$ is a "perfect positive correlation" while -1 is a "perfect negative correlation" between two continuous variables. The relationship between the two continues variables said to be strong when Pearson's correlation result is between ± 0.5 and ± 1 (Mukaka, 2012).

Lastly, the Granger causality test is used to determine whether the change in stock return affects transaction volume changes or trading volume changes affect stock return changes. Koop (2006) states that "the basic idea behind the Granger causality test is that a variable X Granger-causes Y, if past values of X can help explain Y. Of course, if Granger causality holds this does not guarantee that X causes Y. This is why we say "Granger causality" rather than just "causality". Nevertheless, if past values of X have explanatory power for the current values of Y, it at least suggests that X might be causing Y."

Is the stock return R that "causes" change in trading volume$(R \rightarrow V)$? Or is the trading volume V that causes a change in stock return $R\,(V \rightarrow R)$? The arrow shows the variable affected by the other variable. According to the granger causality test, the information essential to the forecast of variables such as stock price variations and transaction volume changes (Gujarati, 2009). Accordingly, the Granger causality test is expressed statistically as follows.

$$R_i = \sum_{i=1}^{n} \alpha_i V_{t-i} + \sum_{j=1}^{n} \beta_j R_{t-j} + \varepsilon_{1t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$V_i = \sum_{i=1}^{n} \lambda_i V_{t-i} + \sum_{j=1}^{n} \delta_j R_{t-j} + \varepsilon_{2t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where it is supposed that the errors such as ε_{1t} and ε_{2t} are uncorrelated; $\alpha_i, \beta_j, \lambda_i$, and δ_j are coefficients; and n and m are the number of lagged terms for equation (4) and (5) respectively.

The regression results of equation (4) and (5) will be one the following four probabilities such as one-directional causality from R to$V$, one-directional causality from V to R, bilateral causality, and independence. If the calculated value on the lagged V in equality (4) are statistically dissimilar from zero as a cluster and the set of assessed coefficients on the lagged R in equality (5) is not statistically dissimilar from zero, the causality is known as "unidirectional causality" from R to V while the

inverse is called "unidirectional causality" from V to R. Bilateral causality exists when V and R values are statistically significantly diverse from zero in both equalities. If V and R values are not statistically important in either of the abovementioned equations is called independence (Gujarati, 2009).

Determining the optimum lag length that should include in the model is a critical issue in the Granger causality test. In this study, the ideal lag size is decided based on the Schwarz information criterion (SIC). To employ the Granger causality test, variables should be stationary (have not a unit root). If time series are not stationary, we should make it stationary by taking it difference. ADF unit root test is applied to check the stationarity of variables. The stationarity at the level I (0) and first difference I (1) with intercept; intercept and trend; and without trend and intercept are checked.

4. Empirical Analysis

In this part, the analysis results of the study such as descriptive statistics, correlation coefficients, ADF unit root test and Granger causality test are summarized. The analysis is started by assessing the descriptive statistics of selected variables for all 9 sample bank stocks. Before engaging in regression or model testing, knowing the characteristics of variables is essential. Descriptive statistics is important to know the normality of time series data. Accordingly, the central tendency, disruption, and normality information of the selected samples are presented in table 2 below.

Table 2

Explanatory Statistics of Selected Samples

Stock		Mean	Median	Stdv.	Minimum	Maximum	Skewness	Kurtosis	Obsebn.
AKBNK	R	0.00	0.00	0.03	-0.10	0.61	8.90	198.62	1255
	V	0.00	-0.01	0.41	-1.64	1.86	0.08	1.27	1255
ALBRK	R	0.00	0.00	0.02	-0.22	0.18	0.35	16.89	1255
	V	0.01	-0.04	0.80	-2.43	3.03	0.30	0.58	1255
GARAN	R	0.00	0.00	0.02	-0.12	0.09	-0.23	2.94	1255
	V	0.00	0.00	0.48	-6.92	7.20	0.40	76.40	1255
HALKB	R	0.00	0.00	0.02	-0.15	0.14	-0.25	4.23	1255
	V	0.00	-0.03	0.46	-1.78	2.95	0.36	2.16	1255
TSKB	R	0.00	0.00	0.02	-0.12	0.09	-0.38	3.12	1255
	V	0.00	-0.03	0.79	-3.49	2.83	0.02	0.91	1255
ISCTR	R	0.00	0.00	0.02	-0.13	0.08	-0.40	2.64	1255
	V	0.00	-0.01	0.42	-1.76	1.84	0.22	1.27	1255
YKBNK	R	0.00	0.00	0.02	-0.14	0.11	-0.25	3.70	1255
	V	0.00	-0.03	0.51	-2.18	2.18	0.26	1.20	1255
VAKBN	R	0.00	0.00	0.02	-0.12	0.11	-0.22	2.75	1255
	V	0.00	0.00	0.43	-1.96	1.70	0.03	1.53	1255
SKBNK	R	0.00	0.00	0.02	-0.10	0.18	1.10	11.38	1255
	V	0.00	-0.05	0.75	-2.68	3.95	0.54	1.50	1255

The mean value of log return (R) and log trading volume change (V) almost for all samples is near to zero. The standard deviation of trading volume changes is higher than return changes. This means trading volume

more fluctuate than the stock price. Skewness measures the asymmetry of time series variables. If the skewness is zero, the series is normally skewed. Most of the price variations and transaction volume variations are positively skewed. Kurtosis measures the peakedness or flatness of variables. All series have a positive kurtosis value.

Correlation Coefficient

A correlation coefficient shows whether a negative or positive association between variables. As stated in the methodology section, a correlation said to be strong when the coefficient is between ± 0.5 and ± 1. Accordingly, only GARAN stock price variations and transaction quantity changes have a negative relationship and the other 8 samples have a positive relationship. Regarding the strength of the correlation, none of the samples had a strong association. All samples have an insignificant correlation between their stock price variations and transaction quantity changes. According to Hinkle, Wiersma & Jurs (2003), a correlation result between 0 and ± 0.3 is an insignificant correlation. Therefore, based on correlation coefficient analysis, no significant association found among stock returns and transaction volume variations.

Table3

Pearson Correlation Coefficient

No.	Name of the Bank Stock	Correlation between V and R
1	AKBNK	0.058
2	ALBRK	0.189
3	GARAN	-0.028
4	HALKB	0.129
5	TSKB	0.017
6	ISCTR	0.052
7	YKBNK	0.037
8	VAKBN	0.122
9	SKBNK	0.278

Granger Causality Test

There are two primery tests such as unit root test for stationarity and deciding the ideal lag size are nedded for conducting a Granger causality test. Test for stationarity is employed using ADF unit root test and the outcomes are summarized in Table 4 below. The decision criteria are if the absolute value of ADF test statistics is higher the 1%, 5%, and 10% critical values, the samples has not a unit root, meaning that the they are stationary. The analysis is employed by the formula with normal, constant, constant and trend at the level I (0) and 1st difference I (1). In all scenarios, the ADF test results significantly higher than at 1% critical value. Consequently, the series is stationary and there is no hindrance to conducting the Granger causality test.

Table 4

Stationery Test Result Using ADF Unit Root Test

Variables		ADF Test Statistic					
		Level I (0)			1st Difference I (1)		
		Intercept	Trend &Intercept	None	Intercept	Trend &Intercept	None
AKBNK	R	-27.89*	-27.93*	-27.89*	-12.66*	-12.67*	-12.66*
	V	-11.92*	-11.95*	-11.93*	-14.24*	-14.23*	-14.24*
ALBRK	R	-14.54*	-14.57*	-14.55*	-14.63*	-14.63*	-14.63*
	V	-15.20*	-15.22*	-15.19*	-13.97*	-13.96*	-13.97*
GARAN	R	-37.06*	-37.06*	-37.07*	-13.99*	-13.98*	-13.99*
	V	-13.07*	-13.11*	-13.07*	-14.33*	-14.32*	-14.33*
HALKB	R	-35.62*	-35.61*	-35.62*	-13.60*	-13.59*	-13.60*
	V	-13.92*	-13.91*	-13.92*	-14.86*	-14.85*	-14.86*
TSKB	R	-36.26*	-36.25*	-36.27*	-13.39*	-13.39*	-13.40*
	V	-14.05*	-14.04*	-14.03*	15.24*	-15.23*	-15.24*
ISCTR	R	-14.73*	-14.74*	-14.73*	-14.76*	-14.65*	-14.66*
	V	-12.42*	-12.42*	-12.42*	-15.01*	-15.00*	-15.01*
YKBNK	R	-15.19*	-15.21*	-15.19*	-13.57*	-13.56*	-13.57*
	V	-11.48*	-11.48*	-11.48*	-14.06*	-14.06*	-14.07*
VAKBN	R	-19.66*	-19.66*	-19.67*	-13.19*	-13.18*	-13.19*
	V	-12.41*	-12.41*	-12.42*	-14.14*	-14.13*	-14.15*
SKBNK	R	-25.99*	-25.99*	-25.99*	-13.68*	-13.68*	-13.69*
	V	-15.79*	-15.79*	-15.79*	-14.64*	-14.64*	-14.65*
Note: * denotes the significance at 1% significant level. Test critical values for constant test equation are: -3.44 (1%); -2.86 (5%) and -2.57 (10%). Test critical values for constant and trend test equation are: -3.97 (1%); -3.41 (5%) and -3.13 (10%). Test critical values for equation without constant and trend are -2.57 (1%); -1.94 (5%) and -1.62 (10%).							

The second key issue in the Granger causality test is the decision of optimum lag length. The optimum lag length decided using the SIC for each sample is presented in table 5.

Table 5:

Optimal Lag Length Using the SIC

Stock	AKBNK	ALBRK	GARAN	HALKB	TSKB	ISCTR	YKBNK	VAKBN	SKBNK
Lag	4	3	4	3	4	4	3	4	3

Finally, the Granger causality test employed for all samples and F-statistics and P-values results for all hypotheses are presented in table 6. There are two null hypotheses for each sample.

H_{01}: trading volume change (V) does not Granger Cause stock price change (R)"

H_{02}: "R does not Granger Cause V"

The conclusion benchmarks are to accept the H_0 (no causality between variables) if P-value >5% and reject the H_0 (there is a causality between variables) when P-value <5%.

The Granger causality test results of AKBNK, HALKB, and SKBNK indicate that H_{01} is accepted due to all P-values are greater than 5% and H_{02} is rejected because of all lag's P-values are less than 5%. Therefore, in the case of AKBNK, HALKB and SKBNK price changes cause trading volume change. This is called unidirectional causality from R to V $(R \rightarrow V)$. There is no causality between R and V for ALBRK, GARAN, TSKB, ISCTR, YAKBNK, and VAKBN as a result of no significant P-value in either hypothesis. Therefore, R and V are independent in the case of these bank stocks. In general, as most of the bank stocks' price and trading volume changes are independent and do not have a significant correlation between them, no one can use either transaction quantity to expect upcoming prices or stock prices to predict trading volume.

Table 6

Pairwise Granger Causality Tests Results

Stock	Hypotheses		Lag Length					
			2		3		4	
			F	P	F	P	F	P
AKBNK	H_0	1	0.37	0.68	1.35	0.25	1.02	0.39
		2	4.03	0.01*	3.49	0.01*	3.69	0.005*
ALBRK	H_0	1	0.48	0.61	0.49	0.68	-	-
		2	1.22	0.29	1.73	0.15	-	-
GARAN	H_0	1	2.52	0.08	1.80	0.14	2.37	0.051
		2	0.87	0.41	1.33	0.26	1.59	0.17
HALKB	H_0	1	0.39	0.67	2.17	0.08	-	-
		2	4.46	0.0*1	3.97	0.007*	-	-
TSKB	H_0	1	1.84	0.15	1.27	0.28	1.21	0.30
		2	0.05	0.94	0.26	0.85	0.88	0.47
ISCTR	H_0	1	1.84	0.15	1.84	0.13	1.74	0.13
		2	0.45	0.63	0.57	0.63	0.84	0.50
YKBNK	H_0	1	0.34	0.70	0.46	0.70	-	-
		2	0.86	0.42	0.42	0.73	-	-
VAKBN	H_0	1	2.36	0.09	1.45	0.22	1.98	0.09
		2	0.84	0.43	0.74	0.52	0.66	0.61
SKBNK	H_0	1	2.41	0.08	1.54	0.20	-	-
		2	9.74	0.00*	7.39	0.00*	-	-
Note: * Indicate the significant P-values which are less than 5%. $H_0 1$: V does not Granger Cause R, $H_0 1$: R does not Granger Cause V								

5. Summary and Conclusion

This study aims to examine the association among stock price variations and transaction volume changes for selected stocks in the Borsa Istanbul banking sector. In this regard, 9 bank stocks such as AKBNK, ALBRK, GARAN, HALKB, TSKB, ISCTR, YKBNK, VAKBN, and SKBNK which included in BIST 100 index are selected as a proxy of banking sectors stocks. 1,255 daily closing price and trading volume observations from January 1, 2015, to December 31, 2018, are collected from finance.yahoo.com. The natural logarithm variations in price and transaction volumes of selected bank stocks calculated. To investigate the link and causality between stock price variations and transaction volume changes; correlation analysis and Granger causality tests are used respectively.

To determine whether stock price variations and transaction size changes are linked to each other or not, the Pearson correlation coefficient is computed and the result shows that only GARAN stock price variations and transaction size changes have a negative relationship and the other 8 samples have a positive relationship. Regarding the strength of the correlation, none of the samples had a strong association. All samples have a weak association between their stock price variations and transaction size changes and no significant association found among stock returns and transaction size changes.

To use the Granger causality test, time series variables should be stationary. The stationarity of selected variables is investigated through ADF unit root test. The stationarity at the I (0) and I (1) with intercept; intercept and trend; and without trend and intercept are checked. In all situations, the ADF test result significantly higher than at 1% critical value. Hence, all series are stationary. Determining the optimum lag length that should include in the model is a critical issue in the Granger causality test. In this study, the optimal lag length determination is conducted by SIC.

The Granger causality test results indicated that AKBNK, HALKB, and SKBNK stock's price changes cause trading volume change. This is called unidirectional causality from R to V (R→V). There is no causality between R and V for ALBRK, GARAN, TSKB, ISCTR, YAKBNK, and VAKBN as the results of no significant P-value in either hypothesis. Therefore, R and V are independent in the case of these bank stocks.

In general, there was no significant association between price variations and transaction size changes for all sample banking sector stocks and there is on direction causality from the return to transaction size for stocks such as AKBNK, HALKB, and SKBNK. On the other hand, there is no causality among returns and transaction sizes of the rest 5 stocks. Depending on the finding of this study, using transaction size to forecast prospect stock prices is not an applicable strategy in BIST banking sector stocks.

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Chapter 18

AWARENESS BUILDING EFFORTS ON CULTURAL HERITAGE: CHILDREN-FRIENDLY ANCIENT CITIES

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1. INTRODUCTION

Following the downfall of the vast empires at the end of the 19th century, one of the methods of legitimizing the political sovereignty of the newly established states along with the effort to became national states within the framework of a cultural-historical approach was to trace back their cultural history and heritage. In this context, cultural heritage has served as a part of the efforts to create and build a national identity on the way to becoming a national state. With the establishment of national states, the notion of preserving cultural heritage works bearing the traces of the past and handing down them to next generations has become widespread all over the world. The detection, protection and exhibition of the monumental and historical artifacts, which are among cultural heritage elements, are regulated by the state institutions. In this sense, the selection of the specimen artifacts that will represent the cultural heritage of the nations and the protection of these works have been determined by the experts appointed by the state institutions (Wright, 1985). Thus, priorities regarding the importance attached to cultural heritage, what it will include as a heritage and how it will be protected according to the national identity policy may differ from country to country. Therefore, what is historically important, what sort of objects must be passed on to future generations, which works or artifacts will be preserved and left as cultural heritage reflect the sensitivities of the societies (Davison, 2008, s. 34).

Until recently, cultural heritage has been defined as immovable cultural assets such as monumental architectural works, structures or buildings with artistic or historical importance, and archaeological sites and artworks like volumes of books, archives, manuscripts, paintings and sculptures as well as movable cultural assets with archaeological and historical importance, and all these have been included in many international conventions such as the 1931 Athens Charter and the 1954 Lahey Convention.

The definition and scope of the concept of cultural heritage has changed over time, and the conception which was initially limited to historical and artistic structures, monumental and architectural works and archaeological sites has developed over time. Civil structures which are an important part of the social memory have been included as elements of cultural heritage in the process. This transformation in the perspectives of cultural heritage manifested itself with the destruction of the historical texture in the urban renewal approach which is also known as the bulldozer approach experienced in European cities in the 1960s and 70s after World War II. Of the buildings that were destroyed in post-war European cities, only monumental ones were preserved while others were demolished and replaced by new ones, and the historical continuity of the cities underwent a rapid transformation with an abrupt interruption. This transformation

movement, which aroused serious reactions afterwards, brought out a new dimension to the conservation approach. In 1964, in the "Venice Charter", it was stated that both civil buildings and monumental structures are worth preserving, thereby expanding the scope of immovable cultural assets (Enlil, 1992).

In 1972, UNESCO (United Nations Educational, Scientific and Cultural Organization) issued a "Convention Concerning the Preservation of World's Cultural and Natural Heritage" has brought a significant change to the definition of cultural heritage. In addition to man-made areas, artifacts created by nature and human beings or works created spontaneously by the nature are also included in the scope of cultural heritage. In January 2008, a new category called "entities with special characteristics" in the "Functional Principles Guide for the Implementation of the World Heritage Convention" accepted by the Intergovernmental Committee for the Protection of World Culture and Natural Heritage was created. Thus, assets with Outstanding Universal Values that fall under the titles of "Cultural Landscapes", "Historical Cities and City Centers", "Heritage Routes" and "Channels" will also be included in the World Heritage List.

In "European Architectural Heritage Convention" released by the Council of Europe, the problems encountered in the preservation of cultural heritage are discussed. It has been stated that the cultural heritage does not consist of only monumental buildings, but also ordinary buildings in old cities and rural settlements are also a part of it. The most important concept introduced by the Council was the principle of "integrated protection" and it was emphasized that the physical environment should be entirely protected with its inhabitants, taking the sensitive restoration techniques and the social background into account. After the 1990s, the requirement of protecting the environment and archaeological sites, planning rural and urban areas, and addressing cultural development policies in an integrated management approach has been influential in the preservation of cultural heritage. Within the framework of the "European Landscape Convention", which was accepted by the Council of Europe in 2000 and to which our country is a signatory party, given the current changes in the world economy, developments in agriculture, forestry, transportation, infrastructure, mining production techniques, tourism and recreation areas, cultural heritage management and planning lays responsibilities and enfrenchises new rights for everyone in the society (Dinçer ve Enlil, 2012).

The desire to protect cultural heritage and to hand it down to future generations is rooted in the belief that heritage is of a great importance. This importance attached to cultural heritage is determined by the cultural system and sensitivities of the society in question. The importance of cultural heritage is derived from the fact that it can trace all aspects of

the society from the past until today rather than being a movable element. However, what elements of the past should be inherited to the present and what aspects of the past are meaningful to us shows that the conception of the past is merely maintained by screening and interpretational activities prioritized by the experts and their perspectives (Darvill, 2005). Recently, The value attributed to cultural heritage sites is not limited to its historical qualities. As a result of attracting the attention of tourism, cultural heritage areas are used as an economic value criterion. Another valuable issue of cultural heritage sites and assets is the public image they provide to the places where they are located. The cities striving to gain a place for themselves by branding in global competition gain added value with cultural heritage elements and this public image has become an important investment area for those cities (Stuart Hall, 1999, s. 221). Culture industrialists call this trend as "creative economy" because the sector they are affiliated with is the body of culture itself and involves creativity. The United Nations Educational, Scientific and Cultural Organization (UNESCO), which guides international studies in the field of culture, regard these cultural industries as the use of intangible cultural content for creation, production and commercial purposes.

2. International Institutions Related to Cultural Heritage of which Turkey is a member

2.1. United Nations Educational, Scientific and Cultural Organization (UNESCO)

UNESCO, a specialized organization of the United Nations, was established on 16th November 1945 to operate in the fields of education, science and culture. It officially entered into force on 4th November 1946 with the votes of 20 countries. Today, 195 states, including Palestine, are members of the organization which is headquartered in Paris. Turkey is the 10th signatory country. UNESCO's cultural program includes basic topics such as world heritage, culture and development, armed conflict and heritage, intangible heritage, illegal cultural assets trade, tangible cultural heritage and museums, underwater cultural heritage, intercultural dialogue and legal regulations. The mission of the organization is to contribute to peace and security within the framework of international cooperation through education, science and culture, in order to develop respect for human rights and fundamental freedoms.

2.2. International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)

It was established in 1959 in order to protect and preserve movable and immovable cultural heritage. ICCROM, headquartered in Rome, Italy, has gathered its conservation activities under the headings of education,

information, promotion and support, research and cooperation. Today it has 129 members, including Turkey.

2.3. International Council of Museums (ICOM)

Founded in Paris in 1946 with the initiative of UNESCO, ICOM is the only international organization representing museums and museum sector employees. It supports the museum sector with the aim of protecting, preserving and sharing cultural heritage. Among the activities of ICOM are combating illegal trade of cultural assets, creating alternative ways to resolve legal disputes regarding cultural assets, and working on the development of sustainable cultural tourism. Today there are offices in 137 countries, including Turkey.

2.4. International Council on Monuments and Sites (ICOMOS)

ICOMOS, which was established in 1965 within UNESCO, serve as an international and non-governmental organization to develop principles, techniques and implement policies for the protection and evaluation of historical monuments and sites around the world. Today, there are national committees in over 110 countries, including Turkey.

2.5. Council of Europe

The Council of Europe, which has 47 members today, is headquartered in Strasbourg, France. It was established in 1949 to advocate human rights, democracy and the rule of law all over Europe. Many Central and Eastern European countries that are part of the European Union, including Turkey are also members of the organization. The aim of the Council is to contribute to the formation and development of European cultural identity, to ensure the protection of cultural and natural heritage, and to create cooperation and policies among member countries in this field.

3. Conception of Cultural Heritage in Turkey

Cultural heritage was initially defined within the scope of national state authority and considered as an instrument utilized to create a shared identity in the process of building up a national background of newly established Turkish Republic.The cultural heritage has played an important role especially in Anatolian archeology and in creating a historically national identity, and definitions of history and culture within the centralized administration policies and practices of the state. In this context, the importance Atatürk attached to history and culture and the purpose of using the cultural heritage at the stage of establishing a national state can be clearly observed in the foundations of Turkish Historical Society and Turkish Language Institution. “Turkish History Thesis”, which was put forward by the studies of Turkish Historical Society, can be taken as an example of usage by the state’s cultural heritage that

connects the history of Turkish culture to Anatolia and revivifying the past Anatolian cultures in the newly founded Republic of Turkey. In the studies based on the "Turkish History Thesis", it is aimed to remind how deep-rooted and important the lands owned by a nation which was turned into the national state after the Ottoman Empire. In this context, historical ties were tried to be founded between the Turks and the Hittites, who founded the first state in Anatolia. With the "Solar Language Theory" put forward by the Turkish Language Institution, the connections that were tried to be established with archaeological excavations was also strived to be supported philologically. In the light of these theories supporting each other, the objects unearthed in the Hittite excavations carried out in the first years of the Turkish Republic were given names such as "Sun Course", "Solar Disc". The finding called as "The Hittite Sun" was erected as a symbol of the newly founded republic in the downtown of Ankara which was declared the capital to rejuvenate the cultural heritage of the Hittite. Within the framework of these theories, after the Hittites, which were the first state to rule over Anatolia, the Minoan and Mycenaean cultures were accepted as of Anatolian origin, and therefore they were associated with the Turks who became the real owners of Anatolia (Gölbaş, 2016, s. 308).

The policies followed in the management of cultural heritage have changed in different periods in our country as in every country. Given the heritage management in public administration adopted in Turkey since 2000, a tendency to decentralization in public administration which was put into practice by the member states of the European Union has gained importance. Those policies regarding the management of cultural heritage are formed by the political programs of the governments to which the public administrations are affiliated.

Firstly, considering the changes in the policy of using cultural heritage in our country since the early 2000s, it is observed that cultural heritage management was relegated from the central government to the local administrations in order to make the local authorities more effective. Secondly, it is seen that private sector initiatives are promoted in the operation of cultural infrastructures, and finally, generous tax discounts which encourage private sector initiatives in the field of culture are provided.

In the general justification of the "Draft Law Ensuring the Transfer of Some Provincial Organizations to Special Provincial Administrations and Municipalities" with the aim of transferring the management of cultural properties, which have been approved by the relevant commissions of the Turkish Grand National Assembly and entered into the process of becoming a law in 2010, "the primary goal has been to protect, preserve, develop and promote cultural heritage". The importance of "contributing to the public and non-governmental organizations as well as public resources" is

emphasized in the realization of this goal. In the additions made to the Law on Cultural and Natural Properties numbered 5226, a new financing source was created for municipalities under the title of "Providing Assistance to the Restoration of Immovable Cultural Property and Contributory Shares" for the purpose of cultural heritage protection and evaluation. According to the regulation, it is aimed to be used by the special provincial administrations and municipalities in the projects prepared for the protection and evaluation of cultural assets in a special account to be opened by the municipalities as "Contribution to the Protection of Immovable Cultural Property" at the rate of 10% of the tax together with the other tax collected from the property taxpayers. Another practice that has been on the agenda in the field of cultural policy since 2000 is the tax incentives that will pave the way for sponsorships in the field of culture. Incentives and tax discounts made in the "Law for Incentives for Cultural Assets and Enterprises" numbered 5225 are listed as articles. Within the framework of these legal regulations, it is aimed to support cultural heritage sites.

As the stakeholders of the management and financing of culture and cultural heritage increase, the image of the city and the region where such sites are located is improved, and cultural tourism contributes to the local economy (Aksoy ve Enlil, 2010).

In this framework, as stated in the document adopted by UNESCO under the title of "Budapest Declaration on World Heritage" issued in 2002, "world heritage values should contribute to social and economic development and increase the quality of life of our societies, and it should be ensured that local communities are actively involved in determining heritage values"(Budapest Declaration, 2002: art. 3c). Therefore, different models with more than one stakeholder and institution have emerged.

In this part of the study, the children who will be the main inheritors and protectors of the cultural heritage, within the scope of the efforts to raise this awareness among them, similar practices in the world such as the Crow Canyon Archeology Camp, London Archeology Museum Archeology Camp, and examples of the ancient cities and works that have created children's camps in our country for this purpose will be presented.

3.1. Çatalhöyük Neolithic City and Çatalhöyük Archeology Workshop

Çatalhöyük Neolithic City, which was included in the UNESCO World Cultural Heritage List in 2012, is located in Çumra District of Konya Province in Central Anatolia Region. The excavations started in 1961 in Çatalhöyük Neolithic City which was discovered by James Mellaart in 1958 lasted until 1965. After Mellaart's excavations, Çatalhöyük Neolithic City was not forgotten, and Ian Hodder from Stanford University started

the excavations again in 1995 at Çatalhöyük and continued his work until 2018. The Neolithic City of Çatalhöyük witnessed significant social changes and developments with the transition to sedentary social life, which is an important stage in the development of humanity such as the beginning of agriculture and hunting. The city is located on an area of approximately 14 hectares in the Southern Anatolian Plateau and consists of two mounds (http://www.kulturvarliklari.gov.tr/TR-46251/catalhoyuk-neolitik-kenti-konya.html). The Eastern Mound is dated between 7400-6200 BC. Wall paintings, sculptures and reliefs, were found,which are indicators of social organization and transition to sedentary life. The Western Mound of the settlement shows characteristics belonging to the Chalcolithic Period and is dated between 6200-5200 BC. Çatalhöyük Neolithic City provides an important evidence in terms of showing the transition from small village communities to sedentary urban life that existed in the same geography for more than 2000 years. It is also of unique value in terms of monitoring the continuity of artistic and cultural traditions over time(Holder ve Garget, 2016, s. 34-49).

In our country, between January 2002 and December 2004, a project called “Prehistoric Education, Training and Planning Project in the Mediterranean (TEMPER)” was carried out under the leadership of the History Foundation. This project was aimed to build up awareness in order to protect our cultural assets and to transfer them to future generations. Under the leadership of archaeologist Gülay SERT and the experts under her supervision, the project continued with the participation of 600 primary school students in 2004, and the life style and beliefs of the prehistoric people of Çatalhöyük were explained to children with the support of barcovision for a month (Şahin, 2017, s. 361).

In recent years, children have been familiarized with the historical heritage with the archeology workshop established in the excavation area in order to make children love, protect and adopt cultural assets. (Sert, 2016, s. 30-33).

Fig.1. (Sert, 2016, s. 31).

Fig.2.(Sert, 2016, s. 32).

To date, more than 7000 participants have been included in the workshop activities for the children aged between 8-12 for free, and in these workshops the children have carried out excavations in the specially prepared area **(Fig.1)**, drawn Çatalhöyük wall paintings on the walls **(Fig.2)** of the Experimental Archeology house, as well as Çatalhöyük clay pots, figurines and house models, reinforcing the knowledge they have acquired through drama and composition (Sert, 2016, s. 30-33).

3.2. Aktopraklık Open Air Museum and Archeology School

The site is located in a distance of 25 km from Bursa province. Excavations in Aktopraklık Mound, are led out by Prof. Necmi KARUL, a faculty member of Istanbul University. In the mound, there are the ruins of a prehistoric village designed from hunter-gatherer to sedentary life, cultivating grain and raising livestock.

Prehistoric settlements are presently regarded as cultural activity areas that enrich the social environment besides being places that bring contemporary societies closer to their past. In this context, although it is not among the priorities of archeology as a science, familiarizing archaeological sites with the public, sharing the acquired knowledge, creating awareness about the common past of humanity constitute a developing field of activity for archeology.

In accordance with this intention, structures similar to those unearthed in Aktopraklık excavation area were rebuilt, and an excavation house for children and exhibition areas were built. Thanks to the project focused on both society and education, the area has been shaped in order to serve as an application area in primary-secondary education and archeology education **(Fig.3)**, Prehistoric village animations **(Fig.4)**, construction techniques and building materials, imitated items-tools, human models and how the spaces are used and prehistoric daily life are explained in detail to the visitors. Within the scope of the project, all animation units are made ready for use as background for the activities for students attending the camp.

Fig.3. https://www.atlasdergisi.com/dergide-bu-ay/aktopraklik-arkeoloji-atolyeleri-tarihoncesi-

Fig.4. https://arkeofili.com/bursa-aktopraklik-arkeoloji-okulunda-yaz-donemi-atolyeleri-denemeler.html

Although it is not among the primary functions of archeology to use the mounds, which serve as a time laboratory, as an application-oriented area in the education of the society and to organize the historical etting for this purpose, given the example of Aktopraklık Höyük, creating awareness in the protection of cultural heritage to children and the society and transferring it to future generations is one of the foremost issues (Karul, 2015, s. 60-63).

3.3. Getting to Know Myndos Ancient City and the Ancient Life Around Me Project

Excavations at Myndos archaeological site in Muğla Province, Bodrum District, Gümüşlük Town are carried out by Professor Mustafa ŞAHİN, a faculty member of Uludağ University.

Nowadays, the point of view of malicious people on cultural assets shows that cultural assets cannot be entirely protectioned by law enforcement measures. Although it is a long-term and difficult task to raise a relatively high level of awareness among the young generations in terms of the world heritage and cultural assets and to create protecting awareness, it is possible that this challenge be eliminated through conscious education. Within the scope of the project titled as "I Know the Ancient Life Around Me I-II" conducted by the Myndos site excavation team in order to transfer the cultural assets that survived to the present day to future generations, educating the new generations has been accepted as a task and a series of projects have been implemented. In the project, primary and secondary school students have been selected as the target audience that can be educated in the fastest way and reach a high level of protection awareness. Considering that today's youngsters will be the adults in the future, the protection of our cultural heritage and transferring it to future generations during a 10-day camp has opened the way for raising a generation sensitive to sustainability (Şahin, 2018).

In this context, the ancient city itself acts as a laboratory and classroom for the children participating in the camp. The children who wear clothes similar to those worn in antiquity can learn about the life of the period by living through drama. They can experience how cultural assets are found and how a broken cultural property is combined through imitation examples (Şahin, 2018).

Fig.5.(Şahin, 2018, s.364).

Fig.6. .(Şahin, 2018, s.363).

Conclusion

The phenomenon of cultural heritage is closely related to the existence of national states that form the national identity together with language and history. Cultural heritage is one of the basic elements that give legitimacy to the land of the country. Cultural heritage in many countries such as Turkey, is a state-owned issue and has been regarded as an economic resource to be managed.

After the 1990s, along with the changes in the economic order, rapid advancements in communication and information technologies, cultural heritage has started to gain a place in the economy. At the beginning of the 21st century, cultural heritage started to create its own economy with different functions in the field of tourism. In this context, cultural assets are values that need to be protected for continuity and heritage economy. Therefore, cultural heritage is a depleted resource that cannot be reproduced. It should be ensured that the the policies related to definition and protection of heritage and the function assigned to it and the sensitive implementation of international conventions are re-evaluated and thus it must be handed down safely to the future generations.

The concept of "Social Archeology" that emerged in England and the USA has shown that social support is also necessary for the protection of cultural heritage and the policies to be produced in creating the awareness of protecting cultural assets are not sufficient. In this context, archeological camps, which have been set up for many years in developed countries such as the United States, England and Canada, have been implemented in our country in recent years. It is aimed to make the new generations aware of "protecting cultural heritage" and transferring it to the future with the archeoparks established in those archaeological sites.

In this respect, children are considered as cultural ambassadors in the transfer of cultural heritage to future generations and in ensuring social peace. In recent years, the workshops done in ancient cities within the framework of the permission of the Ministry of Culture and Tourism and the camping areas created for children proved to be efficacious and promising.

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Chapter 19

MARITIME TRANSPORT AS AN INDICATOR OF ECONOMIC GROWTH: EVIDENCE FROM CAPESIZE ROUTES TO JAPAN

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1. INTRODUCTION

Using simplifying assumptions in economic analysis provides important convenience. Complex economic processes such as the behavior of economic agents and the direction of macroeconomic performance can be analyzed with simplifying assumptions. The maritime economy also has a complex structure. However, as in other areas of the economy, including the main factors in the maritime sector, and accepting other variables as constant, provides economically important and beneficial results. In the economic analysis, this method is called "*ceteris paribus*" and it constitutes the basis of econometric studies.

The performance of today's economies is highly dependent on import and export performance. Almost all of the countries are in commercial contact with each other. The raw material needs of industrialized countries are met by the countries that have it, and least developed or developing countries demand various final goods from these countries. Due to economies of scale, the transfer of these goods between countries is made by maritime transport. The maritime sector has a large share in the import and export of both raw materials and intermediate goods compared to other transportation alternatives. The fact that the economic performances of the countries depend on foreign trade and that a significant part of foreign trade is carried out by seaway leads to the emergence of important relationships between the indicators in the maritime sector and the macroeconomic indicators. From this point of view, the demand for the maritime market is a derived demand (Branch, 1988:1). The transportation of commodities such as energy, coal and iron ore from the source country to the importing country, the length of the routes, the ship capacities and the costs incurred in this process can directly and indirectly affect the economic performance of the importing country.

Capesize type vessels are very suitable for carrying cargo over long distances. Because it is one of the largest dry bulk carriers in size. Thus, it is the ship type with the lowest transportation costs per unit in this class. For this reason, the economies of scale is benefited by carrying out transportation activities from long distances with large ships (Açık and Başer, 2017).

Freight rates in the maritime market basically consist of the balance between supply and demand. The supply side is mainly determined by the quantity of ships in the market and the average speed of the ships. On the other hand, the biggest factor affecting the demand side is the world economy. However, unlike other markets, there are continuous and irregular cycles in maritime transport. The factor that increases the impact of these cycles on the market is the time-to-build effect. Since the ships are large and complex in size, their construction can take between 1-3 years.

This situation causes the supply side not to respond immediately when the demand increases and the freight rates reach very high levels. After an average of two years (Başer and Açık, 2018), when the ships ordered in the high freight period enter the market, excess supply occurs and freight rates decrease. Sometimes it even sees the bottom.

In this study, we mainly aimed to determine whether the changes in the freight rates of ships transporting iron ore to Japan can be indicator of the economic growth of the country. Two assumptions were effective in our thinking about this. First, because transportation costs affect the final price of the product, the increase in costs can affect demand for the product and there may be a volatility spillover from freight to real GDP. Secondly, as iron ore is a raw material, the increase in demand can be interpreted as a sign of an increase in future economic activities. A volatility spillover from freight rates to real GDP can be seen as the change in demand of iron ore affects freight rates. In our research, we applied our analysis with the causality in variance test by using the freight rates of two iron ore routes. Our results show that contrary to our expectations, the volatility spillover is from real GDP to freight rates. The reasons for this may be the small share of transportation cost in total product cost and the country's inventory policies. Stocking activities can be intense, as large volumes are purchased, and this may dampen the impact of freight rates.

In the second part, general relations between raw materials and economic activities will be mentioned. In addition, the importance of iron ore for the Japanese economy will be analyzed. In the third part of the study, the literature on iron ore, freight market and economic development is summarized. The method and dataset used in the research are introduced in the third part. After the results obtained from the analyzes are presented in the fourth part, evaluations are made in the last part.

2. OVERVIEW OF THE IRON ORE AND JAPAN ECONOMY

The volume of economic activities depends on many factors. The most important of these is the production structure of the economy and the raw material resources used accordingly. Some economies are rich in raw materials and develop their economies by exporting them. Some economies import these raw materials, subject them to various processes and create value added. These goods, which undergo various processes, are either supplied to the domestic market or exported. Especially in the production processes of developed economies, raw materials have a very important place. Because these economies subject these raw materials to various production processes to create value added or use them as intermediate inputs in production processes. The most important of these raw materials are petroleum and petroleum products, coal, grain iron ore, forestry products and steel products. Table 1 shows the amount of these

raw materials used in production processes, transported by seaway in 2018 and 2019.

Table 1: *Basic Raw Material Trade in the World (2018 – 2019)*

Tanker Trade (Million Tons)				
		2018	2019	Percentage Change
Crude Oil		1.881	1860	-1.1
Other tanker trade		1320	1308	-0.9
Gas		416	461	10.8
Total tanker trade		3201	3169	-1.0
Dry Bulk Trade (Million Tons)				
Major	Coal	1.263	1.293	2.4
Bulks	Grain	475	477	0.4
	Iron Ore	1.477	1.455	-1.5
Minor	Forest Product	380	382	0.5
Bulks	Steel Products	388	371	-4.4
Total Dry Bulk		5.225	5.253	0.5

Source: Review of Maritime Transport 2020

Bulk cargoes have an important share among the cargoes transported by seaway. Iron ore is undoubtedly one of the most important of these goods. Iron is the most used of all metals and constitutes 95% of the metals produced in the world by weight. Low price and high strength properties making it indispensable in automotive, ship hull construction and as a structural component of buildings. Steel is the best-known iron alloy, other usage forms are; pig iron, cast iron, carbon steel, malleable cast iron, alloy steel and iron oxide (Tuncel vd, 2017:5).

The Japanese economy is nominally the third largest economy in the world with $ 5.5 trillion. It is the fourth largest economy in terms of purchasing power parity (IMF, World Economic Outlook Database). The industry sector within the economy constitutes 30% of the total economy (CIA, the World Factbook 2019 Datas) Within the industrial sector, there are subsectors in which consumer electronics, automobile production, optical fibers and other electronic items are produced. There are many sub-sectors in the industrial sector where iron ore is used as raw material. The most important of these is automobile production. Japan is the world's third largest automaker, and the world's largest automaker is still a Japanese company, Toyota.

The industrial sector, where iron ore is heavily used, accounts for one third of Japan's economy. However, according to the data of OECD 2015 ISIC Rev 4 input and output table, approximately 6% of the total output consists of the construction sector where iron ore is used extensively. Considering its direct and indirect uses, iron ore is of great importance for the production structure of the Japanese economy.

The fact that the raw material, which is so important for the Japanese economy, is also not available in Japan reveals that the Japanese economy is dependent on iron ore imports. According to Review of Maritime Transport (2020) data, iron ore trade worth $ 144.5 billion was realized on a global scale in 2019. In the four years after 2015, iron ore trade increased by 58.1%. The increase only between 2018 and 2019 is approximately 23%.

2019 yılında demir cevheri ithalatının çok büyük bir kısmını Asya ülkeleri gerçekleştirmiştir. Küresel ölçekteki toplam ithalatın 126 milyar $'lık kısmı Asya ülkeleri tarafından yapılmaktadır. Bu rakam toplam ithalatın yaklaşık olarak %87'sini oluşturmaktadır. Avrupa ülkeleri ise %10 ile ikinci sırada olup, Almanya 3.9 milyar $ ile ilk sıradadır. Asya kıtasında en büyük demir cevheri ithalatçısı yaklaşık 100 milyar dolar ile Çin'dir. Hemen arkasından ise yaklaşık 11 milyar dolar ile Japonya gelmektedir ki bu rakam Dünya ithalatının yaklaşık olarak %8'ini oluşturmaktadır.

Asian countries accounted for the vast majority of iron ore imports in 2019. Asian countries account for $ 126 billion of total global imports. This figure constitutes approximately 87% of total imports. European countries are in the second place with 10%, and among European countries, Germany is the first with $ 3.9 billion. China is the largest importer of iron ore in the Asian continent with around $ 100 billion. Immediately after, Japan comes with approximately 11 billion dollars, which constitutes approximately 8% of world imports.

Table 2: *Top 15 Iron Ore Importers in the World*

Country	**Total Iron Ore Import** (Million $)	**Percentage (%)**
China	99.800	69.1
Japan	10.900	7.5
South Korea	6.900	4.8
Germany	3.900	2.7
Netherlands	2.900	2
Taiwan	2.300	1.6
France	1.500	1
Malasia	1.300	0.9
Turkey	1.100	0.8
USA	842	0.6
Bahrain	805	0.6
Canada	772	0.5
Oman	772	0.5
United Kingdom	757	0.5
Belgium	715	0.5

Source: worldstopexports.com

As can be seen in Table 2, Japan ranks second in the world in terms of iron ore imports. According to the 2019 data, world leading exporters

are Australia with 53.8%, Brazil with 18.1%, South Africa with 4.7% and Canada with 4.9% shares. (OEC, 2020). Among them, the main supplier countries of Japan are shown in Table 3.

Table 3: *Top 15 Iron Ore Supplier for Japan*

Country	**Total Iron Ore Import** (Million $)	**Percentage (%)**
Australia	5.600	51.81
Brazil	3.000	27.75
Canada	849.6	7.86
South Africa	342.6	3.17
USA	229.6	2.12
Ukraine	218.8	2.02
India	185.7	1.72
China	162.3	1.50
Mauritania	112.9	1.04
Peru	55.6	0.51
Chile	15.9	0.15
Sweeden	15.5	0.14
Russia	15.1	0.14
New Zealand	4.8	0.04
Italy	0.6	0.01

Source: worldstopexports.com

Among Japan's iron ore suppliers, Australia ranks first with 51.81%. Brazil ranks 2nd with a total import of 3 billion dollars, Canada is ranked 3rd with an import of 849.6 million dollars. These three countries have a very significant share in the Japanese iron ore supply chain with a total of 87 percent.

3. LITERATURE REVIEW

The most important factor affecting the demand for maritime transport is the world economy. The main reason for the long-term cycles in freight is the cycles in the economy (Strandenes, 2012:107). In this context, the relationship between economic growth in the world and dry bulk freight rates was examined by Başer and Açık (2019) for the period between 1985 and 2016. As a result of their analysis using regression modeling, they found that the increases in GDP caused increases in the dry bulk cargo market so there was a positive relationship between them. In addition, they found that there was a break in freight rates after 2008 global economic crisis, and a decline independent of demand was observed. In addition to the global economy, it is certain that major economies in the world have an impact on the maritime freight markets. Because their impact on the global economic cycle is high, and shocks in these countries can have a great impact on the world economy. One of these great economies is the Chinese economy. Especially the Chinese boom experienced in the 2003's brought

the dry bulk market to levels unprecedented in history. In this respect, the effect of foreign trade volume in China on dry bulk freight market has been analyzed by Efes et al. (2019) for the period between 1985 and 2016. The researchers also added the volume of the dry bulk cargo fleet to this model, representing both the supply and demand sides in the model. Researchers have determined that China's trade volume has a positive effect on freight rates, while the fleet volume has a negative effect. They also determined that the effect of changes in the fleet, that is in supply, on freight rates is greater than demand. The main reason for this can be considered as the short run inelastic supply curve in the dry bulk transportation (Koopmans, 1939). Because when the capacity approaches fully effective use, the freight response to changes in demand is high. A decrease in demand or an increase in supply can cause sharp decreases in freight rates. Therefore, when freight rates are high, the amount of cargo carried per unit, ie fleet productivity, also increases (Açık and Kayıran, 2018).

Global economic developments cause major cycles in maritime markets. Apart from that, seasonal fluctuations in freight rates can also be seen. Situations that cause this may be climatic events (Chiste and Vuuren, 2013), commodity production events (Karakitsos and Varnavides, 2016:154), voyage and port events of ships (Stopford, 2009:134; Lemper and Tasto, 2015:9) and political events. When such events occur, there are small positive deviations in freight rates as there is a shortage of available ships in the market. Small cycles in which these seasonal fluctuations peak form price bubbles in the freight rates. In a related empirical study, Açık and Başer (2018) determined these price bubbles in the dry bulk market with the GSADF method. Later, they analyzed what kind of events occurred during these periods from sector reports. According to the results they obtained, the factors causing these small bubbles; climatic, cultural, political, voyage, operational, production, adjacent market and sentiment factors. Apart from the general trend, these factors positively affect the freight rates in the market and form temporary price bubbles.

In our current study, we aimed to examine the relationship between GPD in Japan and freight rates carrying iron ore to this country. The main reason for this is the reflection of changes in economic activities within the country on foreign trade. Studies in this direction have examined the impact of country activities on maritime transport, both on the basis of ships and ports. For example, in studies it conducted on the basis of a port by port traffic Açık et al. (2019) the impact of the industrial production index in Turkey was examined. After all, there must be production activities in the country so that there is a flow of goods in foreign trade. As a result of the research, they determined a significant causality relationship from industrial production to the amount of cargo in the port. In other words, the activities within the country directly affect the demand for sea

transportation. In another study conducted in Turkey, it was investigated by Tunalı and Akarçay (2018) whether the industrial production level in country effects the volume of seaborne trade of the country. In the results obtained by applying regression analysis, the authors found that most of the trade by sea is explained by the industrial production level in the country. In a different study for Turkey, the impact of the number of ships calling the country on industrial production level was investigated by Korkmaz (2012). Because incoming cargoes are mostly industrial cargoes and they are used in future production activities. As a result, the researchers found that the increasing number of ship calls caused an increase in industrial production levels of the country. A similar research question has been investigated by Lattila and Hilmola (2012) for Finnish ports. In the results of the regression analysis applied with industrial production, GDP and exchange rates, they found that these variables significantly affect the demand for ports. Similar research questions and similar variables have been explored in Taiwan ports (Chou et al., 2008), Asian ports (Tsai and Huang, 2017) and Bangkok port (Gosasang et al., 2018). As a result of these studies, they determined that main macro indicators such as industrial production and GDP significantly affect the cargo traffic in ports. This ultimately contributes to a framework that supports our research question related to the ship demand. On the other hand, economic activities alone may not be enough to explain the demand for maritime transport. In addition to this, transportation costs are also an important factor affecting the demand for transportation (Stopford, 2009). Accordingly, research conducted by Kim (2016) showed that BDI volatility has a negative impact on South Korean general port throughputs. In a study carried out in Turkey's port container volume by Açık (2019), volatility spillovers from container freight indices to port throughput were found. Also, the increasing shocks in container freight indices resulted in decrease in the amount of container throughputs. In other words, the relationship between freight and trade can be two-way. Increased demand may cause increases in freight rates, and increased shipping costs may also cause a decline in trade. Which situation will be more dominant may vary depending on the type of goods and the price elasticity of demand.

4. METHODOLOGY AND DATA

Many different methods can be used to determine the econometric relationships between variables. One of them is the causality test first proposed by Granger (1969). In this method, if the past and present values of a variable contribute to explaining the current and future values of the other variable, a causality relationship can be mentioned between them (Yu et al., 2015).

Later, this method was developed and became applicable among different dimensions of similar logic series such as shocks (Hatemi-J, 2012), frequencies and variances (Cheung and Ng, 1996). In this study, we

found it appropriate to apply causality in variance analysis. This is because we aimed to determine the flow of information and risk spillover from one variable to another. This method was first introduced by Cheung and Ng (1996). Later, after some of its shortcomings were eliminated, its version using the LM approach was proposed by Hafner and Herwartz (2006). This later one is a method whose robustness is strengthened using Monte Carlo simulation. In this method, the series must be stationary (Nazlioglu et al., 2016). In addition, linearity tests can be used to check the change of variances of the series.

In this method, the series must be stationary. To test this condition, tests that take into account the possible level and trend breaks in the series were selected. These tests are one break ADF test developed by Zivot and Andrews (1992), one break LM test developed Lee and Strazicich (2013), two break ADF test developed by Narayan and Popp (2010), two break LM test developed by Lee and Strazicich (2003). Because some events that happened in the period when the data are handled may cause erroneous results such that the series contain unit root. The method we use tests the causality between variances, and in this case, the fact that the variances are variable is important for the validity of the results. Variable variance is mostly valid for nonlinear series. For this, it would be appropriate to test the linearity before using this method. To test linearity in series, we used BDS Independence (Brock et al., 1987).

Now let's examine the data set we used in the study. The dataset covers the period between 1st Quarter of 1996 and 2nd Quarter of 2017. Definitions of the variables are presented in Table 4. RGDP refers to Real Gross Domestic Product for Japan in Billions of Yen, SPOT1 refers to Capesize spot rate from Australia to Japan in US dollar unit of transport cost per ton, and SPOT2 refers to Capesize freight rate from Brazil to Japan in US dollar unit of transport cost per ton.

Table 4: *Definition of the Variables*

Code	Definition	Value
RGDP	Real Gross Domestic Product for Japan,	Billions of Chained 2015 Yen
SPOT1	Australia - Japan (120-160 kt)	$ per ton
SPOT2	Brazil (Tubarao) - Japan (120 - 160 kt)	$ per ton

Source: FRED (2020), UNCTAD (2020).

Descriptive statistics we used in our study are presented in Table 5. Since the SPOT1 route is between Australia and Japan and it is closer than the distance between Brazil and Japan, it has a lower value on average. Looking at the ratio of the standard deviation to the mean, the volatility of SPOT1 is 72% and SPOT2 is 79%. It shows a relatively close ratio. However, the volatility is naturally a little higher on the route with a high average value. Also return series are also presented in the table. According to the average values, all the series have positive returns.

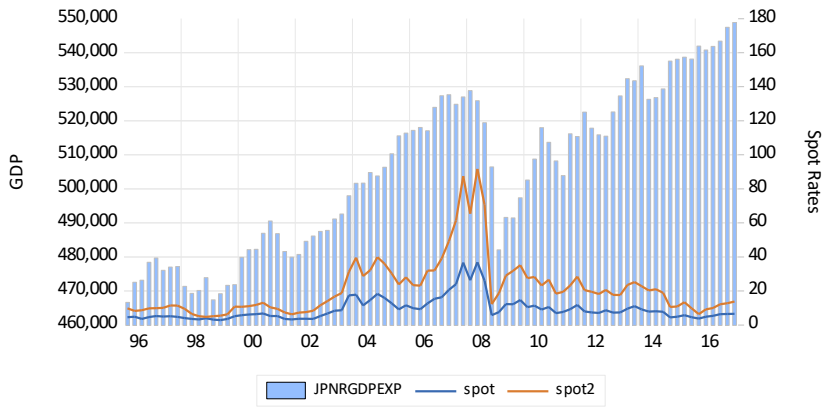
Table 5: *Descriptive Statistics of the Variables*

	RGDP	SPOT1	SPOT2	R_RGDP	R_SPOT1	R_SPOT2
Mean	505104.5	9.243915	21.39025	0.001909	0.004332	0.004029
Median	506402.0	7.279642	17.98892	0.002001	0.030105	0.045053
Maximum	548867.6	36.88258	91.66667	0.024075	0.700825	0.541210
Minimum	466643.7	2.897500	4.766667	-0.049326	-1.502160	-1.748139
Std. Dev.	23663.04	6.687846	16.92576	0.010142	0.285263	0.292604
Skewness	0.012027	2.187274	2.154718	-1.646879	-1.677339	-2.518019
Kurtosis	1.746434	8.484705	8.376052	9.672907	10.71097	16.43655
Jarque-Bera	5.633026	176.3668	170.1123	196.1252	250.4415	729.2384
Probability	0.059814	0.000000	0.000000	0.000000	0.000000	0.000000
Observations	86	86	86	85	85	85

Source: FRED (2020), UNCTAD (2020).

In Figure 1, the movements of the variables in the considered time interval are presented. Although they may have followed a parallel course until the 2008 crisis, this parallelism disappeared relatively later. Of course, this cannot be evaluated like that there is no relationship between them. Instead, it can show that there may be still a significant relationship but finding a linear relationship is quite difficult. The parallel movement was disappeared after the global economic crisis, because maritime markets also have a mechanism within themselves and freight rates are also greatly affected by these internal factors. Ship orders also increased at a very high rate especially after the historic high freight levels reached in 2008, and this situation caused an abundance of supply in the market after the crisis. Naturally, freight rates could not recover and return to their previous high levels.

Figure 1: *Movement of the Variables*



Source: FRED (2020), UNCTAD (2020).

5. FINDINGS

Since the method we used in our study requires stationarity, unit root test should be applied to the series. In this direction, we applied unit root tests that also take into account the structural breaks in variables. Because

series may break due to economic, political and natural reasons and this situation may result as if there is a unit root. The applied tests are one break ADF test developed by Zivot and Andrews (1992), one break LM test developed Lee and Strazicich (2013), two break ADF test developed by Narayan and Popp (2010), two break LM test developed by Lee and Strazicich (2003). The results of the tests applied are presented in Table 6. According to the results, the unit root null hypothesis was rejected by at least one test in all variables. Especially, two breaks ADF unit root test developed by Narayan and Popp (2010) rejects null of unit root hypothesis for all variables. Especially the break in the variables caused by the global economic crisis in 2008 was determined by many tests. With the help of Figure 1, it can be easily said that this break caused a level break in the GDP variable and a level and trend break in spot freight rates. Therefore, its impact on the maritime market appears to be more negative. According to the results, all variables can be expressed as I (0). This shows that the shocks the variables are subjected to are temporary and the variables tend to return to the mean. After this stage, the stage of testing linearity is passed.

Table 6: *Unit Root Tests with Structural Breaks for the Variables*

Test Items	Mod A GDP	Mod C GDP	Mod A Spot1	Mod C Spot1	Mod A Spot2	Mod C Spot2
	One break ADF test (Zivot & Andrews, 1992)					
ADF Stat	-6.85***	-6.65***	-4.47	-5.46**	-4.09	-5.19**
Break Date	2008Q2	2008Q2	2002Q2	2009Q3	2002Q2	2006Q3
Fraction	0.58	0.58	0.30	0.64	0.30	0.50
Lag	1	1	0	0	0	0
	One break LM test (Lee & Strazicich, 2013)					
LM Stat	-3.63**	-3.75	-3.01	-4.47*	-2.52	-3.98
Break Date	2008Q4	2008Q3	2003Q3	2008Q3	2009Q2	2008Q3
Fraction	0.60	0.59	0.36	0.59	0.62	0.59
Lag	1	1	0	0	0	0
	Two break ADF test (Narayan & Popp, 2010)					
ADF Stat	-7.46***	-7.70***	-5.19***	-7.33***	-4.55**	-6.55***
Break Date	2004Q3, 2008Q2	11, 2008Q2	2002Q2, 2006Q1	2003Q2, 2008Q3	2008Q2, 2014Q2	2003Q2, 2009Q3
Fraction	0.40, 0.58	0.12, 0.58	0.30, 0.47	0.34, 0.64	0.58, 0.86	0.34, 0.64
Lag	1	2	0	0	0	0
	Two break LM test (Lee & Strazicich, 2003)					
LM Stat	-4.07**	-5.20	-3.47	-6.87***	-2.84	-6.26**
Break Date	1998Q4, 2008Q4	2003Q2, 2008Q3	2002Q3, 2003Q3	2003Q2, 2009Q3	2003Q3, 2014Q4	2003Q2, 2009Q2
Fraction	0.14, 0.60	0.34, 0.59	0.31, 0.36	0.34, 0.64	0.36, 0.88	0.34, 0.62
Lag	1	1	0	0	0	0

Null of unit root is rejected at ***1%, **5%, *10%.

BDS Independence test proposed by (Brock et al. 1987) was used to test the linearity of the variables. For this, first the series were converted

into return series by using log difference. Later, ARMA models with the lowest Aic value for each series were determined. After the determined models were estimated, BDS tests were applied to the residuals of the models. So ARMA (1,3) model with -6.329 Aic value for RGDP, ARMA (3,5) model with 0.278 Aic value for SPOT1, and ARMA (4,2) model with 0.402 Aic value for SPOT2 were determined. Then, the results of the BDS Independence test applied to the residuals of these models are presented in Table 7. According to the results obtained, the linearity null hypothesis for RGDP and SPOT1 variables is rejected in at least one dimension, while it cannot be rejected for SPOT2 variables. However, analysis can still be applied as the RGDP variable is not linear. In addition, referring to the non-normal distribution of SPOT2 in Table 5, it can be inferred that its structure is not linear. In the next step, causality in variance analysis is applied.

Table 7*: BDS Nonlinearity Test Results*

Dimension	RGDP	SPOT1	SPOT2
2	0.036069***	-0.002201	-0.000280
3	0.048196***	0.015491	-0.000846
4	0.055100***	0.030604	-0.001705
5	0.057159***	0.034465*	-0.002862
6	0.053704***	0.031816*	-0.004321

Null of non-causality is rejected ***1%, **5%, *10%.

According to the results of the causality test, significant relationships were determined for both routes, from GDP in the country to the route. This situation shows that the volatility in economic activities in Japan caused volatility in the freight rates of ships transporting iron ore to Japan. In other words, the volatility spillovers are determined from GDP values to the freight on routes.

Table 8: *Causality Test Results*

Causality-in-variance from	LM stat	p-value
RGDP to SPOT1	5.437	0.066*
SPOT1 to RGDP	1.651	0.438
RGDP to SPOT2	5.043	0.080*
SPOT2 to RGDP	2.552	0.279

Null of non-causality is rejected ***1%, **5%, *10%.

6. CONCLUSION

In today's world, economic processes consist of very complex structures. Within this structure, many variables and economic indicators affect each other. The facilities provided by sea transport play a very important role in the development of trade between countries. The increase in foreign trade increases the interdependence of countries and thus the internal dynamics of each country are affected by other countries. Generating economically

meaningful results from such a complex structure on a global scale requires challenging analysis processes. This dependence between countries makes the relationships between maritime trade indicators and macroeconomic indicators significantly meaningful. The main motivation source of this study was formed in this context.

In the study, the relationship between the GDP of the Japanese economy, the world's third largest economy and the world's second largest iron ore importer, and the freight rates of ships carrying iron ore was examined. As an analysis tool, causality in variance was used.

As a result, the causality relationship from Japan GDP to freight rates has been determined. This situation shows that the developments in the Japanese economy affect the freight rates. The most important reason for this is that Japan is the most important iron ore importer. This is because the high amount of demand exerts a certain influence on both iron ore prices and freight rates. On the other hand, the increasing production capacity increases the iron ore demand of many sectors. Increasing demand is reflected in freight rates.

Dry bulk freight rates are used by some economists as an economic indicator. Because the cargoes transported in the dry bulk market are raw material-type cargoes. The amount of these cargoes transported varies according to future production activities. In an environment where economic expectations are positive, raw material orders increase and this increases the demand for ships, so freight rates go up. In this respect, a causality could be expected from the changes in iron ore freight, which is an important raw material, to economic indicators. However, we found a causality in the variance from GDP to freight rates. This situation can be interpreted as the past and current economic situation affects the demand for iron ore rather than future expectations.

In further studies, the relationship between freight rates and GDP can be examined from different dimensions by using different econometric methods. For example, they may have a delayed relationship or a relationship that changes over time. The effect of GDP may not be significant during the entire period, as freight is affected by many factors other than demand, such as newbuildings, oil prices, secondhand values, etc. In addition, the relationship between variables may differ in the short term, medium term or long term.

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Chapter 20

ANALYSIS OF REGIONAL POVERTY: AN APPLICATION OF SPATIAL PANEL DATA FOR TURKEY

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1. INTRODUCTION

The concept of poverty has entered the economics literature as a social phenomenon since the 17th century. Economists have stated that this problem started to rise with the acceleration of the industrial revolution (Duran, 2015: 89). Economic and technological changes occurring in the world directly affect social life. Poverty is one of the most important human and social problems faced by people in almost every region of the world (Levent and Arvas, 2019: 172). The poverty problem is observed in varying degrees for developing and less developed countries and developed countries. Although it is a problem that arises in less developed countries, it is a fundamental problem that must be solved for all countries and felt on a world scale (Es and Şengül, 2007: 354).

Poverty is a phenomenon that has economic, social and political dimensions and is intertwined with each other. The economic dimension consists of income, production, allocation, access to goods and services, meeting basic needs (housing, health, education); the social dimension involves the relations between social segments, participation in various social groups, gender, ethnic and racial difference; human rights and political rights (personal security, rule of law, freedom of expression, political participation and equal opportunity, etc.) constitute the political dimension. The economic, social and political dimensions are interrelated and complementary (Coşkun, 2012: 181). Despite its various dimensions, the poverty problem is subject to national and international literature, especially with its economic dimension.

As a general definition, poverty is defined as the inability to satisfy the needs of the minimum living conditions (Fırat, 2015: 195). It can also be defined as being financially inadequate below a level worthy of human dignity. It is not only based on economic data, but also is considered as the inability to meet certain social and cultural needs (Es and Şengül, 2007: 354). In short, poverty is not only a situation where people do not have access to basic needs such as income, consumption, food, shelter and it may also be the case of being deprived of services like education, health, transportation, etc. (İbrişim, 2008: 3).

Poverty is divided into two as absolute poverty and relative poverty. Absolute poverty is the inability of individuals to have an income to meet their essential needs (Ökten and Kale, 2009: 63). In other words, absolute poverty refers to the inability to meet minimum level of clothing, accommodation and food needs (Sarısoy and Koç, 2010: 328). Relative poverty, on the one hand, expresses poverty that can vary from country to country. On the other hand, it describes the poverty that emerges as a result of the comparison of individuals with the life levels of other individuals in the society. In other words, it is the situation of individuals having a lower

standard of living compared to other individuals with high income in the society (Sarısoy and Koç, 2010: 328; Duran, 2015: 88). It is a situation that can meet absolutely basic needs, but is below the welfare level of the whole society due to the lack of personal resources and it is not possible to participate actively in the society (Yanar and Şahbaz, 2013: 60). The relative poverty line is important in terms of reflecting the general standart of life of a nation and showing the inequality within the society.

Poverty, which has become a global problem, has been an issue closely related to all countries. According to World Bank data, the global extreme poverty rate of the population whose daily income is below $ 1.90 (2011 purchasing power parity-PPP) in the world decreased from 36.2% in 1990 to 10.1% in 2015. In 2017, it decreased to 9.2%. This means that there are 689 million people living on less than $ 1.90 a day. At higher poverty lines, 24.1% of the world lived on less than $3.20 a day and 43.6% on less than $5.50 a day in 2017 (https://data.worldbank.org/topic/poverty).

The poverty literature has mostly focused on defining poverty, improving its numerical criteria, and proposing policies to combat it. In Turkey, the studies on poverty have also been made mostly on the country basis, industry basis or rural-urban distinction. These studies are about measuring poverty, evaluating its cause-effect relationship or developing policies to reduce poverty. However, poverty varies greatly for different segments and classes. Understanding the severity and intensity of poverty is only possible from a local level. Since each region has a different trend, and the poverty problem may change significantly from region to region, it is crucial to make an analysis on a regional basis. In addition, it is aimed to contribute to the limited number of existing literature that deals with poverty at the regional level and examines it with its spatial dimension. In this context, the aim of the study is to determine the socio-economic factors, which affect poverty and is to investigate whether poverty converges or not by regions in 12 regions of Turkey that are classified according to the Nomenclature of Units for Territorial Statistics (NUTS) - Level 1 for the years between 2008 and 2018.

The rest of the study consists of the following sections. In the second section regional poverty in Turkey was studied; in the third section a summary of empirical poverty literature was presented; in the fourth part data, variables and method were introduced and the empirical findings were interpreted; in fifth chapter, conclusions and recommendations were given.

2. REGIONAL DEVELOPMENT DIFFERENCES AND POVERTY IN TURKEY

Turkey is a developing country in the world today. Although it has experienced significant economic development until today, it also has faced

with many important problems. One of them is the problem of poverty. In order to observe the dimension of poverty in our country, it is necessary to examine Table 1. The table 1, demonstrates the poverty rates by poverty thresholds adjusted by purchasing power parity for Turkey during the 2008-2019 period.

Table 1: *Poverty rates by poverty thresholds adjusted by PPP for Turkey, 2008-2019*

Years	50%		60%	
	Poverty threshold (TL)	Poverty rate (%)	Poverty threshold (TL)	Poverty rate (%)
2008	3075	15.3	3689	22.8
2009	3419	16.1	4103	23.3
2010	3608	16.1	4330	22.8
2011	3958	15.3	4750	22.0
2012	4394	15.1	5272	21.8
2013	4871	13.9	5845	21.5
2014	5390	13.8	6468	20.9
2015	6032	13.8	7238	21.0
2016	6896	13.4	8275	20.8
2017	7707	12.3	9249	19.4
2018	8647	13.3	10377	20.5
2019	10442	13.4	12531	20.2

Source: TURKSTAT, https://data.tuik.gov.tr/Kategori/GetKategori?p=gelir-yasam-tuketim-ve-yoksulluk-107&dil=1

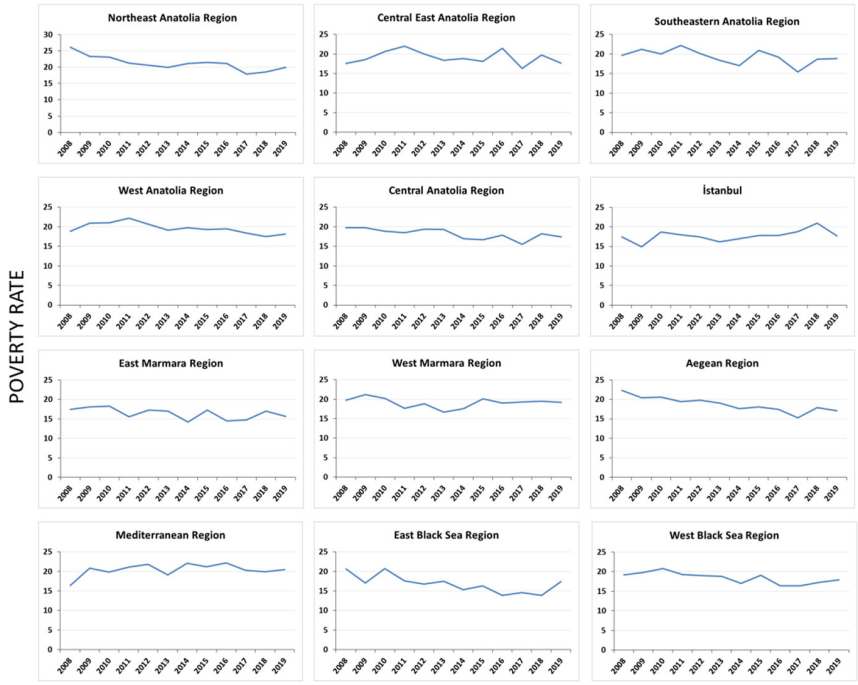
According to the 50% relative poverty line in Turkey, while 15.3% of the population was poor in 2008, this rate has started to decline after 2011 and was 13.4% in 2019. Similarly, according to the 60% relative poverty line, the poverty rate, which was 22.8% in 2008, dropped to 20.2% in 2019.

Expenditures for basic needs vary significantly from country to country, as well as from region to region in the same country. In terms of per capita income, social opportunities, human resources, education level, access to basic services and physical infrastructure, there are differences among the regions in Turkey. Socio-economic imbalances among regions result from differences in agriculture, industry, trade, service, communication, transportation, health, education, demographic and social indicators. The consequences of these differences create imbalances in income distribution across regions (Es and Şengül, 2007: 359; Özbilgin, 2016: 65). As a result, the problem of poverty arises among regions. The regional development assessment made according to the Gini coefficient reveals the extent of the income distribution inequality within the regions. In 2019, Istanbul was the region with the highest Gini coefficient of 0.428 in Turkey, while East Marmara region was the one with the lowest value of 0.305 (www.tuik.gov.tr).

In Turkey, interregional disparities particularly between east and west is seen in an obvious way. The economic activity has remained limited in the Eastern regions, which are quite underdeveloped compared to other relatively developed regions of the country, and its share from the national income has decreased as well (Özbilgin, 2016: 66). Gross domestic product per capita (at current prices) for Turkey in 2018 was 45463 TL. Gross domestic product per capita in Istanbul, West Marmara, Aegean, East Marmara and West Anatolia is very close to or more than the average of Turkey. In other regions it remains below the average of Turkey.

In this part of the study, it will be useful to look at the graphs of poverty rates according to 12 regions determined as Level 1 in NUTS conducted by TURKSTAT. Regional poverty rates are calculated according to 60% of the median income based on equivalised household disposable income.

Figure 1: *Poverty Rates in 12 Regions in 2008-2019*



Source: Prepared by the authors based on TURKSTAT data.

While determining the poverty line, regional inequalities within the country are also taken into account. The regional poverty line is calculated separately, taking into account 60% of the equivalised household disposable median income for the regions. In other words, the relative poverty value of each region arises according to the average income of that region. The poverty rate is the ratio of the poor population to the total population. When

the Figure 1 is analyzed, it is seen that the region with the lowest regional poverty rate in 2019 is East Marmara with 15.7% and the highest region is the Mediterranean with 20.5%. The regions where the poverty rate decreased among 2008-2019 years are the Aegean, Northeast Anatolia and East Black Sea regions. It is observed that the region with an increasing trend in poverty during these years is Istanbul. Except for 2019, there is a significant increase especially after 2013 (16.2%).

3. LITERATURE REVIEW

There are many theoretical and empirical studies on poverty, both nationally and internationally. This section gives a brief litereature review considering Turkey and other countries in terms of regional poverty by employing various models.

In this framework, Levernier et al. (2000) used data at the provincial level of the USA to investigate the reasons for the regional differences in poverty rates. Taking all counties in the adjacent 48 states, they identified the causes of differences in regional poverty in the United States. Economic growth, industry restructuring and labor market skills mismatches are among the economic factors examined. It has been found that high sphere poverty is associated with a single female head of family and lower educational level. It is concluded that there is lower poverty in the regions with more employment. Especially among women, a higher labor force participation has been associated with lower poverty rates. On the other hand, educational attainment has reduced poverty more in non-metropolitan areas than in metropolitan areas.

Park et al. (2002) wanted to evaluate the effectiveness of regional targeting in China's large-scale poverty reduction program launched in 1986, by analyzing a panel data set of all provinces in China for the period 1981-1995. In this context, three main programs are defined. Estimates of the models for poor provinces' region, poverty fund allocation and newly defined targeting gap and targeting error measures programs concluded that political factors affect targeting, but poverty increases as coverage improves. Only one of this major program has been successful in its goal. Growth model estimates found that the per capita income in the poor provinces region increased by 2.28% per year among 1985-1992 and 0.91% between 1992-1995.

Okurut et al. (2002) evaluated the key factors that explain the regional poverty differences in Uganda. The research objectives are to estimate national and regional food poverty lines to identify poor households; to compare socio-economic and demographic characteristics of poor households across and within regions; to calculate poverty indexes for Uganda based on national and regional food poverty lines; to identify

key determinants of regional poverty; and to obtain policy implications for poverty reduction. They used the Greer-Thorbecke methodology in the analysis to calculate poverty lines and poverty indexes, with primary data from the 1992 Integrated Household Survey. Logistic regression was used to analyze the main determinants of poverty and five models were applied (one national and four regional). While northern Uganda was designated the poorest region, it had the greatest poverty and the worst inequality. Education level of the household head, household size and migration status were found to be important determinants of poverty.

Kolenikov and Shorrocks (2005) applied a new decomposition technique to the study of changes in poverty in regions of Russia. They used per capita income, income inequality and local prices in their studies. Contrary to expectations, regional poverty differences resulted from differences in income inequality among regions rather than differences in actual per capita income. However, the differences in nominal incomes appeared to be more important for most of the regions than income inequality or price effects.

Ibrisim (2008), using "The Survey of Household Budget" data, conducted many different socio-economic analyses at urban, rural and regional level in Turkey. Indicators used in poverty analysis: migration, housing, vehicle, education, library, health, crime, labor and national product variables. As a result of the analysis made, it has been observed that Istanbul and Aegean regions are distinct among all regions according to poverty indicators. In other words, these regions show the lowest level of poverty.

Das et al. (2010) examined the regional convergence of the relationship among poverty, income inequality and per capita consumption for 14 different states of India in the 1958-2005 period. Using the robust panel unit root tests against cross-sectional dependency, they found that income inequality and poverty indicators show regional convergence at both rural and urban levels.

Bayraktutan and Akatay (2012) emphasized the importance of micro finance within the scope of combating poverty and the micro-credit project implemented by Kocaeli Special Provincial Administration; as of the end of 2010, they analyzed the results of the survey conducted with 102 out of 1365 women using micro-credit from the Special Provincial Administration. According to the findings, it has been determined that the income levels, consumption and savings of women engaged in economic activities using micro-credits have increased. These findings show that the hypothesis that "the level of urban poverty can be reduced by micro-credit planning" is confirmed.

Doğan and Çelik (2012) conducted a field study by meeting face-to-face with representatives of 3.000 households living in 14 neighborhoods with relatively high poverty levels in order to reveal the economic dimensions of the perception profile of poverty in Diyarbakır city center. He generalized his results by aggregating them and subjected them to principal component analysis and examined the relationship between variables with linear regression analysis and Pearson correlation method. According to the results of the regression analysis, the perception of poverty increases as the economic problems increase, and decreases as the size of the household increases.

Duran (2015) examined the change and geographical distribution of poverty in Turkey's 12 regions (Level 1) for the 2006-2013 period and investigated whether there is an inter-regional convergence or not. For the analysis, spatial poverty statistics, Moran I test, conditional Kernel density and Markov transition probability matrices were used. According to the findings, the number of poor and the rate of poverty have decreased on a country basis. However, this decrease was especially in the Western regions and increased in the East and Southeast regions. Poverty has been affected by both, based on spatial neighborhood within the country. Regional poverty rates have not converged over the years.

Akgiş and Karakas (2016) analyzed poverty, income inequality and socio-economic variables in the whole Turkey and NUTS - Level 1 for the years between 2006 and 2014 by employing quantitative research methods. They examined the role of migration in the spatial change of regional poverty rates in the TR 41 Mediterranean Region. The Mediterranean Region is the poorest area in Turkey and stated that it followed the Northeast Anatolia. They determined that there is a statistically significant relationship between income inequality and poverty. Migration has been determined as one of the main factors influencing the spatial variation of poverty in Turkey.

Based on the poverty culture, Yayla (2018) determined the general situation of the poor living in Sakarya and he examined whether people transform poverty into a way of life by shaping this situation with field research. A survey was conducted on 230 households. In this study, the demographic characteristics of individuals, their socio-economic status, their views on receiving social assistance, and their thoughts about social exclusion and poverty in general were discussed. The most important factors affecting poverty were the low number of literate and income levels, insufficient education and professional competence levels.

Ali and Rahut (2018) examined the relationship between regional poverty and household income based on forest resources, using the data set collected from 500 farmers in 7 different regions of Pakistan. They used a

multivariate probit and propensity score matching (PSM) approach in the analysis. The results showed that households with forest-based livelihoods had higher incomes, lower levels of poverty and consumed more forest-based products.

Sriyana (2018) explained some policies in details regarding the reduction of regional poverty in the province of Central Java (island of Indonesia). This research estimates a poverty model based on panel data of 29 regions and six cities from 2011 to 2016. A fixed-effect model reveals that the poverty rate has a negative relationship with regional economic growth, minimum wage level, human resources quality and the number of unemployed. In addition, this study showed that there is a higher rate of poverty in the eastern part of the island than in the western region. It is concluded that the percentage of poverty in the implemented policy regimes remains higher than the level in cities.

Evcim et al. (2019), in the 2006-2017 period, for Turkey's Level 1 regions, have examined the relationship among poverty, income distribution and economic growth. Using the poverty rate, the Gini coefficient and per capita income variables in Turkey, they have carried out the causality analysis with Fisher's panel test. According to the results, while there was a causal relationship from poverty to economic growth in Turkey, they obtained different results for different models on the regional basis.

Levent and Arvas (2019), in Turkey NUTS Level 1 regions, have investigated the effects of socio-economic factors on poverty for the years between 2008-2017. The poverty rate was taken as the dependent variable according to 60% of households' median income. Factors such as per capita income, education, immigration and unemployment rate were included in the analysis as explanatory variables. While the poverty rates were highest in Northeast Anatolia and Southeast Anatolia regions, it was observed to be at the lowest level in Istanbul and East Marmara regions. According to the panel data analysis results, while the increase in education level and net migration rate decreased regional poverty, low per capita income increased regional poverty.

Imran et al. (2020) examined the relationship between foreign remittances and poverty in Punjab, Pakistan. In the study, which was examined with logit regression analysis, the instrumental variable approach was used to prevent possible endogeneity. Household-based data covering more than 40.000 households in Punjab were used for empirical estimates. After controlling for multiple variables such as the number of dependents of households, the age, gender, and education of the household head, the results showed that foreign currency inflows reduce the frequency and severity of poverty in the Northern Punjab, Southern Punjab and Central Punjab region. However, Southern Punjab was found to be poorer.

Lin et al. (2020) conducted an empirical analysis on the relationship between entrepreneurship and regional poverty reduction, using panel data collected from 31 provinces in China between 2000 and 2017. Three main results were reached in the study. First, entrepreneurship in urban and rural areas has facilitated overall poverty reduction. Second, the correlation between entrepreneurship and poverty reduction in urban areas is significantly stronger than in rural areas. Third, the level of financial development in a region has decreased the impact of entrepreneurship on poverty reduction. These results show that entrepreneurial activities in developing economies have a stronger effect on poverty reduction in urban areas.

Zhong et al. (2020) used the VAR model on the dynamic causal relationship between land consolidation and regional poverty management based on the data of 31 provinces in China in the 2005-2015 period. The research has shown that there is an interactive relationship between land consolidation and poverty management. It has been concluded that land consolidation has a positive impact on regional poverty management. According to the impulse response function, the impact of land consolidation on poverty reduction has stabilized from 2005 to 2015. From the variance decomposition chart, it was seen that land consolidation and regional poverty reduction interact with each other.

4. EMPIRICAL ANALYSIS

The purpose of this study is to investigate if there are effects on poverty levels within the 12 regions which are defined at the NUTS Level 1 in Turkey and reveal the impact of socio-economic factors on poverty. In the study, the annual data of 12 regions for the period 2008-2018 were obtained from TURKSTAT. The study covers the period 2008-2018 since the data used in the study is only available for the relevant years. In this part of the study, the distribution of poverty in Turkey will be examined at the regional level and will focus on econometric analysis of the spatial interaction between the regions. Spatial panel data analysis will be used to determine the extent of poverty at the regional level, together with investigating the existence of spatial dependence and addressing the spatial effects between regions.

4.1. Model

Within the scope of the study, socio-economic variables affecting poverty are discussed. The main model of the study below is formed by taking the logarithms of the variables:

$$LYS_{it} = \beta_0 + \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \varepsilon_{it} \quad (1)$$

The dependent variable in model 1 YS expresses the number of poor belonging to the "i" region at time t. While the population density, which is the first variable that explains the model, is expressed as the number of people living in a unit area, the high population density in terms of economics will lead to the inability of manpower to find a job, the consumption of earned income by more people, decrease in the welfare level and thus increase the number of the poor. For this reason, β_1 coefficient is expected to be positive. Another economic variable is gross domestic product per capita. One of the important development criteria of a region is the height of gross domestic product per capita. In this sense, the fact that both production and production bring income will increase the welfare level of the people living in the region. In this respect, β_2 coefficient is expected to be negative. Another variable is age dependency ratio. It is used to calculate the population dependent on the working and producing population in the society. It can also be defined as the number of dependent people per productive person. It is obtained by dividing the consumer population (0-14 and over 65) by the active population (15-64 age group). Increasing the age dependency ratio variable will either increase the number of the consuming population or cause the producing population not to meet this consumption. Therefore, the effect of β_3 coefficient is expected to be positive. The decrease in income due to production and production will bring along the problem of unemployment. In this sense, as the unemployment rate increases in an economy, the number of poor is parallel to it. The effect of β_4 coefficient should be positive. In the business sector, employer and self-employed persons constitute the least part of the poverty share (TURKSTAT, 2018). Nevertheless, increasing incomes of employer and self-employed persons will reduce the number of the poor a little. In this respect, β_5 is expected to have a negative effect. There is also an important relationship between crime and poverty. In some cases, individuals whose financial situation is not suitable may want to gain their earnings unfairly and may be involved in criminal activities. In this sense, the increasing number of convicts in the society increases the number of the poor. For this reason, β_6 should be positive. Another important variable considered in terms of health is the number of hospitals and beds. The most important feature of regions that have developed in terms of health is the high number of hospitals and hospital beds. Due to a bottleneck effect, poor cannot get adequate health care. In this sense, β_7 is expected to have a negative value on the number of the poor.

4.2. Method

The most important difference of spatial econometrics from classic econometrics is that there is a spatial relation among observations and spatial heterogeneity in the models. Therefore, if the extent of spatial heterogeneity is severe or if the observations interact with each other due

to its geographical location, the existence of spatial dependency should be determined. In addition, spatial econometric models should be used.

In spatial econometrics, the data set can be either a cross-section or a panel data set. Spatial neighborhood is defined by weighting matrices (W). The weighting matrix W calculated according to the spatial proximity of the cross-sectional units shows the nxn dimensional boundary or distance relationship. Spatial dependency is taken to the analysis with the lag operator.

$$Wy_i = \sum_{j=1}^{N} w_{ij} y_j \quad (2)$$

In the Equation 2, W is a positive and symmetric weighting matrix. It is used to associate the *y* observation with its neighbor, and thus the lag operator is obtained. There are two types of models involving dependency in spatial econometrics.

The Spatial Autoregressive Model (SAR) is the first of these. It assumes that *x* variables with neighborhood relation have an effect on the y dependent variable of the observations with geographic dependence. The expansion of this model is as follows:

$$y = \rho W_y + X\beta + \varepsilon \varepsilon \sim N(0, \sigma^2 I) \quad (3)$$

The value of the spatial relation in the model is ρ and the weighting matrix related to the relation between the units having spatial relation is W.

Spatial Error Model (SEM) is the second model that includes spatial dependency. It deals with the autoregressive structure in the error terms of the econometric model. The expansion of this model is as follows:

$$y = X\beta + \varepsilon$$

$$\varepsilon = \lambda W \varepsilon + uu \sim N(0, \sigma^2 I) \quad (4)$$

λ is the measure of spatial dependency based on error terms.

Since spatial panel data analysis is applied in the study, it is possible to expand the model into a panel. In panel data analysis series are created in both cross-section and time dimensions. According to the assumptions included in the panel data analysis, estimates are made in three different ways, namely, pooled, fixed effects and random effects models.

In the pooled model heterogeneity between cross-sectional units is not considered. Spatial interaction has been added to this model in equation 1 and is shown below.

Pooled Spatial Autoregressive Model (PSAR)

$$LYS_{it} = \theta + pwLYS_{it} + \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \varepsilon_{it}$$
$$\varepsilon_{it} \square N(0, \sigma^2 I) \quad (5)$$

Pooled Spatial Error Model (PSEM)

$$LYS_{it} = \theta + \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \varepsilon_{it}$$
$$\varepsilon_{it} = \lambda W \varepsilon_{it} + u_{it}$$
$$u_{it} \square N(0, \sigma^2 I) \quad (6)$$

In the Fixed Effects model, heterogeneity between cross-sectional units is considered. By adding a constant term to each unit, the differences between cross section are determined. ϕ_i indicates the unobserved effect among cross-section units. The models in which spatial interaction is included in this model are created with the help of equation 1 as follows:

Fixed Effects Spatial Autoregressive Model (FSAR)

$$LYS_{it} = \phi_i + pwLYS_{it} + \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \varepsilon_{it}$$
$$\varepsilon_{it} \square N(0, \sigma^2 I) \quad (7)$$

Fixed Effects Spatial Error Model (FSEM)

$$LYS_{it} = \phi_i + \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \varepsilon_{it} \quad (8)$$
$$\varepsilon_{it} = \lambda W \varepsilon_{it} + u_{it}$$
$$u_{it} \square N(0, \sigma^2 I)$$

In the Random Effects model, changes occurring according to cross-section units and time are included in the model as a component of the error term. The Random Effects model to which spatial interaction is added are created with the help of the equation 1 as follows:

Random Effects Spatial Autoregressive Model (RSAR)

$$LYS_{it} = pwLYS_{it} + \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \tau_{it} + \varepsilon_{it}$$
$$\tau_{it} = \sigma_N^2 / \sigma^2$$
$$\varepsilon_{it} \square N(0, \sigma^2 I) \quad (9)$$

Random Effects Spatial Error Model (RSEM)

$$LYS_{it} = \beta_1 LNY_{it} + \beta_2 LKBGSYH_{it} + \beta_3 LYBO_{it} + \beta_4 LİO_{it} + \beta_5 LİKHÇ_{it} + \beta_6 LTH_{it} + \beta_7 LHYS_{it} + \tau_{it} + \varepsilon_{it}$$
$$\tau_{it} = \sigma_N^2 / \sigma^2$$
$$\varepsilon_{it} = \lambda W \varepsilon_{it} + u_{it}$$
$$u_{it} \square N(0, \sigma^2 I) \quad (10)$$

The important thing in spatial panel models is which model is the most suitable estimator. Model determination tests should be applied to determine this. The first of these tests is the Moran I test. This test is carried out on the basis of spatial sequence relation. The content of the spatial correlation in the alternative hypothesis in the Moran I test is not clear. Therefore, it is only tested whether spatial sequence relation exists. The

Moran I statistic, based on the assumption that the error terms are normally distributed, is calculated as follows:

$$I = \frac{N}{S_0}\left(\frac{e'We}{e'e}\right) \tag{11}$$

In equation 11, N represents the number of observations and S_0 represents the sum of the cross-section units related to the spatial weighting matrix. Convergence of the Moran I statistic to a value of +1 indicates positive, and its convergence to a value of -1 indicates negative strong spatial dependence. If this value is 0, it is concluded that there is no spatial dependency.

Another model determination test is the Lagrange multiplier test. Contrary to the Moran I test statistics, tests based on the Maximum Likelihood Method are created based on alternative hypotheses. The hypotheses for the spatial autoregressive model are given below. The same hypothesis can be written in the spatial error model regarding the λ coefficient.

$H_{0:}\ \rho = 0$ (There is not spatial autoregressive)

$H_{a:}\ \rho \neq 0$ (There is a spatial autoregressive)

The Lagrange Multiplier test statistics (LM_{ERR} ve LM_{LAG}) for the Spatial Error Model and the Spatial Autoregressive Model are obtained as follows (Anselin and Florax, 1995: 25):

$$LM_{ERR} = LM_{\lambda} = (e'We/\sigma^2)^2 / tr(W'W + W^2) \tag{12}$$

σ^2 was defined as $\sigma^2 = e'e/n$. This test statistic follows the χ^2 distribution and the degree of freedom is 1.

$$LM_{LAG} = LM_{\rho} = \{e'Wy/\sigma^2\} / \{(Wxb)'MWxb/\sigma^2 + tr(W'W + W^2)\} \tag{13}$$

In the equation 13, $M = I - x(x'x)^{-1}x$. This statistic also fits the χ^2 distribution and the degree of freedom is 1.

If both of these tests are significant, robust transformations should also be employed and tested. It can be determined from which model the spatial effect originates by making robust transformations. The final model can be compared with the model obtained by the least squares method.

4.3. The Model Results

In this section, the spesification tests of the spatial model for Turkey are conducted to determine whether there are spatial neighborly relations or not in the light of the model formed on the determinants of the number of poor people,and then the estimated model results are expained.

When using the data method, the Spatial Weighting Matrix was created according to the Queen Neighborhood rule. There are two types of spatial weighting. These are contiguity and distance based weighting. In the contiguity weighting, Anselin (1988: 18) developed definitions inspired by the game of chess. These are the neighborhoods of the castle, the bishop and the queen. In the castle neighborhood, if $w_{ij} = 1$, regions (i and j) are neighbors that share a common edge. In the bishop neighborhood, if $w_{ij} = 1$, regions (i and j) are neighbors that share a common corner. In the queen neighborhood, the regions (i and j) share a common edge or corner.

The Spesification tests of the spatial model were conducted to determine whether the effects of the variables used in the study on the regional poverty create spatial dependency in terms of neighborhood relations or not. The results of the Spatial Error Model (LMERR) and Spatial Autoregressive Model (LMLAG) tests carried out in this direction are given in the Table 2.

Table 2: *Spatial Dependency Test Results*

Tests	Hypotheses	Test Statistics	Probability Value
LM_{LAG}	$H_0: \rho = 0$ $H_a: \rho \neq 0$	1.934	0.296
LM_{ERR}	$H_0: \lambda = 0$ $H_a: \lambda \neq 0$	3.115	0.047

According to the Table 2, it can be said that the Spatial Error model is valid for the regions. Since the spatial panel data analysis is used in the study, it is necessary to calculate the test statistics to obtain the appropriate panel model. Due to the assumptions of panel data models, determining the appropriate estimation method is important for the consistency and efficiency of estimation results. The results of the F test, LR test and Hausman test performed to decide which of the panel estimators will fit the model used in the study are given in the table below.

Table 3: *Spatial Model Determination Tests*

Test	Test Statistics Value	Probability Value
F-Test (Fixed Effect Constraint)	11.743	0.000
LR-Testi (Random Effect Constrait)	7.609	0.000
Hausman Test	-3.982	0.004

In the Table 3, the null hypothesis (pooled spatial error model is valid) was rejected because the probability value is significant as a result of the F test between the spatial pooled and fixed effects model. In addition, as

a result of the LR-test made to make a choice between pooled and random effects model, the null hypothesis was rejected and it was decided that the pooled model was not valid. In this case, the result of Hausman Test statistics, which was made to make a choice between the fixed effects spatial error model and the random effects spatial error model, gained importance. According to the obtained probability value, the null hypothesis (random effects spatial error model is valid) was rejected and it was decided that the Fixed Effects Spatial Error Model was valid as the appropriate spatial panel data model.

Among the 12 sub-regions which are present in Turkey at NUTS Level 1, it has been observed that poverty is spatially spreaded. In other words, it has been found that the number of poor shows a dynamic relationship by creating a significant effect among regions. It also has been observed that this effect is due to the spatial error. The Spatial panel data models suitable for the panel data model used in the analysis were also determined. In this direction, the estimation results of the model are given in the Table 4.

In the Table 4, the fixed effects spatial error model is valid in the tests for the spatial model on poverty in Level 1 regions. In addition, the estimation results that do not consider the spatial effect are given. Here, when the spatial effect is not taken into account, it is found that the β coefficients are biased according to the model in which the spatial effect. Since the spatial interaction is not taken into account in explaining the model, the estimators are biased and the model results are not valid (Anselin, 1988: 26).

Table 4: *Estimation Results of the Model*

Dependent Variable: LYS_{it}	**Fixed Effects Spatial Error Model**	**Non Spatial Effect Model**
ϕ_i	0.018***[4.328]	0.226[1.843]
Population Density (LNY_{it})	0.037** [2.481]	0.025* [1.702]
Gross Domestic Product Per Capita ($LKBGSYH_{it}$)	-1.319** [2.396]	1.023 [0.635]
Age Dependency Ratio ($LYBO_{it}$)	2.923*** [4.027]	-0.875[0.439]
Unemployment Rate ($LİO_{it}$)	1.274*[1.995]	1.843**[2.107]
Employer and Self-Employed ($LİKHÇ_{it}$)	-0.371**[2.407]	1.542*[1.964]
Number of Convicts (LHT_{it})	0.025*[1.974]	-0.328[0.524]
Number of Hospitals and Beds ($LHYS_{it}$)	-1.372***[5.894]	2.783[0.926]
λ (Spatial Dependency)	0.116**[2.785]	-
R^2	0.76	0.72
Adjusted R^2	0.70	0.66
Number of Observation	11	11
Cross-Section	12	12
Wald Test	χ^2 = 1.268, Prob: 0.369	χ^2 =2.041, Prob: 0.077
Bhargava Adjusted Durbin Watson Test	1.637, Prob: 0.488	1.495, Prob:0.743

Note: *, ** and *** show the statistical significance of the coefficients at 10%, 5% and 1% significance levels, respectively. Values in square brackets [] are the t-statistic values.

In the model, it was found that the spatial interaction among regions was significant for the number of poor. In other words, the spatial dependency among Level 1 was positive in terms of the number of poor in Turkey. The 1% increase in the number of poor in the neighboring region caused an increase of 0.116% in the number of poor in the region.

One of the explanatory variables, the effect of the gross domestic product per capita variable is negative as expected. When income increases in Level 1 regions, the number of poor decreases. Among the explanatory variables, population density, age dependency ratio and unemployment rate led to an increase in the number of the poor in line with economic expectations. Coefficients were found to be statistically significant. In addition, age dependency ratio has been one of the most important variables increasing the number of poor with an effect of 2.923%. Another variable that has an effect on the number of the poor is the total number of convicts. With the decrease in income, the total number of convicts, which is a factor that increases the tendency to crime, affects the number of the poor with a small increase of 0.025%. A 1% increase in the number of employer and self-employed people will reduce the number of poor with an effect of 0.371%. This decrease was found to be statistically significant. Another variable in the model is the number of hospitals and beds. The variable is statistically significant. Although the increase in the number of beds in hospitals is not expected to have a direct effect on reducing the number of the poor, it can be interpreted as meeting the needs of the poor and benefiting from the health services. The spatial model gave more consistent and efficient estimators in terms of both the statistically and economically significant of the coefficients, R^2, the heteroscedasticity and autocorrelation results when it is compared with the pooled model, where there is no spatial relation.

Findings obtained from the model support the studies of Doğan and Çelik (2012), Yayla (2018), Levent and Arvas (2019). Especially, one of the common results is that the gross domestic product per capita, which is one of the economic variables, has the effect of reducing poverty, while population density and unemployment rate increase poverty.

5.CONCLUSIONS and RECOMMENDATIONS

Today, although poverty exists all over the world, it is necessary to analyze it on a regional basis in order to understand its severity and intensity. This study was carried out with the belief that the poverty problem may differ from region to region and show some changes. The aim of the study to is to determine socio-economic factors which affect poverty, to examine the geographic spread of poverty and to investigate whether poverty interregional convergence in Turkey's 12 region for the period 2008-2018. The data used in this study, in which analyses are carried out with the spatial panel data method, were taken from TURKSTAT.

In the spatial panel data analysis, it was seen that the fixed effect spatial error model is valid. According to this model, it has been determined that the spatial interaction among regions is important in determining the number of the poor. In short, there is a spatial dependency among 12 regions in terms of the number of poor. As a result of the analysis, it was found that among the variables considered in the study, the gross domestic product per capita and the number of employed and self-employed people are the variables that reduce the number of the poor; it was found that population density, age dependency ratio, unemployment rate and total number of convicts cause an increase in the number of the poor. Looking at the regional poverty rates, it is seen that the region with the lowest poverty rate in 2019 is East Marmara and the highest region is the Mediterranean. On the other hand, in 2018, while per capita gross domestic product in Istanbul, West Marmara, Aegean, East Marmara and Western Anatolia was above the average of Turkey, the especially in eastern regions remained below this average.

Studying regional differences arising from various causes, is one of the most remarkable area that poverty and inequality can be observed expicitly in Turkey. These reasons are crowded family structure, unemployment resulting from the underdevelopment of the industry and services sector, unfair income distribution and population growth. Considering these reasons, the regulations to be made and the policies to be followed should allow the poverty difference among the regions to be reduced. One of the most important factors in the regional change of poverty, it is necessary to reduce the changes in regional income distribution and to reduce the differences among regions in terms of other social indicators. Policies that could be successful in combating poverty should include measures that ensure rapid and sustainable growth, create employment, increase the supply of qualified workforce, and thus increase per capita income, reduce income inequality and regulate income redistribution. In this case, the problem of inequality in income distribution and poverty, especially in the eastern regions, could be solved faster. Thus, it would be possible to decrease poverty and all the regions could reach a higher level of welfare in our country.

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