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CHAPTER 1

PUBLIC ADMINISTRATION IN THE GRIP OF THEORIES AND CULTURAL VALUES

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1. INTRODUCTION

Theories are information put forward as a result of observing and explaining any phenomenon. Theories, which are important in terms of understanding and interpreting the world we live in, are common both in social life and in social institutions created by the society. This is also true for public administration. Public administration is a structure created to meet the common needs of the society as the executive tool of the state. There are many theories that have emerged in the historical process in order for the public administration to realize what is expected from it. Theories are commonly used in areas such as making sense of the public administration, interpreting it, improving the service production processes, providing the services needed by the citizens in an effective and efficient manner, and demonstrating a successful administration.

Theories are very important and effective in public administration's providing service successfully. However, some problems may occur in successful implementation of theories in public administration. Most important of these problems are that public administration theories are not created for every country and that theory applications are applied by different countries in the form of policy transfer. This situation is one of the leading factors that prevent public administration theories from being successful in country practices. This is because the structure and culture of each society is different from each other.

Culture refers to all the material and spiritual values that individuals, who are social beings and therefore have to live together, have created in the historical process. Culture encompasses the shared, learned behaviours and beliefs that are passed down from generation to generation. Culture, which forms the system of social relations, is the main activity area required for the survival of human societies. Cultural values that shape life are effective in every area where the individual is present. This is also true for public administration, which operates to meet social needs. In the light of this information, this study will first explain what public administration theories and cultural values mean. The rest of the study will provide suggestions on how to solve the problems experienced by public administration, which is between theories and cultural values.

2. PUBLIC ADMINISTRATION AND THEORIES OF PUBLIC ADMINISTRATION

Theories are analytical tools through which people make sense of their experiences with the world and which are used to understand a particular subject, explain it in detail, reveal the different dimensions of the subject, and make predictions in terms of its relation to other fields. Theories, which encompass all of the thoughts and views about a subject, express

the systematic grouping of concepts that are connected to each other (Ateş, 2020: 4). Theories are explanations for understanding the way things happen in social life or natural events. They are the basic elements that shape the way we perceive and interpret the world we live in and our reactions to the events we experience (Taşçı, 2013: 4). Theories, which can be effective on social life and all social institutions created, have a very important place in today's modern world. This situation requires humans to live together (Denek, 2010: 33). Humans who have to live together have tried to create effective and efficient organizations in order to meet their needs and they have developed different management theories on the subject (Şahin, 2004: 523). Very important ideas have been put forward in order to reveal a successful management approach within the historical process. The development of theories in the field of management, which corresponds to the history of humanity, is a new phenomenon. This situation is related to the recent acceptance of management science as a discipline.

Public administration, which is a special field of management science, expresses the organizational structure of the state as a structural concept (Ökmen and Parlak, 2008: 4). Public administration is social structures created to produce the basic needs of citizens. Public administration is a field closely related to many disciplines. In this respect, it is closely related to different disciplines such as politics, law, business, economy, psychology and sociology (Ökmen and Çağatay, 2016: 82). This situation causes the expansion of public administration as a concept and the increase in knowledge about public administration. In addition, the relationship of public administration with many different disciplines brings about being influenced and benefiting from theories emerging in related fields. Public administration is accepted as an art with its feature of making suggestions to administrators and a science to the extent that it examines organizational problems (Ergun and Polat, 1988: 8).

Especially since the last quarter of the 20th century, the separation of political science and public administration from each other and the examination of public administration as a separate discipline has led to an increase in scientific studies in the field of public administration. In this process, different studies have been carried out in the field of public administration, both in theory and in practice, and a public administration adventure has started until today (Bayansar and Uzun, 2022: 1837). Many theories have been developed in the field of public administration during this process.

The main purpose of the theories that emerge in the field of public administration is to create an effective and efficient public administration. Theories of public administration have emerged sometimes to solve a problem directly, sometimes to adapt the public administration to new

developments, and sometimes to cover the deficiencies of different theories by seeking alternatives. Therefore, theories of public administration consist of many management theories that deal with public organizations from different perspectives.

The world is going through an intense transformation from the process that started with industrialization to the present. This transformation also affects public administration and the development of theories in the field of public administration. According to Bayansar and Uzun, the subject of management continues to be the subject of different new criticisms and thoughts after being grounded on a scientific basis. A new study or idea that emerges in the field of management is usually the product of an effort to improve or change the existing situation. However, every innovation brings with it different problems, and therefore, studies on management continue to be conducted (2022: 1837).

Theories of public administration are very effective on the change of public administration. There are many factors that make change inevitable in terms of public administration. These can be listed as the increase and change in human needs over time, the politicization of public policies, the inability of traditional bureaucracy to meet needs, the loss of value and prestige of public administration in terms of performance, the changes in the understanding of politics and economy, and the increase in the importance given to people and civil society (Dursun, 2018: 22). It is of course possible to increase the reasons for the change in public administration.

The important factor here is the path to be followed for the change and transformation of public administration. Theories emerging in the field of public administration play a very important role in the transformation of public administration and they have an impact on the direction of change. According to Varol, theories of public administration contribute to a systematic understanding of the public sector and to guiding public administrators in the functioning (2021: 97). Therefore, theories are needed in public administration. This is because theories of public administration are needed in order to keep the important social developments today under control. Theories are important, especially in order to provide a systematic organization of information on behaviour in the field of management, to see the gaps that exist and to understand the consequences and costs of different courses of action. Again, theories are needed to predict social actions and to control the harmful consequences that may occur in the future (Caldwell, 1970: 178).

Change has led to the development of theories in the field of public administration and the emergence of different theories within the process (Leblebici, 2015: 54). Many theories have emerged in the process from

the 20th century, when public administration was the subject of scientific research, to the present day. Güler divided the development of theories in public administration into four different phases chronologically. In general terms, it is possible to list the phases as Classical-traditional school (1900-1925), neoclassical-behavioural school (1925-1950), modern school (1950-1980) and neomodern school (1980-2005) (2005; 2). These stages, which are discussed with a very general classification, contain different theories within themselves. The theories in each classification are similar in terms of general characteristics and public organizations are examined from different perspectives.

It can be stated that in general sense public administration theories criticize each other or emerge as a reaction to each other. However, it is not sufficient to evaluate public administration theories only as a reaction. In fact, public administration theories have emerged with different assumptions and conceptualizations about people, society and organization. With a very general evaluation, classical organizational theories accept organizations as "rational" systems and emphasize the importance of organizational system for an efficient management. Neoclassical organizational theories oppose considering only the organizational structure in order to ensure organizational efficiency and emphasize the importance of the element of "human" in productivity (Aydın, 2015: 158). Modern organizational theories have led to the development of different and new theories with the thought that classical and neoclassical organizational theories are insufficient. Postmodern organization theories, on the other hand, have led to a paradigm shift and the emergence of new theories in line with a service understanding that puts people in the centre in parallel with the development of globalization and information and communication technologies (Seçtim and Erkul, 2020: 42).

Each public administration paradigm and each of the theories within this paradigm has an origin story and an administrative problem that needs to offer a solution. Almost all public administration theories have adopted an approach that prioritizes the problem in whichever environment they have been developed as a solution to the problem (Ateş, 2020: 15). Therefore, each theory focuses on a different area of the organization. Again, the concept and method preferences of each theory are different. Some theories choose a method of analysis based on experimentation and observation, while others prefer a more positive and empirical tradition (Öztaş, 2015: 274). Different perspectives and analysis methods for institutions have brought about the emergence of many theories.

Theories do not contain clear information about the correctness or incorrectness of the decisions taken. Public administration theories provide a normative basis for how political decision processes should work.

The fact that different theories can predict different decision processes is a matter of which values the theory adopts. Just as a theory may not be enough to understand all reality, not every theory can explain every situation. Therefore, it can be stated that theories develop concepts, definitions and metaphors (Leblebici, 2015: 56).

Public administration theories are effective in providing services effectively and efficiently, in eliminating existing problems, in providing public services with new methods, in establishing and explaining citizen-management relations, and in the transformation of public administration. For this reason, it should be stated that theories are very effective and important in the successful functioning of public administration. However, some problems may arise in the successful application of theories in public administration. The most important of these problems is that public administration theories are not created for every country and that different countries try to apply theory practices in the form of policy transfer. This situation is one of the most important factors that prevent public administration theories from being successful in country practices. This is because the structure of each society and its cultural values are different from each other. Culture has to be taken into account because of its impact on management.

3. CULTURAL VALUES

Culture is a comprehensive concept studied by different disciplines. This makes it very difficult to explain what culture means. Culture has emerged with people, who are social creatures, living with other people. Culture, which affects both individual and social life directly in all historical periods, covers all areas of life. Therefore, it is not easy to define culture.

Culture, which can mean different things, is defined as "all of the material and spiritual values created in the historical and social development process and the tools used in creating them and transmitting them to the next generations, showing the extent of human dominance over their natural and social environment" by Turkish Language Society (sozluk.gov.tr). Culture is everything created by human beings in line with their aims, intentions and thoughts (Özlem, 2012: 183). Culture is all of the values found in the conscience of a nation (Yılmaz, 2014: 97). According to another definition, culture is the most general knowledge of man about humanity and the intellectual activities shown in a civilization (Timuçin, 2004b: 340).

Culture, which is commonly expressed as "a lifestyle", consists of the values that members of a group believe in, the norms they follow, and the material things they create (Gökalp, 2011: 28). Culture is the descriptor of

all elements in social life expressed by concepts such as rules, institutions, social norms, trust, civic virtue, morality, belief and values (Aktan and Tutar, 2007: 1). Culture, which covers a very broad area in individual and social life, is a privileged area with its own dynamics within human activities. Being privileged gives culture a special importance among other areas of social life (Ergur, 2011: 18).

According to Güvenç, culture is a concept that includes four basic features. According to these features, "Culture is the cumulative civilization of a society or of all societies. Culture is a specific society. Culture is the resultant of a series of social processes. Culture is a theory of humans and society" (1979: 95). With these features, it can be stated that culture develops specific behavioural models, rules and social institutions in many areas starting from the traditions of different societies separated by factors such as religion, race, language and history, to law, economy, political and economic systems, from art to literature, from leisure time habits to religious ceremonies. In this respect, culture is the most important factor affecting the attitudes and behaviours of individuals and groups in society towards each other and their mutual relations. Culture is a phenomenon that exists outside of individuals and creates a common lifestyle by making human societies behave like a single organism. Therefore, culture is the only factor that determines attitudes and behaviours in a society regarding views about family, judgments about gender, habits, celebrations, eating and drinking, dressing style, accommodation habits, interpersonal relationship types and many other private and public areas (Ballı, 2001: 190-191).

Culture encompasses shared, symbolic, learned behaviours and beliefs that are passed down from generation to generation (Kottak, 1987: 35; cited from Berger, 2014: 142). Humans, who are members of a certain society, learn, defend, keep their culture alive and transfer it to next generations. This process is a prerequisite and inevitable function of cultural existence (Güvenç, 1979: 4). Therefore, culture rises on three basic aspects. Culture is inherited from the upper generation, lived as a legacy, and passed on to the next generations as a legacy (Aktan and Tutar, 2007: 2).

Culture is not an unchanging area. Culture is a process in which new structures emerge with the continuous change of values (Ergur, 2011: 12). Cultural change is a process of adaptation to social needs. The change does not take place suddenly in the whole cultural system, but by spreading from certain segments to others (Gümüştekin, 2011: 320). Each age is shaped by certain lifestyles that develop as a result of certain social and economic conditions. Social and economic transformations change lifestyles, and accordingly, values change constantly. This transformation in social life also changes the culture. Cultural change takes place through

adaptation. Culture that exists in every society adapts to the natural environment and changes over time. Therefore, depending on the change, each age carries various cultural values that develop according to its own lifestyle (Timuçin, 2013b: 28; Güvenç, 1979: 105).

The lifestyle adopted by a society in order to meet its needs, constitutes the culture together with its material and spiritual elements (Güngör, 2006: 68). Therefore, culture is generally expressed as the set of material and spiritual values in a society (Aktan and Tutar, 2007: 2). This situation brings about the emergence of culture in two different types as material and spiritual culture. Material culture is the functional tools and equipment taken from or originating from another culture. All kinds of materials produced or created by man constitute the material culture. Spiritual culture on the other hand consists of values, attitudes, beliefs and symbols in a society. The behaviour patterns of any society originate from the spiritual culture. The structure of any society in a certain time period is shaped by the relationship between the material and spiritual culture of that society (Avcıoğlu, 2020: 316; Gümüştekin, 2011: 319).

Culture is embodied through values in individual and social life. In other words, values transfer culture to real life. According to Tümuçin, all cultural values are embodied in people's beliefs, worships, behaviours, activities and what they say (2004b: 342). Therefore, there is a very close relationship between values and culture. The only source of values is culture (Güvenç, 1979: 95). Social culture produces abstract criteria called values in culture. Individuals who have just joined the society first internalize values and then socialize (Yazıcı, 2014: 214). Every society needs values to exist. Values make social culture unique and differentiate it from other cultures. The formation and continuity of the differentiation between 'us' and 'them' is realized through values (Yapıcı et al., 2012: 130).

Values are the soul of culture (Canatan, 2011: 50). Values are deep in the social structure and they are at the base of behaviour and habits in daily life (Güven, 2011: 78). Human acts become concrete in the axis of criteria such as right-wrong, good-bad, unjust, unfair-justice. Values rooted in beliefs are a result of this tendency to become concrete. All societies have to set criteria in the way of making sense of the behaviours of individuals and in the activities of transforming nature. Otherwise, social life would not be possible. For this purpose, values that will ensure the continuity of social life and turn into traditions and customs through repetition are accepted as common founding elements. Thanks to values, individuals in society produce, perceive, share and reproduce the meanings of actions without the need to communicate directly (Ergur, 2011: 11).

The change in culture occurs through the change in values. Struc-

tural differences between individuals, differences in choice between individuals, their culture, and the way they relate to the world lead to the emergence of new values (Maslow, 2001: 161). In every age, old and new cultural values coexist in the process of cultural change. Besides causing cultural conflicts, this situation also brings about the operation of every society with a complex cultural order. Therefore, culture is a complex area of values where old and new values coexist (Timuçin, 2013a: 117).

Culture is both the founder and the reflection of the way in which the system of social relations is formed and organized. Regardless of the approach taken, culture is the basic field of activity necessary to establish and maintain the existence of human societies (Ergur, 2011: 18). Culture is the foundation of individual and social life. Cultural values which shape life are effective in every area individuals exist. This situation is also true for public administration, which operates to meet social needs. Therefore, it can be stated that culture is effective in the functioning of public administration and in the processes of realizing theories related to public administration.

4. CULTURAL VALUES AND THEORIES OF PUBLIC ADMINISTRATION

As the face of state reflected on citizens, public administration operates to produce public services. Public administration acts in accordance with predetermined laws and rules in today's modern states. Rational functioning of public administration is closely related to its adherence to the relevant rules. However, management is a social function and it is affected by the society in which it exists. Therefore, it is not possible to evaluate public administration independently of the society it is in and the cultural values of the society. This is due to the fact that public administration is an open system.

First of all, it should be stated that culture is not the only factor that is effective in the decisions and functioning of the public administration. Public organizations are affected by environmental factors such as globalization, technological developments, political structure, size, etc. This shows that different factors are evident on the structure and functioning of public administration. However, according to Ergun and Polatoğlu, the main part of a social system and institutions is humans (1998:13). Therefore, 'human', which constitutes the humane element of public administration, shapes administration with its actions and processes and transforms the administration with its values. This situation brings culture to a privileged position in terms of public administration.

Public administration renews itself periodically due to changing political, economic and social conditions because as an open system, public

administration has to keep up with changing conditions around. Thus, the ever-changing and diversifying desires and demands of the society can be met more effectively. For this reason, different theories about public administration have emerged over time. Emerging theories have developed theoretical and conceptual models on how to create a more transparent, effective, strong, sustainable and efficient public administration. However, despite all efforts for reform, it is not possible to say that public administration has completely changed in accordance with these theories and models and has reached an effective application in any country (Peter, 2001, cited from Ayhan, 2021: 326).

Cultural values are very effective in the failure of public administration and theories of public administration to fully demonstrate the success expected from them. According to Emre, even the simplest organization in a society is affected by the general values of the society (2003: 459). This is because there is a very intense communication between the structure of a society and the structure of the organizations in that society. Since social structure means human relations that take place on a certain basis, it is quite natural for human relations to affect the structures of organizations in a society (Kongar, 1976: 25). This is actually due to the fact that people are at the centre of the relationship between organizational life and culture. Humans are both an element of the administrative structure and members of social life. Humans, who provide the communication between the organization and social life, are affected by the society on the one hand and affect the organization on the other hand. This is also evident for public administration because the reason for the existence of public administration is the provision of public services. Public administration operating in line with this purpose is intertwined with the society. Therefore, public administration is heavily influenced by the cultural values of the society.

Every state is the state of a society. Therefore, each state reflects all the characteristics of society at a high level. Culture, which constitutes the basic features of a society, is clearly reflected in all the actions of the state as a regulatory force. In other words, the cultural level of the state and the cultural level of the society are completely compatible with each other (Timuçin, 2004a: 51). Public administration, which includes an orientation from the state to the society and ultimately to the human (Saklı, 2011: 111), is the dependent variable in the social whole (Güler, 2004: 4). This situation causes the public administration to be constantly affected by social developments and the changing cultural values of the society.

Individual behaviours are the basis of the effectiveness of cultural values in public administration. Behaviours should be evaluated and interpreted in the context of culture (Açа and Demir, 2020: 1273). Each culture presents individuals with an unconscious schema for all the actions of life

and creates its own norms of values and behaviour over time. Humans are born and grown up in a ready-made culture. Therefore, human is the product of the culture in which he/she lives (Cuche, 2013: 51; Aktan and Tutar, 2007: 2). From this point of view, culture is a phenomenon that shows itself in human behaviour and determines how people should behave.

In a chain hierarchy, culture affects the individual and the individual affects the institution (Gültekin and Sığrı, 2007: 275; Ören, 1999: 313). Therefore, the general values of the society have a great impact on the actions of the personnel working in public institutions and the management procedures and practices of the relevant institution (Okçu et al., 2020: 296).

Public administration's being influenced by cultural values differs according to individualistic and collectivist cultures. Individualism is valid in societies where ties between individuals are not tight; every individual is responsible for taking care of himself/herself and his/her family. Collectivism, on the other hand, is specific to societies where there is a sense of belonging and loyalty to strong and loyal groups from the moment individuals are born throughout their lives (Hofstede, 1984: 83).

In individualistic cultures, individual's interests are more important than group interests, while in collectivist cultures group interests direct the individual's thoughts and behaviours. Individuals of collectivistic cultures care more about getting group approval than individuals of individualistic cultures (Kağıtçıbaşı and Cemalcılar, 2014: 90). In individualistic cultures, the relationship between individuals is weak. In collectivist cultures, community ties are very strong and being a member of a group or society is very important. Therefore, while the concept of 'I' is valid in individualistic cultures; the concept of 'us' prevails in collectivist cultures (Gültekin and Sığrı, 2007: 277). Individuals with individualistic and collectivist cultural values live together in all societies. For this reason, it is not possible to group a society into a purely individualistic culture or a collectivist culture. The main criterion that is effective in this grouping is the behaviours exhibited by the people who make up the society. If the majority of the society shows individualistic behaviours, it is classified as an individualistic culture, and if it shows collectivistic behaviours, it is classified as a collectivistic culture. The effect of both cultural classifications is different on public administration. According to Emre, the structure and functioning of public administration are completely different between societies with an individualistic culture and societies with a collectivist culture. Traces of collectivist culture are clearly seen in Turkish public administration. As a result of the collectivist culture in Turkey, family and friendship relations are given importance. This situation creates the expectation that individuals should help their family and friends under all circumstances. Therefore, decisions that need to be made objectively

in public administration can be made in line with personal requirements (2003: 477-488).

All organizations are cultural assets that are constantly reproduced by the stakeholders who constitute them. It is not possible to speak of a single best organizational structure. All organizations have their own characteristics (Erdemir, 2013: 176). This situation arises from the cultural structure of the society in which the organization exists. Public administration is the basic structure that exists in almost every society to meet the needs of citizens. Cultural differences differentiate the formation, structure and functioning of public administration. Therefore, all evaluations and theories about public administration should be developed within the context of cultural differences. Theories applied in Turkish public administration have been produced directly from international centres or with developed western-centred perspectives (Güler, 1994: 4). This is a reality that has been ongoing from the Tanzimat era in Turkey. Those who prepared the Tanzimat were a group of statesmen who were brought up with western culture. These statesmen believed that the problems in the country could be solved by taking over the institutions developed by the western states. In other words, Ottoman State had to adopt the institutions developed by the European civilization and try to be like them (Ergun and Polatoğlu, 1988: 76). The understanding that this situation would solve the country's problems was also effective in the following periods and western-centred methods and techniques were adopted in solving the problems related to public administration. According to Akın-Yalçın, there is an intense parallelism between the dynamics that are effective in shaping the discipline of public administration in Turkey and the developments at the level of public administration based in the United States and Europe (2020: 36). Therefore, it can be said that the theories created by different civilizations are still effective in the development of Turkish public administration.

Güler stated that there are two main sources of problems in Turkish public administration. The first of these is that the Turkish public administration discipline is 'imported' in terms of both its field and analysis models. The second is that the approach, model, concept and terms developed in Turkish public administration are determined by the reality of the place transferred (1994: 16). The main reason for this situation is the examination of Turkish public administration independently of economic and social conditions. The parallelism between public administration issues and theories, especially between the USA and Turkey, summarizes this situation. The main problem here is that the US public administration has different economic and social conditions than Turkey. This is because two countries which have different development level of the productive forces and formation of social institutions should also have different methods of

examining administrative institutions (Akbulut, 2006: 175).

The basis of the problems experienced in the application of theories related to public administration lies in the fact that individuals act in line with the values they have. For example, classical management theory is compatible with the culture in which it developed, the American culture. Although classical management theory deals with the principles that are common to all organizations, it has experienced many changes in the process. The only way to understand this change is to study human behaviour in detail (Ergun and Polatoğlu, 1988: 132; Yalçın, 2010: 90). This understanding also applies to other theories of public administration. The important point here is that each public administration system and organization has its own specific conditions and environment. Even two different organizations within a public administration system cannot be subjected to uniform examination, analysis and recovery prescriptions (Üstüner, 1995: 68). Therefore, every public organization should be evaluated in line with the conditions it is in.

Analysis unit and level of public administration theories is organization. Management is the actions of the public administrator. Managers work according to principles and doctrines, not laws (Varol, 2021: 96). The main reason for the contradiction here is that research on public administration is reduced to a technical process and public administration is examined only as an organization. The starting point of research on public administration should be determined as 'social relations' instead of 'organization' and public administration should be evaluated from a broad perspective. In fact, it is a necessity for public administration research to go beyond the limitation of 'organization'. Social foundations of administrative institutions can be examined only in this way (Üstüner, 1986: 150; Akbulut, 2006: 175).

Organizations are not areas about which universally valid information can be produced in every society and culture (Taşçı, 2013: 12). Therefore, an ethnocentric management style that has been successful somewhere today may fail elsewhere (Demir, 2008: 122). The main reason for this situation is cultural differences. The concepts related to organization and management should be evaluated within the context of cultural differences. General understanding of the society affects the management style and organizational forms. Management activity can achieve success as long as it is compatible with the social culture (Öztürk, 1997: 40-41). In most of the articles written and words spoken about public administration in Turkey, administration has been discussed in isolation from its social environment. Therefore, the focus of scientific theory discussions on public administration is that public administration theories are independent of cultural values. However, administrative system is in close communica-

tion with the social environment it is in. Applying administrative theories developed in another country without considering the cultural patterns and values of a country will not produce the expected results (Ergun and Platoğlu, 1988: V, 91; Akbulut, 2007: 23).

Humans implement all kinds of systems. Therefore, human is the main factor in shaping the decisions to be taken within the organizational system (Emre, 2003: 396). Humans, who are very important for organizational life, are not only members of the organization, but also members of the social environment that surround and contain the organization. In this direction, people will carry the dominant culture in the environment to management (Bozkurt, 1995: 47). It is very difficult to say that a public official can stand out from social values and be objective and impartial as a member of the society. Even if this is accepted as possible, a social structure founded on theoretically neutral principles will be shaped according to the cultural values of the majority in practice (Ballı, 2001: 29-30). Theories developed elsewhere and at different times may be useful in the development of some hypotheses, but these theories cannot be adopted as final solutions. It cannot be argued that certain structures will be functional for the same purposes in every country without testing them. Management changing theories specific to each country can be revealed by research methods to be conducted in that country (Heper and Berkman, 1979: 4). It should be stated that cultural values should be taken into account in order for the theories related to public administration to realize the intended change in administration. The basic solution for this is "to question the design by international capital today and to be a candidate to undertake the design", in the words of Güler (1994: 18). In other words, theories of public administration should be formed by taking into account the cultural values of countries.

5. CONCLUSION

Theories emerging in the field of public administration provide very important transformations on the structure and functioning of public administration. Theories formed on issues such as how public administration can provide more effective and more efficient services, how its problems can be solved, how it can keep up with the developments in global, economic, technological, political and social areas, how public services can be produced with new methods, how citizen-management relationships can be created and explained have significant effects. Therefore, theories are a necessity in the field of public administration and they are very important for the administration to realize what is expected from it. However, it is very difficult to state that public administration theories fully show the success expected from them in practice. The main reason for this situation is trying to apply theories of public administration in public administra-

tions of all countries with a universal understanding and expecting them to be successful. However, public administration is a social structure and is affected by the society it is in. This situation brings the cultural values of the society to be effective in public administration and directly affects the success rate of public administration theories.

It is not possible to isolate public administration from culture. It is humans who will implement each system. Humans are entities that carry the culture of the society in which they live and shape the administration with their values. Culture, which is effective on the meaning world of individuals, the way they perceive events, how they behave and how they make decisions, is effective in the decisions and practices of the public administration. Therefore, cultural values need to be taken into account in any case related to public administration.

There is a close relationship between the theories produced in order to realize a successful transformation in public administration and cultural values. It is more successful in applying the theories that are formed by taking cultural values into account. It is a big mistake to think that any theory created by different countries will lead to the same success in all countries. Public administration structure of each country has been created in line with the social structure and cultural values of the relevant country. Theories created in another country and time may lead to some important developments, but these theories are not a definitive solution. Theories applied in Turkish public administration are in parallel with the theories applied in western civilizations. This situation is one of the main obstacles to the success of the theories applied in Turkey because the social structure and cultural values of Turkey are different from those of western countries. Therefore, the first thing to do is not to evaluate public administration theories independently of the social and cultural structure of the countries, and instead to develop public administration theories specific to each country. It is thought that the theories to be created in this respect will transform public administration more successfully.

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CHAPTER 2

THE ROLE OF SOCIAL MARKETING CAMPAIGNS IN IMPROVING PUBLIC HEALTH[1]

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INTRODUCTION

Today, encouraging social marketing campaigns and communication elements are frequently used in the public sector to improve public health. These campaigns consist of programs designed to encourage individually beneficial behavior change with a focus on social benefit (Grier and Bryant, 2005: 319). Most of the social marketing campaigns implemented in Turkey, especially in the last decade, have health content. This shows that social marketing has a significant potential in solving health problems. Although social marketing practices in Turkey have a recent past, they have been used in the world to correct many health problems (insufficient physical activity, high-fat, low-vegetable diet) before the 2000s (Coreil, 2009: 329). Publicly controlled social marketing professionals deliver health communication messages aimed at behavior change on national television channels (as a public service announcement), billboards, and posters in schools and hospitals. In social marketing, as in traditional marketing, it is to offer value to the target audience by showing the positive aspects of being healthy and adopting the targeted behavior with the campaigns (Evans, 2008: 182). The state prefers to reduce public health expenditures by promoting healthy life, rather than undertaking financial obligations to cure diseases, which are the outputs of unhealthy life (Cugelman et al., 2011: 2). Ornish (2008) stated that with the disease prevention program he implemented, health insurance expenses decreased by 50% in the first year and by 20-30% in the following period.

Although social marketing is based on commercial marketing as stated above, four basic features are effective in the success of the application (Gordon et al., 2006: 1134). The first is observing voluntary behavior change after the campaign. Because sustainable behaviors can be gained voluntarily. The second feature is that behavior change provides a significant benefit to the individual (French and Gordon, 2015: 28). The benefit that an individual will get in return for quitting his or her habitual behavior can affect the level of motivation. While the first two features are individual-based success criteria, the last two features are related to the institutions or organizations that make the campaign. While managing the campaign, the relevant institution should first research the market potential, segment the market in line with the data obtained as a result of the research, and then select the department that will respond the fastest to the change in behavior and develop an appropriate marketing mix strategy. The last feature is that social benefit is more important than corporate benefit in social marketing.

In many countries of the world that care about the improvement of public health, social marketing campaigns in various categories have been organized and the effectiveness of these campaigns has been researched

by many academics. Gordon et al. (2006) examined the results of studies conducted before 2006 to evaluate the effectiveness of social marketing campaigns in three categories (improving nutrition, increasing physical activity, and substance abuse). As a result of the research, there is evidence that social marketing interventions have a significant effect in the categories of nutrition (increasing fruit-vegetable consumption, reducing fat consumption, improving dietary knowledge), physical activity (behavioral change, providing information about physical activity) and substance abuse (reducing smoking and alcohol use, preventing illegal drug use). The results of this large-scale study have been an inspiration to investigate the effect of social marketing campaigns on behavior change in Turkey. In this context, in the present study, the potential of social marketing campaigns in improving and protecting public health is explored specifically in the "Fight Against Obesity" campaign carried out by the Ministry of Health of the Republic of Turkey.

The study is designed in three parts. In the first part, the concepts of obesity and social marketing, which are the focus of the application part of the research, are mentioned first, and then the types of campaigns for social marketing are explained and the results of previous research in the literature are included. The second part consists of a series of sub-titles, such as developing the questionnaire, choosing the population to which the questionnaire will be applied, collecting data, and creating a research model. In the third part, the methods and findings used in analyzing the data are presented. The results of the current research were compared with the results of previous research, and some suggestions were given to the campaign practitioners to increase the effectiveness.

1. CONCEPTUAL FRAMEWORK

The concept of obesity and social marketing is discussed in this section. Then, the concept of campaign and the types of social marketing campaigns are mentioned and the results of previous similar studies are given.

1.1. Obesity

According to the World Health Organization, obesity is the amount of fat the body stores that can impair human health. While 25-30% and 15-20% fat ratios in women and men, respectively, are considered normal, a rise in these rates above 30% and 25%, respectively, is considered the onset of obesity (Woodward et al., 2005: 98). It may be possible to correct with behavior modification and medical treatment (Altunkaynak and Özbek, 2006: 139). Body Mass Index (BMI) value is widely used in the diagnosis of obesity. This value is calculated by dividing the person's body weight by the square of their height. According to the technical report

number 854 of the World Health Organization, individuals with a BMI of 30 and above are considered obese (WHO, 2007). Obesity has been an epidemic that has been affecting the world population since the 1990s and has become increasingly difficult to control. Due to the increasing number of obese people, the World Health Organization has considered obesity as a neglected health problem (Batch and Baur, 2005: 130). According to the International Obesity Task Force report, more than 1 billion people in the world population are overweight and approximately 30% of them are obese. Obese individuals constitute one-third of the adult population in many developed countries, especially in Australia, Canada and the United States (Cismaru and Lavack, 2007: 10). When Turkey's data is analyzed, similar to world statistics, according to the "Turkey Nutrition and Health Survey-2010" report, 30.3% of the country's population consists of obese individuals (Bozpolat and Cömert, 2015: 28).

There are many factors that cause obesity. Stress, education, alcohol use, genetic background and environmental factors (Batch and Baur, 2005: 130), especially irregular diet and insufficient physical activity, trigger obesity. For example, low-educated individuals are more likely to be obese because they have less knowledge about healthy food choices and sports (Björntorp, 2001: 306). All these negative factors that cause obesity bring along many diseases. Health problems such as fatty liver, diabetes, high blood pressure, respiratory distress, psychological problems, gallbladder diseases, dermatological diseases are just some of them (Björntorp, 2001: 402). With all these diseases, obesity competes with smoking in terms of preventable cause of death (Algazy et al., 2009: 2252). On the other hand, obesity increases hospitalization and drug costs by 36% and 77%, respectively (Seiders and Petty, 2004: 153). Social marketing campaigns have been carried out in many countries and by many researchers, and their effectiveness has been evaluated, primarily due to the improvement and protection of public health, and then the reduction of health costs (Thomas, 2009; Sugerman et al., 2011; Walls et al., 2011; Llauradó et al. 2015). The focus of obesity-related campaigns is to reduce portions, to increase the frequency of fruit-vegetable and protein-based diets and physical activity (Cohen et. al, 2010: 380). The purpose of these messages in the campaigns is to ensure that people have an ideal BMI (Anderson et al., 2009: 341). In addition, since it is aimed to provide social benefit by improving individual health, work and non-work life with the campaigns, it attracts the attention of practitioners (Tengilimoğlu et al., 2014: 3). In this context, this research was conducted to reveal the effect of social marketing practices within the scope of the "Fight Against Obesity" campaign on the behavior of adopting philosophy of healthy diet and active life.

1.2. Social Marketing

Changes in the understanding of marketing towards the end of the 20th century have led both for-profit and non-profit organizations to act with a sense of social responsibility (Kurtoğlu, 2007: 128). In other words, as a result of the "self-actualization" stage of Maslow's Hierarchy of Needs, societies have turned to individual-oriented practices and this situation has expanded the boundaries of classical marketing and caused its social aspect to gain importance (Lazer and Kelley, 1973: 11). Market conditions in the 1970s and the following decade, the increase in the number of dissatisfied consumers, ecological problems (climate crisis, decrease in natural resources) and various legal changes have an impact on these orientations of marketing managers (Mucuk, 2001: 9). In this direction social marketing emerged in the early 1970s with the idea of solving social problems and thus providing social benefit, independent of the commercial benefit of traditional marketing (Kotler and Levy, 1969: 12). Later, Kotler and Zaltman (1971: 5) defined social marketing as the use of elements of the traditional marketing mix (product, price promotion, distribution) in the adoption of social ideas. Andreasen (1994: 110) extended the views of Kotler, Levy, and Zaltman as follows: adapting marketing techniques for individual and social well-being into practices that will enable voluntary behavior change. Similar to all these opinion leaders, Weinreich (2010: 4) defines social marketing as the use of marketing techniques to adopt behaviors that will increase the quality of life of the target audience or the whole society.

The aim in social marketing is to provide a positive change in thoughts and behaviors in areas such as health (disseminating regular sports, preventing alcohol and drug use, etc.), environment (establishing recycling systems, protecting nature, protecting endangered animals, etc.) and education (increasing literacy rate, etc.) in order to increase the level of social welfare. Velioğlu and Çoknaz (2008: 457) discussed social marketing purposes under four headings: teaching, creating a new trend, changing belief and behavior. Studies focusing on the importance of physical activity frequency for a healthy life (Wong et al., 2004: 1) and the harms of substance addiction (Janssen et al., 2013: 1) exemplify the teaching purpose of social marketing. The "Long Live Our School" campaign, which was launched in Turkey in 2004, is an example that can be shown to create a new trend in society. The purpose of the campaign; to repair 81 village primary schools in 81 provinces with the support of the public (www.tocev.org.tr). Another example on the subject is; it is the "Let's Go Girls to School" campaign, which was launched to enable girls to study. Changing families' beliefs and attitudes and making them behave sensitively in this regard are examples of beliefs and behavior change purposes (www.unicef.org.tr).

Social marketing accelerates the adoption, rejection, continuation, or abandonment of a particular behavior by a particular audience (Kotler et. al. 2002: 12). Institutions or organizations that want to direct a behavior have often benefited from social marketing activities until today. The first social marketing campaign in the literature was started in 1967 in India in order to protect the society from HIV, a sexually transmitted disease. The campaign aimed to change behavior by giving messages about loyalty, secure relationships and protection methods (Meadley et al., 2003: 3). Social marketing campaigns target primary audiences of the population rather than individuals and focus on mass behavior change (Lefebvre, 2011: 58). Social marketing is widely used in international health programs for mass behavior change. Studies on the use of contraception methods, drug and prevention of starting smoking, organ donation and obesity are among the most common examples of health-related social marketing practices. In this context, Mostafa (2010: 108), in his study evaluating the behavioral attitudes towards organ donation in Egypt, stated that campaigns that are compatible with cultural values, that include information and awareness can be effective in order to get the support of the public about organ donation. In another similar study, it was emphasized that in order to change the negative attitude towards organ donation, it would be beneficial to design social marketing advertising content in a way that addresses religious concerns (Lwin et al., 2002: 74). In the study conducted in the field of sexual health, it was concluded that with the intervention of social marketing, young people became conscious of birth control methods and reflected on their behaviors (Van Rossem and Meerkers, 2000: 383). Thrasher et al. (2011: 328) in their study examining the effectiveness of smoke-free law in Mexico concluded that social marketing campaigns help to establish norms for fighting smoking. In the study, in which the contribution of social marketing strategies to the prevention of childhood obesity was investigated, 41 interventions were examined and it was found that all 9 interventions made in the five-year period covering 1997-2002 resulted in behavior change (Gracia-Marco et al., 2011: 472).

1.3. Types of Social Marketing Campaigns

The campaign is defined, in TDK Dictionary, as a period of activity for a certain period in the fields of economy, culture, social etc. (TDK, 2015). Social problems or desired events are considered as inspiration when organizing a campaign (Argan, 2007: 79). Social marketing campaigns are categorized under four headings: behavior, education, value and action-oriented, according to the purpose of their initiation (Kotler et al., 2002: 6). Behavioral campaigns are used extensively in the healthcare industry. The behavior of an individual while protecting his/her health and experiencing any health problem is defined as health behavior. Various individual and

social resources play a role in these health behaviors of individuals (Araz et al., 2007: 113). Targeted behavioral change begins with persuading the individual. In addition to the communication created with behavior campaigns, persuasion is also affected by factors such as needs priorities, personal preferences, alternative attitudes and behaviors (Tabak, 2003: 66). The attitude that is the preliminary step of the behavior change is defined as the predisposition of a mental, emotional, and behavioral response that the individual organizes based on any object, social subject, or experience, knowledge, emotion, or motive in the self or its surroundings (İnceoğlu, 2010: 22). Behavior campaigns have an important place in the transformation of attitude into behavior and are divided into two as individual and social behavior campaigns in themselves. The aim of individual behavior change campaigns is to change the behavior that causes social problems. In this context, campaigns on issues such as reducing alcohol and tobacco use, quitting drug use, and traffic safety aim to change individual behavior. Social behavior campaigns, on the other hand, raise awareness of social problems and contribute to the knowledge of the limits of the legal framework necessary to overcome these problems (Argan, 2007: 82). An example of this is the application of fines to smokers in closed areas as part of the cigarette quit campaign.

In educational campaigns, first of all, the questions such as what (on which subject), when (the day on which the education will be given, hour etc.), how (which methods and tools will be used), where (the place where the education will be given) who (the person that will give the education) must be answered thoroughly (Merdol, 2008: 7). Such campaigns are aimed at informing society about a certain social problem (Kotler vd., 2002: 6). Public spotlights explaining the benefits of physical activity, the use of breast milk for the first six months, early diagnosis in breast cancer, brushing teeth for oral health, and the importance of hand hygiene in preventing diseases can be given as an example of this type of campaign. Value-oriented campaigns aim to change the inaccurate knowledge, attitudes and thoughts existing in society. These campaigns aimed at removing prejudices about any social issue are effective in changing the wrong ideas and attitudes resulting from lack of information (Kotler, 2005). Insufficient or incomplete information on organ donation and changing the prejudices caused by religious approaches can be given as an example in this context (Argan, 2007: 82). Finally action-oriented campaigns are designed to encourage the target audience to take action on a specific topic (Argan, 2007: 79). Red Crescent's campaigns to increase blood donation or healthy diet and active life walk activities organized by the Ministry of Health in many cities in the context of the fight against obesity can be evaluated in this framework.

When the literature is examined, it is seen that there are many researchers investigating the effectiveness of the campaign types described above. In this section, only the results of the campaigns carried out in the field of health are included. In the study of Truong (2014: 16), in which he evaluated the status of social marketing research conducted in a 15-year period covering 1998-2012, he underlined that the most research was done in the field of health. He also stated that many of these studies have been successful in behavior change. In a study conducted in the distant transition period, it was determined that anti-smoking campaigns have a reducing effect on cigarette consumption. In the analyzes made before and after the campaign, it was observed that the annual per capita cigarette consumption decreased from 5% to 4% (Warner, 1977: 645). In another study in which it is claimed that the use of drunk driving can be reduced with mass media campaigns, it was determined that great savings were achieved in medical costs as a result of the campaign (Tay, 2005: 26). In a study evaluating the effectiveness of health communication campaigns in general, it was revealed that it is possible to change nutritional behaviors with communication activities such as feedback, effective message content and presentation (Snyder, 2007: 32). Cameron et al. (2013: 2059) have organized an online campaign based on the idea that the classical media campaigns in the field of organ donation in the USA are insufficient. Members were informed about organ donation via a platform developed on Facebook, and people who agreed to be donors were entered into the organ donation list through their own state records. After becoming a donor, this situation was shared with his/her friends in the Facebook network. With the campaign, the number of donors, which were 616 at the beginning, increased to 13,054. A study on abortion law in India revealed that raising awareness and perception about abortion law with proper communication interventions will result in beneficial behavior change. The authors also stated that social marketing activities for behavior change are an effective way to improve knowledge and perceptions about abortion in situations where women's access to abortion services is prevented due to myths, misunderstandings and lack of information (Banerjee et al., 2013: 149).

Numerous social marketing campaigns are organized in the USA, where the prevalence of obesity is the highest in the world, and the effectiveness of these campaigns is discussed by many researchers. Burton et al. (2006: 1669) evaluated how the writing of nutritional information on restaurant menus, in order to reduce the prevalence of obesity in the USA, reflected on the purchasing intentions and preferences of customers. As a result of the research, it was determined that writing nutritional information on the menu reduces the consumption of less healthy foods and has a potentially positive effect on public health. George et al. (2016: 283) launched a six-

week social marketing campaign to increase awareness of obesity, prevent type 2 diabetes, and increase participation in nutrition and sports programs in two poor states of New York City, USA. Behavior change messages were posted at the transportation stops in the region within the scope of the campaign. In addition, social media and websites were also used. With the research, it has been concluded that social marketing campaigns supported by preventive activities can be effective in drawing attention to health problems. The importance of lifestyle change was emphasized with the "100 small steps in the fight against obesity campaign" in the USA. The 67th step of this campaign is to encourage the use of stairs instead of escalators in public spaces. In this study, in which the effect of incentives in related areas on the use of stairs was examined, it was predicted that a 2.8% increase in the use of stairs could result in weight loss and/or prevention of weight gain (Dolan et al., 2006: 25). Again, with the increase in childhood obesity in the USA, a social marketing campaign called "Food Friends-Making New Foods Fun for Kids" was launched. Teachers, parents and caregivers were identified as campaign collaborators. With the campaign, changes in children's behaviors were observed with clues such as being a role model in trying new food, giving the right to choose among the new dishes offered (Bellows and Anderson, 2006: 37). All these studies documented that social marketing campaigns provide positive behavior change and inspired the current study. The increasing prevalence of obesity in Turkey has brought up the evaluation of the effectiveness of the campaign of the "Fight Against Obesity" which is a social marketing campaign carried out in this context.

2. METHODOLOGY

Obesity in Turkey was first put on the agenda at the European Ministerial Conference on Counteracting Obesity in 2006. At the end of the conference, a protocol was signed and activities to combat obesity were started (WHO, 2007: 12). First, the Department of Obesity, Diabetes and Metabolic Diseases was established under the Ministry of Health, and then an action plan was prepared for the "Obesity Fight and Control Program" covering the years 2010-2014. The aim of this program, which is within the scope of preventive health services, is to inform the society about healthy nutrition and physical activity. In 2012, the "Obesity Struggle Movement" campaign started across the country, with a public spotlight describing the importance of body mass index and an active life, and communication materials such as reducing portion sizes and taking 10,000 steps a day, banners and billboards (www.saglik.gov.tr). In this part of the study, the empirical results of the research carried out in order to determine the level of social change created by the "Fight Against Obesity" campaign on the target audience are included.

2.1. Purpose

This study was conducted in order to reveal the role of social marketing campaigns in improving public health in the context of the campaign to fight against obesity. In addition, it was aimed to determine whether this campaign created a behavioral change in the target audience. In other words, the effect of the fight against obesity campaign on the behavior of adopting philosophy of healthy diet and active life was investigated.

2.2. Sample

The population, from which the research results are generalized and the sample is selected (Gürbüz and Şahin, 2014: 132), consists of adult individuals in the city center of Nevşehir. The numerical data used in determining the sample size of the study (based on the December 2014 census) were obtained from the Nevşehir Regional Directorate of the Presidency of the Turkish Statistical Institute. According to the information received, there are a total of 21 neighborhoods in the city center. In order to increase the representative power of the sample, stratified sampling method based on the ratio of neighborhoods to the total population was preferred. The city center population being in the range of 50-100 thousand required a sample size of at least 384 people at 5% margin of error and 95% confidence level (Altunışık et al., 2007: 127). In this direction, data were collected as a result of face-to-face interviews from 400 people who agreed to answer the questionnaire. The number of people to participate in the survey in each neighborhood and their gender distribution were determined according to their percentages in the total population.

2.3. Scales

The scale used in the research consists of three parts. In the first part, there are 30 questions graded according to the Likert scale (1= I absolutely disagree ... 5= I strongly agree). These questions measure how individuals evaluate social marketing activities within the scope of fight against obesity. The questions in this section are adapted from Develi (2008). In addition, while developing the questions, the official website of www.beslenme.gov.tr, which contains all the details of the campaign to fight against obesity, was also used. In the second part of the scale, questions about demographic characteristics such as age, gender and income were asked, followed by questions about body weight and physical activity in order to calculate the body mass index. In the last part, prepared by the researchers themselves (with reference to the www.beslenme.gov.tr official website) and there are two importance scale questions (1=Not at all effective..... 5=Very effective), each consisting of six questions. These questions are aimed at determining the factors that are effective in the reflection/inability of individuals to reflect the philosophy of healthy diet

and active life on their behaviors. Content validity based on expert opinion (Yükselen, 2009: 99) was carried out to make sure that the final version of the scale contains a sufficient number of questions that can represent the phenomenon to be measured. In line with the opinions of academic experts, it has been determined that there is no problem with the content and clarity of the measurement tool. Another analysis that should be done in case the scale is used in different samples is reliability analysis. A reliability level of 0.70 and above, measured by the Cronbach α coefficient, indicates that the measurement tool is reliable (Bryman and Cramer, 1997: 78; Hair et al., 2006). The reliability of the scale was supported in the preliminary analysis made on the data of the pilot study conducted with 40 people.

2.4. Research Model

Descriptive researches are used in many fields when it is desired to obtain complete and accurate information about the target audience (Nakip, 2006). The model created for the purpose of the research is shown in Figure 1. According to the model, social marketing practices (with the content of fighting obesity) to improve public health have a positive effect on the behavior of adopting philosophy of healthy diet and active life. Under this main assumption, six sub-hypotheses were formed. These;

H_1: Public responsibilities and sample practices positively affect the behavior of adopting philosophy of healthy diet and active life.

H_2: Promotion methods positively affect the behavior of adopting philosophy of healthy diet and active life.

H_3: Effectiveness of the campaign positively affects the behavior of adopting philosophy of healthy diet and active life.

H_4: Informing positively affects the behavior of adopting philosophy of healthy diet and active life.

H_5: Physical activity practices positively affect the behavior of adopting philosophy of healthy diet and active life.

H_6: Mass media positively affects the behavior of adopting philosophy of healthy diet and active life.

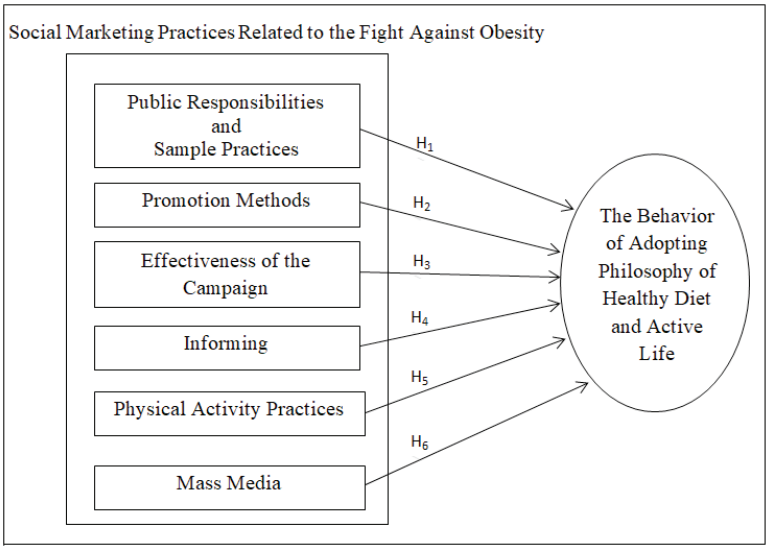

Figure 1: Research Model

In the research model, 'public responsibilities and sample practices', 'promotion methods', 'informing', 'physical activity practices' and 'mass media' were defined as independent variables and the behavior of adopting philosophy of healthy diet and active life as dependent variable.

3. ANALYSİS OF DATA

After the collected data were coded and entered into the SPSS package program, a multi-stage analysis procedure was carried out. Firstly, two preliminary analyzes were performed, namely reliability analysis and normality test. Then, the general characteristics of the sample volume were summarized by frequency analysis. Afterward, the expressions related to social marketing practices related to the fight against obesity were evaluated with explanatory factor analysis and sub-dimensions or factors were tried to be obtained. The relationship between the emerging factors was evaluated by correlation analysis. Factors were named according to the contents of their sub-expressions. Finally, multiple regression analysis was performed to determine the effect of independent variables (dimensions revealed by factor analysis) on the dependent variable. In this section, the details of the analysis are given

3.1. Reliability Analysis and Normality Test

Reliability is expressed as the confidence that the same results will be obtained on another sample that will be made for the same purpose of the measurement tool. If this value, which is interpreted with the Cronbach

α coefficient, is 0.80 and above, it indicates that the measurement tool is quite reliable (Bryman and Cramer, 1997: 78). As a result of the analysis, the total reliability of the 30-item scale was determined as 0.881. In order to control whether the data is normally distributed, which is the prerequisite of factor analysis, skewness and kurtosis values were checked. The fact that these values are between ±2 limits indicates that the data are normally distributed (Tabachnick and Fidell, 2013: 68). As a result of the analysis, it is seen that the data provide the normality assumption. As a result of the analysis, it is seen that the data provide the normality assumption. In addition, it was determined that nearly half of the participants were working individuals (n=206, 51.5%) with a bachelor's degree or higher education (n=196, 49.1%).

3.2. Frequency Analysis

In this section, the general characteristics of the people participating in the research were evaluated with frequency distribution in line with the answers given to the questionnaire. First, height and weight information was asked with an open-ended question in order to calculate the BMI of the participants. BMI information was obtained by formulating it with the help of Microsoft Excel. Accordingly, 28.8% of the sample size was in the overweight category, and 8.5% was in the obese category. The fact that 37.3% of the participants in the study had a weight problem reveals the importance of the subject and the necessity of researching it. On the other hand, the participants were classified as predominantly male (n=212, 53%), married (n=231, 57.8%), and between the ages of 25-45 (n=245, 61.3%).

3.3. Factor Analysis

Factor analysis is a type of analysis that reveals the basic factors of a scale consisting of many expressions that are thought to be related and helps to understand the relationships between these factors more easily (Altunışık et al., 2007: 222). With the help of this analysis, two prerequisites must be met before factoring the current research scale with 30 expressions. The first is that the sample volume is sufficient. According to Büyüköztürk (2002: 480), the sample size should be at least five times the number of expressions in the scale. Although the size of 150 is sufficient for the current scale, the sample volume is determined as 400. In addition, a sample size of this size allows to include expressions with a factor load of 0.40 and above into the analysis (Gürbüz and Şahin, 2014: 305). The second prerequisite is provided according to the Kaiser-Mayer-Olkin value and Bartlett test results. According to Norusis (1993: 49), a KMO value of 0.60 and above indicates the suitability of the data set for factor analysis. The KMO value and Bartlett test results for the current data set are shown in Table 1.

Table 1: *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.89
Bartlett's Test of Sphericity	Approx. Chi-Square df Sig.	3340,143 435 .000

When Table 1 is examined, it is seen that the KMO coefficient takes a value of 0.89. In this context, it can be said that the sample size is sufficient for factor analysis. After the prerequisites were met, the 30-item research scale was factored by applying principal component analysis, which is one of the methods frequently used in social sciences. As a result of the analysis, it was seen that there were 6 factors that explained 55,589% of the total variance and had an eigenvalue above 1. Cronbach α and loading values of the factors are presented in Table 2.

Table 2: *Explanatory Factor Analysis Results*

Component	Eigenvalue	% of Variance	Cronbach α	Explanation
1	3.372	12.967	0.816	9 expressions, 0.705……0.530*
2	2.628	10.106	0.778	7 expressions, 0.741……0.528*
3	2.577	9.912	0.779	3 expressions, 0.761……0.569*
4	2.454	9.437	0.702	3 expressions, 0.740……0.556*
5	1.953	7.512	0.746	2 expressions, 0.733……0.683*
6	1.532	5.891	0.752	3 expressions, 0.768……0.706*

*Indicates the lowest and highest factor loadings.
% of Total Explained Variance =55.589
9 Rotation, Extraction Method: Principal Component Analysis

Looking at Table 2, it is seen that the resulting factors have reliability of 0.70 and above. This ratio means that the factors created by the expressions combined with factor analysis are reliable (Nakip, 2006). According to Table 2, the number of expressions included in the analysis is 27. The three expressions before the analysis were excluded because their factor loads were below 0.50. According to Kurtuluş and Okumuş (2006), it is acceptable to have a total explained variance percentage of 50 or more. Finally, considering the expressions constituting the factors, 6 factors were named as public responsibilities and sample practices, promotion methods, effectiveness of the campaign, informing, physical activity practices and mass media. Pearson Correlation analysis was performed to determine the direction and degree of the relationship between the factors (Nakip, 2006: 423). The analysis results are summarized in Table 3.

Table 3: Correlation Analysis Results

Factors	1	2	3	4	5	6
1. Public Resp. and Sample Prac.	1	.588	.367	.252	.433	-.023
2. Promotion Methods		1	.358	.247	.526	.029
3. Effectiveness of the Campaign			1	.378	.253	.047
4. Informing				1	.203	-.066
5. Physical Activity Practices					1	-.031
6. Mass Media						1

According to Table 3, while there is a positive correlation at the level of 0.01 among the first 5 factors, there is a negative and weak relationship between the mass media factor and other factors. Before the regression analysis, it is expected that there will be a significant relationship between the independent variables and the dependent variable (the behavior of adopting philosophy of healthy diet and active life). In the analysis, it was determined that there was a positive and significant relationship between public responsibilities and sample practices ($r=0.395$; $p<0.01$), promotion methods ($r=0.392$; $p<0.01$), effectiveness of the campaign ($r=0.346$; $p<0.01$), informing ($r=0.214$; $p<0.01$), physical activity practices ($r=0.289$; $p<0.01$) and mass media ($r=0.134$; $p<0.05$) factors and the behavior of adopting philosophy of healthy diet and active life.

3.4. Regression Analysis

Multiple regression analysis is used when it is desired to investigate the effect of more than one independent variable on a dependent variable (Nakip, 2006: 330). In this study, the effect of the dimensions of social marketing practices determined by factor analysis on the behavior of adopting philosophy of healthy diet and active life was examined by multiple regression analysis. The values obtained as a result of the analysis are as shown in Table 4.

Table 4: *Multiple Regression Analysis Results*

Independent Variables in the Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta(β)			Tolerance	VIF
(Constant)	1.066	.329		3.235**	.000		
Public Responsibilities and Sample Practices	.220	.092	.183	2.384*	.018	.564	1.772
Promotion Methods	.152	.087	.143	1.752	.081	.498	2.008
Effectiveness of the Campaign	.136	.057	.162	2.367*	.019	.709	1.411

Informing	.031	.059	.035	.531	.596	.777	1.287
Physical Activity Practices	.087	.061	.096	1.412	.159	.715	1.398
Mass Media	.124	.055	.132	2.267*	.024	.971	1.030
R	.487						
R^2	.237						
Adjusted R^2	.217						
Std. Error of Estimate	.68678						
$F_{(6-236)}$	11.921						
The Level of Sig.	.000						
Durbin-Watson	2.079						

Dependent Variable: The behavior of adopting philosophy of healthy diet and active life.

$^{*}p< 0.05$. $^{**}p< 0.01$.

As seen in Table 4, Variance Inflation Factors (VIF) values were calculated for each regression equation so as to examine the multiple correlation problem. The maximum VIF value in the model is 2,008. This is well below 10 which is regarded to be the upper limit (Midi et al., 2010: 259). The lowest tolerance value is 0.498, and it is much higher than the lowest limit value of 0.10 (Hair et al., 2006). The Durbin-Watson coefficient is about 2. For this reason, there is no multiple correlation problem in the multiple regression model. The positive value of the beta coefficient indicates that the effect is positive. A significance level of 0.00 indicates that the research model is statistically significant. In addition, the correlation (R) is 0.487 and the coefficient of determination (Adjusted R^2) is 0.217. These results show that 21.7% of the behavior of adopting philosophy of healthy diet and active life can be explained by the dimensions of social marketing practices, which are the independent variables in the research model.

The research model, in which 6 factors determined as a result of the exploratory factor analysis and the behavior of adopting philosophy of healthy diet and active life were accepted as dependent variable, is statistically significant (R^2=0.237; $F_{(6-236)}$=11.921; $p<0.01$). According to the model, the independent variables account for 32.35% of the dependent variance. As a result of the analysis, it has been determined that in dependent variables of as public responsibilities and sample practices (β=0.183, $p<0.05$), effectiveness of the campaign (β=0.162; $p<0.05$) and mass media (β=0.132; $p<0.05$) have a positive effect on the behavior of adopting philosophy of healthy diet and active life. H1, H3 and H6 hypotheses were accepted. The effects of promotion methods (β=0.143, $p>0.05$), informing (β=0.035, $p>0.05$) and physical activity practices (β=0.096; $p> 0.05$) on the behavior of adopting philosophy of healthy

diet and active life are not statistically significant. Hence, H2, H4 and H5 hypotheses have been rejected.

4. CONCLUSION AND SUGGESTIONS

Governments are activating social marketing practices that trigger the necessary behavioral change to reduce the incidence of obesity. Gracia-Marco et al. (2011) stated that the lifestyle shaped by daily behaviors is the main determinant of obesity. The current study evaluates the effectiveness of an intervention aimed at changing lifestyles with healthy eating and physical activity practices to reduce the risk of obesity in the general population. This intervention was introduced to the public as the "Fight Against Obesity" campaign, which is a national social marketing practice carried out in the field of health in Turkey. Although it is thought that the campaign will have a high impact on behavior change, the results of the research show that this change is not as much as expected. Similarly, the Change4Life program to reduce obesity in the UK has also had a limited impact on attitudes and behaviors, although it has raised awareness of obesity (Llauradó et al., 2015: 10). Behavior change at a rate of 21.7% in the campaign to fight against obesity is realized with the positive contribution of public responsibilities and sample practices, effectiveness of the campaign and mass media. In this context, it is important that the government authorities regularly inform the society about nutrition and active life, the campaign advertisements are believable, the government is sensitive to obesity, the stories are told in the campaign advertisements, and the effective use of mass media such as radio, newspaper and magazine.

Despite all these features that have a positive effect on behavior change, it has been determined that promotion methods, informing and physical activity practices do not have an effect contrary to expectations. The theme, person or persons, sound, music, message content and viral marketing used in the campaign advertisement have no effect on the behavior of individuals. Mollaoğlu (2016: 50) stated in his study that it may be more beneficial in behavior change to prepare the content of the advertising message by determining the factors that prevent healthy eating and living an active life with a preliminary research. In addition, when the impact power of the visual and auditory elements used in these advertisements made under the name of publicity is increased, it can create emotional effects in individuals (Sözen, 2013: 167). This can be a trigger for behavior change. Moreover walking activities organized by official institutions and exercise equipment in parks do not have an encouraging role in physical activity. It is recommended to take urgent corrective actions regarding non-continuous walking activities and the use of exercise equipment in parks that are not clearly stated how to use and what they are for.

Based on the results of the current research, it can be said that, like many studies in the literature (Gordon et al., 2006; Burton et al., 2006; Dolan et al., 2006; Gracia-Marco et al., 2011; Truong, 2014; George et al., 2016), the contribution of social marketing campaigns to behavior change cannot be ignored in this study. In order to increase the share of this limited contribution, some suggestions are made to the practitioners.

First of all, it is necessary to improve the content quality of these advertisements, which are published under the name of public service advertisement. Remarkable, impressive, visually and audibly rich message content should be created that is compatible with the expectations and wishes of the target audience. On the other hand, educational cartoons and school milk program applied within the scope of prevention of obesity in schools should be developed. Although these practices aim to eat healthy, unhealthy snacks and fast food-style meals in school canteens reduce the effectiveness of the program. Continuous inspection of school canteens and implementation of constructive policies in this area may be beneficial. According to Hoelscher et al. (2013) in addition to providing information on healthy nutrition in schools, reflecting the acquired knowledge to the lifestyle is more important in preventing obesity. In campaign advertisements, it should be conveyed with convincing messages that it is important in sports and active life as well as nutrition. In the campaign advertisements, which are emphasized with the slogan of 10,000 steps a day, the exercise equipment in the walking paths and parks should be reminded. Red walking paths and blue bicycle paths should be built in such a way that many parts of the city can be reached. In addition, physical and mental benefits of being active can be mentioned.

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CHAPTER 3

THE EFFECTS OF INFORMATION COMMUNICATION TECHNOLOGIES ON THE DEVELOPMENT OF INTERNATIONAL TRANSPORT TYPES

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1. INTRODUCTION

Information and communication technologies have important contributions to the development of countries. ICT has started to play a more important role especially in production after 1980s. ICT is not only used for personal needs, but also makes important contributions to the economic development of countries. Thanks to ICT, information and documents can be easily shared within and between countries. The fact that information can be shared easily and instantaneously means that information can be disseminated more quickly. Thanks to the information, people can demand the products they need from anywhere they want. On the other hand, when it is considered from the perspective of the manufacturer, it can determine where in the world they can produce and sell which products, how much and at what price. Thus, human needs can be identified and met easily and quickly (Saidi, Toumi and Zaidi: 2017).

The digital and information age is changing the way people learn, communicate, do business and treat diseases. ICT provides great opportunities for the economic growth of countries, providing better quality services, creating better health services, learning with distance education methods, and progress in social and cultural areas. Although many countries have data for ICT use; school, business, research, government, etc. Little is known about how and by whom they are used in the fields. More comparative statistical analyzes are needed to determine the growth of the ICT sector and its benefits on production and development. Thanks to ICT, countries can establish global partnerships, harmonize information and data exchanges, and build their statistical capacity (Word data bank, 2023).

Logistics is the element that brings together the demands of the people that emerged thanks to ICT and the supplies of the producers. Many types of transportation such as road, air, rail, sea Öğr. Gör. Dr. Ramazan Yıldız, Çanakkale Onsekiz Mart University, Yenice Vocational School, Department of Management and Organization, e-mail: ramazanyildizahmet@gmail.com, ORCID ID: 0000-0001-8437-8171 and pipeline transportation are used in logistics activities. While one of these types of transportation can be used to deliver the products to the places where they are needed, two or more types of transportation can also be used together. There are intermodal, multimodal and combined transportation types among the two or more used transportation types. With the healthy operation of logistics activities, the desired product can be delivered on time, to the desired location, at the desired price and quality (Yıldız, 2022).

There are many prominent domestic and foreign studies on ICT and logistics applications. Karlı and Tanyaş (2020) worked on the integration

of ICT supported activities and logistics centers. In the study, they mention that ICT is needed in order to improve logistics centers, increase their efficiency and make full integration. Çeviker, Mutlu, and Sesliokuyucu (2013) have studied the place of Middle Eastern Countries using ICT in world trade according to their e-commerce infrastructures. In the study, the Middle East Countries are divided into three groups. It has been observed that there are differences in the use of ICT and income levels between these countries. Cengiz and Çetinceli (2020) investigated the situations between logistics performance indices and ICT development indices. They found that there were significant differences between the sub-dimensions of both indices. Perego, Perotti, and Mangiaracina (2010) conducted a literature study on ICT for logistics and freight transportation. In the research, they stated that while there is ICT work for public transport, there is less scientific work for the private sector. They also mentioned that most of the studies were based on questionnaires. Cuong and Tien (2022) conducted a study on the application of ICT in logistics and supply chain after COVID-19. In the study, it is mentioned that ICT has a great contribution to the improvement of services in the logistics and supply chain. They also stated that ICT has a vital importance in the social-economic development of the society. Korpysa, Halicki and Uphaus (2021) studied new financing methods for logistics initiatives against ICT. In the study, it is mentioned that the first coin supply can be used. They also stated that uncertainty has arisen due to the fact that the tokens have not gained their legal status.

Literature research is mainly focused on the effects of ICT on economic growth. In addition, studies on the effects of ICT on logistics performance gains are gaining weight. However, no study has been found on the effects of ICT on the development of international logistics activities. In this respect, this study will investigate the effects of ICT on the development of international logistics activities (road, rail, air and sea). In addition, by revealing that ICT affects which type of international transport is developed more, it is to make suggestions to support the development of other inefficient transport modes. For the research, the export and import values of highway, railway, airway, seaway and the gross domestic product (GDP) ratio of ICTs between 2013-2022 were used. First of all, the stationarity levels of the data were determined by ADF unit root tests. After the stationarity levels were determined, models were established between the series. Specification tests were performed to determine whether the established models were suitable. After determining the suitability of the established models for the EKK method, analyzes were carried out.

2. THE CONCEPTUAL FRAMEWORK

2.1. Logistics and Economic Effects of Information and Communication Technologies

In parallel with the developments in the world, ICT is developing rapidly in Turkey. This rapid development creates a rapid social and economic change within the country. After the establishment of the internet infrastructure that started in 1990, the number of internet subscribers, which was 50 thousand in 1995, has exceeded 11 million in 10 years (Kragöz, 2007). It is understood that while households have access to the internet at the rate of 90.7% in 2020, it is 92% in 2021. It has been determined that 82.6% of internet users are between the ages of 14-76. While the rate of men using the internet in this age group is 87.7%, it is understood that the rate of women is 77.5%. This shows that mostly young population uses the internet (TÜİK, 2023).

Information communication systems consist of human, data, procedure, hardware and software systems that enable the collection, storage, processing and transmission of data in order to achieve a goal (Adıgüzel, 2005). ICT consists of the production of products and services. Products and services can be exported and imported. In terms of export and import, it consists of computers, hardware parts, communication equipment, user electronic equipment, sensors, software and other equipment. ICT is developing with the production of these equipments and offering them to the users. The more these tools are used, the faster the economies of those countries develop (Word data bank, 2023).

Information on ICT activities on the economic growth of countries is shown in Figure 1. This figure was developed by being inspired by Türedi's 2013 study. ICT channels affecting economic growth; use of ICT systems in logistics, production of ICT systems and investment in ICT systems.

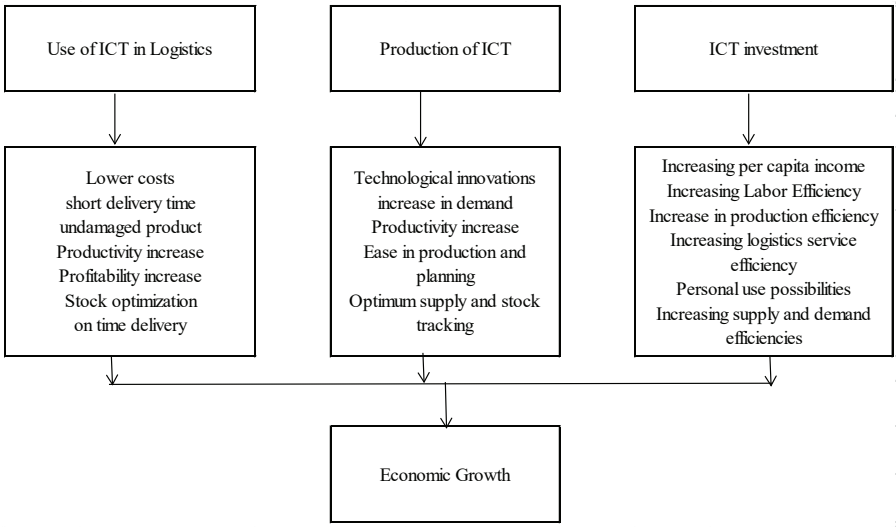

Figure 1: *ICT Channels Affecting Economic Growth*

Source: Developed from the study of Türedi (2013).

The structure of the ICT channels that affect the economic development of the countries is shown in Figure 1.

Contribution of ICT Use in Logistics to Economic Growth: Information is of great importance for businesses and society. From the perspective of society, it is possible to access comprehensive and accurate information about the products and services needed. In addition, products or services can be purchased from anywhere by tracking their costs. In addition to these, economic, political, social, logistics, etc. occurring in the domestic or international arena. events can be heard and necessary steps can be taken accordingly. In terms of businesses, it can provide the best way to market their products or services. ICT creates a great advantage in transmitting information to relevant places in a correct and timely manner. With the use of information and communication technologies in logistics, logistics activities can function in a healthy way. Instant tracking and sending of needed requests can be done more accurately with ICT. Information exchange among all logistics activities can be done in a healthy way thanks to ICT (Yoshimoto and Nemoto, 2005).

Thanks to ICT, instant and accurate information and documents can be provided to businesses. Thanks to instant and accurate information, businesses can manage their logistics operations well and deliver their products in a short time. The operational efficiency of well-managed businesses can increase, thus reducing operating costs. Businesses that can reduce their costs can increase their profitability (Korpysa, Halicki and Uphaus, 2021).

Thanks to ICT, logistics enterprises can better manage their stocks. The products can be delivered to the customers on time, with the stocks in the business at the right time and in the desired amount. In addition to barcode and barcode readers, ICT systems such as RFID, warehouse management systems and enterprise resource planning systems can be used to track stocks well. ICT such as vehicle loading systems, load planning systems and vehicle routing systems can be used to deliver the products leaving the warehouse to the customer's feet. Thanks to these systems, the most suitable load can be distributed from the most suitable route by searching for the most suitable vehicle. Thus, both operating costs can be reduced and products can be delivered to those in need in a shorter time (Ekene, 2014).

Contribution of ICT Production to Economic Growth: Developments in the field of ICT have rapidly improved information and communication among people. Therefore, needs can be determined instantly. In addition, purchases are made quickly. In purchasing, logistics activities are of great importance in delivering the requests and needs of the customers to the desired place on time, without missing, error-free. In addition, the development in the field of ICT accelerates production and service production and increases the efficiency of enterprises. With the effect of this, economic activities accelerate and contribute to the growth of national economies (Türedi, 2013).

In addition to its impact on the development of companies, ICT also affects the development of the country's industries. ICT is directly effective in the use and development of new technologies used in the industry, R&D studies of products, production and logistics systems, and the development of the marketing and retail sector. In addition to these, the development of ICT systems can be easier and faster thanks to ICT (Özkan and Çelik, 2018).

The development of ICT systems affects the development of national economies in a permanent and dynamic way. Thanks to globalization and ICT systems, the world has switched to the "New Economy" approach. Internet, computers, mobile phones, software and smart devices are among the most important factors affecting the economy in ICT systems. As these vehicles become cheaper, their usage rates are becoming more common. Thanks to the widely used ICT, the country and inter-country exchanges are faster and more efficient in the country's economy (Çeviker and Sarıdoğan, 2006).

If businesses use their existing resources more efficiently, they can increase their productivity by 30%. In order to realize this increase, it is necessary to benefit from ICT systems. It has been determined that

businesses that use ICT systems work at least 5% more efficiently than those that do not. More efficient processes will have more economic gains as they produce more products or services in a short time (Mouelhi, 2009).

Contribution of ICT Investments to Economic Growth: In order to determine the impact of ICT system investments on economic growth, it is necessary to look at per capita income. In order for the per capita income to increase, the GDP ratios must increase gradually. This is possible by investing in the processing of production processes to improve themselves or by increasing their efficiency. Depending on technological and global developments, it is very difficult to achieve economic development in the absence of sufficient investment in the field of ICT. Embroidery works in national and international arena under competitive conditions. Whichever business invests more in technologies and ICT systems can increase their efficiency and reduce their costs. Businesses that can reduce their costs can compete more (Türedi, 2013).

Developed countries can make their investments in technologies and ICT systems faster and easier. Developing countries find it difficult to access these technologies immediately. In addition, it takes a long time for these countries to access new technologies or they cannot reach them. This means that developed countries grow more economically than developing countries. This means that the already existing income imbalance between countries will increase more and more (Guetat and Dine, 2007).

According to the research conducted in Egypt, they stated that the contribution of the investment made in the telecom sector to the GDP in a year is 4.35 billion USD. Therefore, the country has accelerated its investments in new licenses for international submarine cables and more fixed line operators. ICT is one of the most important tools for providing not only economic but also health, education, logistics, production and government services (Kamel, Rateb and El-Tawil 2009). It has been determined that investment in ICT systems in Bangladesh has gradually grown in domestic and export earnings (Shamim, 2022).

2.2. International Logistics

International logistics is one of the most important factors in the realization of foreign trade. International logistics activities are needed in order to transmit the products between the countries between the sender and the receiver at the desired time, in the desired amount, at the appropriate cost and without any problems. Apart from the shipment of products between countries, the exchange of money and information is also considered within the scope of international logistics. Accurate planning and implementation in the field of international logistics; It will provide advantages in reducing total costs, gaining reputation and creating new

customers. The development of international logistics and the development of foreign trade support each other to a great extent.

In national logistics, the tracking and control of products or vehicles is easier due to the fact that the product shipment and documents within the country are a little simpler. However, in international logistics, it has a more complex structure due to the intervention of many intermediary institutions and the fact that there are more documents and documents. In international logistics, many applications such as transportation, logistics planning, load plan creation, storage, handling, packaging and customs procedures need to be processed separately and in detail. There are costs incurred by each activity. If these activities are managed in the best way, the costs can be reduced and a competitive price can be obtained. Competitive price, on the other hand, can be accepted in international trade and increase purchasing (Dinler, 2022).

In international logistics, rail, road, sea, air and pipeline transportation are one of the modes of transportation. These types of transport have advantages and disadvantages among themselves. In terms of transporting more products by rail transport than by road, the transportation cost per unit product is low. In addition, it is safer and less affected by adverse weather conditions compared to the highway. However, for less shipments, highway is preferred instead of railway (Yıldız, 2022).

Road transport provides a great advantage in transporting customers to their feet. It is an indispensable type of transportation for small shipments. The initial investment costs are lower than other types of transportation. It is called and is a faster type of transportation compared to seaway. However, unit transportation costs are higher (Eşiyok, 2021).

In terms of product variety in maritime transportation, the amount of cargo sent at one time is higher than other types of transportation. In this respect, the transportation cost per unit product is lower. Maritime transportation is a great advantage in international transportation. It affects foreign trade and has important contributions to the economic development of countries. In addition, it is a slow type of transportation and does not have access to everywhere (Emre, 2019). ICT is developing rapidly in the Industry 4.0 revolution. Thanks to these newly developed systems, the concept of smart port is being adopted. In addition to the smartening of the ports, the ships used are beginning to be equipped with smart systems. In addition to automation ships, controllable sea freight vehicles are being designed (Yıldız, 2022).

It is a suitable type of transportation for valuable, small-scale and sensitive shipments in air transportation. Although it is the most expensive type of transportation in terms of product variety, it is actively used in

passenger and freight transportation (Dinler, 2022). In addition to civil aviation, ICT is also used in the military field. These technologies are rapidly developing and becoming widespread, especially in the age of industry 4.0. Countries that can use these technologies (instant communication systems, smart positioning systems, guided missile systems, unmanned aerial vehicles, etc.) in a military sense can gain deterrent power (Alp, 2022).

In pipeline transportation, it is possible to transport loads such as liquid and gas continuously. In this type of transport, solid cargoes and liquid solid cargoes can also be transported, albeit rarely. Although the initial investment costs of this type of transportation are high, it is an efficient type of transportation. Transportation of natural gas, water and petroleum products between countries is common. There are pumping stations at specified intervals depending on the condition of the pipelines. Depending on the size of the pipes, the density of the transported load and the altitude, there are pumping stations with an average length of every 20 km. The pump motors in the pumping stations are mainly powered by electricity. In pipeline transportation, warehouses are needed before and after the cargo is transferred. Pipes are generally laid underground, and it is more difficult to provide security as they pass between countries and in uninhabited places (Kudu, 2021).

Transport types have advantages and disadvantages among themselves. Carrying out transportation by taking advantage of the advantages of transportation types in international product shipment creates a great advantage for businesses. At the beginning of these advantages are cost, speed and security. While a single type of transport mode can be used in the international arena, more than one mode of transport can also be used. These types of transport include multimodal, intermodal and combined transport. If the loads are to be handled in parts from one type of transport to another, this type of transport is multimodal. Separate documents must be prepared between the types of transport. However, if the cargoes will be handled in containers among the transportation types, this type of transportation is intermodal transportation. Combined transport, on the other hand, is a type of uninterrupted transport. There are different types of transportation such as road-sea, road-railway, rail-sea, bimodal transportation (Eşiyok, 2021).

3. METHOD OF THE RESEARCH

In this research, the effects of ICT systems on railway, road, sea, airway, export and import developments are investigated. The data used in the research between the years 2013-2022 were compiled from the Turkish Statistical Institute. Microsoft Excel was used for the classification and

descriptive statistics of the data, and EViews 12 package programs were used for the analysis of the models.

Descriptive statistics (maximum, minimum, mean, standard deviation) of the research data are given in Table 1. The values of the data are evaluated over monetary income. While the standard deviation of export data occurs mostly in air transportation, the standard deviation in import transportation occurs mostly in maritime transport.

Table 1: *Descriptive Statistics of Research Data*

	Descriptive Values	**Maritime transport**	**Rail Freight**	**Highway transports**	**Airways transporting**	**ICT**
Export Data	Maximum	42897796	758816,6	24098999	6951310	24297459
	Minimum	6730023	78161,68	4313112	1098240	7549413
	Average	25572446	279626,3	14319509	3994774	12658030
	Standard deviation	6806585	143537,8	3091284	1047733	3973340
Import Data	Maximum	54 130 247	801 941	15 951 292	13 076 094	24297459
	Minimum	25 864 213	280 860	7 989 683	4 666 835	7549413
	Average	35 306 955	461 206	10 737 989	7 440 040	12658030
	Standard deviation	6 833 640	163 013	2 018 912	2 100 068	3973340

Augmented Dickey-Fuller (ADF) unit root test was proposed by Dickey Fuller (1981) to evaluate the stationarity of temporal series. With this analysis, it can be determined whether the temporal series are stationary or at what level they become stationary (Demirel, 2022). Dickey Fuller (ADF) and Phillips Perron (PP) unit root tests were applied to determine the analysis methods of the research data and to determine the suitability of the data for analysis.

There are many types of time series analysis used in the analysis of temporal data. One of these analyzes is the Least Squares (LCS) method. The EKK method is a statistical method in which factor analysis and hypothesis testing are performed simultaneously. However, the margin of error in a small number of samples is lower than in covariance-based analyses. In addition, it can be actively used in estimation studies, exploratory and theory creation (Çalışkan & Öztürkoğlu, 2020). In this study, EKK method was preferred depending on the data and the pre-test analysis of the data.

After determining the stationarity levels of the temporal series, models for the EKK method were established between ICT and international

transportation types. In order to determine whether the established models are significant, the normality distributions of the models, variable variance and autocorrelation tests were performed.

The annual or seasonal differences between the error terms of the series in the established models show the autocorrelation difference. In annual time series, errors of period "t" only mean first-order autocorrelation if a relationship is observed with errors of period t-1. First-order autocorrelation is frequently encountered in practice. Second- and third-degree autocorrelation, although rare, is seen. In EKK models, it is desired that there is no autocorrelation between the errors of the series. In case of autocorrelation problem in the models, the previous value (t-1) of the dependent variable is included in the model independently (Albayrak, 2014). In autocorrelation tests, models with autocorrelation problems (Railway export-ICT, Railway import-ICT, Seaway import-ICT, Highway import-ICT) were tested by taking the 1st difference (t-1) and modeling was done in this way.

✓ ***Hypothesis Tests of the Research***

H1. The change in the amount of GDP in the ICT area over the years affects railway exports.

H2. The change in the amount of GDP in the ICT area over the years affects railway imports.

H3. The change in the amount of GDP in the ICT area over the years affects road exports.

H4. The change in the amount of GDP in the ICT area over the years affects road imports.

H5. The change in the amount of GDP in the ICT area over the years affects maritime exports.

H6. The change in the amount of GDP in the ICT area over the years affects maritime imports.

H7. The change in the amount of GDP in the ICT area over the years affects airline exports.

H8. The change of GDP in the ICT area over the years affects airline imports.

4. FINDINGS

In this part of the research, there are descriptive statistics values, stationarity tests, specification tests that determine the suitability of the established models, and EQC analysis results of the series that are the subject of the research. In addition, the results of the hypothesis tests were evaluated.

Augmented Dickey-Fuller (ADF) unit root test results are shown in Table 2 to determine the stationarity levels of the temporal series that are the subject of the research. In order for the variables to be stationary, the "t" statistical values must be higher than the test critical values in absolute value (Uzgören and Uzgören (2005). Since the data subject to the research is not stationary at the I(0) level, they were tested by taking the 1st difference. According to the results, the probability value of all series (Prob.* = 0.0000) is below 0.005 according to 5% margin of error. In my ADF unit root test, it is seen that all series are below 1% test critical value.

Table 2: *Stability Levels of Variables According to ADF Unit Root Test Statistics Results*

	Augmented Dickey-Fuller test statistic			**Test critical values**		
	t-Statistic	**Prob.***	**Stability**	**1% level**	**5% level**	**10% level**
Railway Export	-8.405759	0.0000	I(1)	-3.615588	-2.941145	-2.609066
Railroad Import	-6.430462	0.0000	I(1)	-3.621023	-2.943427	-2.610263
Highway Export	-9.296982	0.0000	I(1)	-3.615588	-2.941145	-2.609066
Highway Import	-6.599729	0.0000	I(1)	-3.621023	-2.943427	-2.610263
Seaway Export	-10.24168	0.0000	I(1)	-3.615588	-2.941145	-2.609066
Seaway Import	-8.528568	0.0000	I(1)	-3.615588	-2.941145	-2.609066
Airline Export	-6.479261	0.0000	I(1)	-3.626784	-2.945842	-2.611531
Airline Import	-8.834387	0.0000	I(1)	-3.615588	-2.941145	-2.609066
ICT	-3.962620	0.0046	I(1)	-3.653730	-2.957110	-2.617434

Normality distributions, autocorrelation tests and covariance tests were performed to determine whether the models established between international transport types and ICT are valid. In Figure 2, there is the Jarque-Bera test result for the normality distributions of the model established between railway exports and ICT. Since the probability values of the Jarque-Bera test result (0.215138) are greater than 5% margin of error (0.005), it means that the series are normally distributed. Jarque-Bera test results of other models of research hypotheses are included in the appendices of the study.

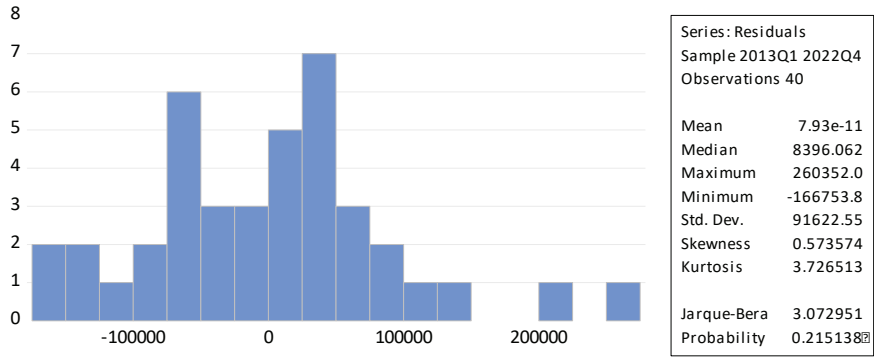

Figure 2: *Normality Distribution of the Model Established between Railway Exports and ICT*

The result of the analysis on whether there is an autocorrelation problem between the models established between international transport types and ICT is given in Table 3. In the analysis, "f" statistical results, chi-square autocorrelation probability values and lag length are included. Since the chi-square probability values (Prob. Chi-Square) of all the models established are greater than 5% error (0.05), it means that there is no autocorrelation problem between the residuals of the series. This indicates that the model is suitable and the analysis will continue.

Table 3: *Autocorrelation Status in Established Models*

Types of transport	f-statistic	Obs*R-squared	Prob. F	Latency Length	Prob. Chi-Square
Railway Export	1.903855	3.927789	0.1645	2	0.1403
Railroad Import	1.190820	2.553045	0.3163	2	0.2790
Highway Export	2.385724	8.766433	0.0705	4	0.0672
Highway Import	0.633825	1.401805	0.5367	2	0.4961
Seaway Export	0.855042	1.867632	0.4342	2	0.3931
Seaway Import	1.357411	2.883796	0.2709	2	0.2365
Airline Export	0.904419	1.913666	0.4138	2	0.3841
Airline Import	2.219196	4.390276	0.1234	2	0.1113

Table 4 shows whether there is variable variance among the residuals of variables between international transport modes and ICT. According to the variable variance test; "f" means that there is no problem of variable variance among the residuals of the series, since the statistical, R2, and scaled annotation results are greater than 5% (0.05) margin of error. This situation shows that the model is suitable and LCC analysis can be done.

Table 4: *Test of Variance of Variance in Established Models*

Dependent-Independent Variables	F-statistic	Obs*R-squared	Scaled explained SS
Railway Export	0.3308	0.3127	0.1853
Railroad Import	0.1835	0.1732	0.0594
Highway Export	0.9811	0.9805	0.9748
Highway Import	0.6122	0.6122	0.2150
Seaway Export	0.2343	0.2208	0.0235
Seaway Import	0.1791	0.1692	0.0036
Airline Export	0.4116	0.3985	0.3357
Airline Import	0.2544	0.2432	0.3222

The test results of the analysis of the hypotheses established between ICT systems and international transport types using the EKK method are given in Table 5. Since the probability value (0.0103) of the model established between ICT and railway exports is smaller than the 5% margin of error (0.005), it can be said that the established model is appropriate. This means that there is a positive and significant relationship between ICT and rail exports and the H1 hypothesis will be accepted. In addition, since the coefficient value in the model is 0.008506; It means that a 1% change in the ICT argument will change international rail exports by 0.008506%. Since the probability value (0.0038) of the model established between ICT and railway imports is smaller than the 5% margin of error (0.005), it can be said that the established model is appropriate. This means that there is a positive and significant relationship between ICT and railroad imports and the H2 hypothesis will be accepted. In addition, since the coefficient value in the model is 0.014287; It means that a 1% change in the ICT argument will change international rail exports by 0.014287%.

Since the probability value (0.0000) of the model established between ICT and road exports is smaller than the 5% margin of error (0.005), it can be said that the established model is appropriate. This means that there is a positive and significant relationship between ICT and road exports and the H3 hypothesis will be accepted. In addition, since the coefficient value in the model is 0.535440; It means that a 1% change in the ICT independent variable will change road exports by 0.53544%. Since the probability value (0.0106) of the model established between ICT and road imports is smaller than the 5% margin of error (0.005), it can be said that the established model is appropriate. This means that there is a positive and significant relationship between ICT and road imports and the H4 hypothesis will be accepted. In addition, since the coefficient value in the model is 0.194931; It means that a 1% change in the ICT argument will change road imports by 0.194931%.

Table 5: *EQL Analysis of Dependent and Independent Variables of Countries*

The dependent variable	Independent variable	Coefficient	Standard error	t- Statistics	Probability value	R^2	Adjusted R^2	Hypothesis Result
Railway Export	ICT	0.008506	0.003144	2.705714	0.0103	0.863276	0.855680	Accept
Railroad Import	ICT	0.014287	0.004611	3.098702	0.0038	0.713965	0.698075	Accept
Highway Export	ICT	0.535440	0.091565	5.847641	0.0000	0.473647	0.459796	Accept
Highway Import	ICT	0.194931	0.072261	2.697602	0.0106	0.413206	0.380606	Accept
Seaway Export	ICT	0.894775	0.145687	6.141759	0.0000	0.842174	0.833406	Accept
Seaway Import	ICT	0.210251	0.240457	0.874382	0.3877	0.383044	0.348769	Reject
Airline Export	ICT	0.116984	0.038336	3.051510	0.0041	0.196816	0.175680	Accept
Airline Import	ICT	0.151847	0.082126	1.848951	0.0723	0.082538	0.058394	Reject

Since the probability value (0.0000) of the model established between ICT and maritime export is smaller than 5% margin of error (0.005), it can be said that the established model is appropriate. This means that there is a positive and significant relationship between ICT and maritime exports and the H5 hypothesis will be accepted. In addition, since the coefficient value in the model is 1.458717; It means that a 1% change in the ICT independent variable will change maritime exports by 1.458717%. Since the probability value (0.3877) of the model established between ICT and maritime import is greater than 5% error margin (0.005), it can be said that there is no relationship between them. This means that there is no significant relationship between ICT and maritime imports and the H6 hypothesis will be rejected.

Since the probability value (0.0041) of the model established between ICT and airline export is smaller than the 5% margin of error (0.005), it can be said that the established model is appropriate. This means that there is a positive and significant relationship between ICT and airline exports and the H7 hypothesis will be accepted. In addition, since the coefficient value in the model is 0.116984; It means that a 1% change in the ICT argument will change airline exports by 0.116984%. Since the probability value (0,0723) of the model established between ICT and airline imports is greater than 5% error margin (0,005), it can be said that there is no relationship between them. This means that there is no significant relationship between ICT and airline imports and the H8 hypothesis will be rejected.

5. CONCLUSION AND DISCUSSION

ICT affects countries economically, socially and culturally. More ICT systems are needed in international logistics. ICT systems are used in all processes after order arrival, production, packaging and preparation, logistics shipment, delivery of products and post-delivery processes. ICT can directly affect logistics activities. In this study, it is to reveal to what extent information communication technologies affect international

transport types in Turkey.

In the research, ICT positively affects the international transportation types (rail, road, sea and air). While the increase in the field of ICT increases the amount of international transport, the decrease in the field of ICT decreases the amount of international transport.

A 1% increase in the field of ICT increases railway exports by 0.0085%, while railway imports increase by 0.014%. In this case, it is said that ICT affects rail imports more (Table 5). While a 1% increase in the field of ICT increases road exports by 0.53%, it increases road imports by 0.19%. In this case, it is said that ICT affects road exports more than road imports. While a 1% increase in the field of ICT increases maritime exports by 0.89%, there is no interaction with maritime imports. While a 1% increase in the field of ICT increases airline exports by 0.11%, there is no interaction with airline imports (Table 5). Similar to this study; Yoshimoto and Nemoto (2005) studied the effect of information communication technologies on road freight transport. In the study, they determined that ICT has a huge impact on road freight transport. Rabah and Mahmassan (2002) conducted a similar study to determine the effects of ICT on logistics and freight transportation. In the research, it has been understood that ICT has effects on reducing logistics costs. Banister and Stead (2014) in their study on the additives of ICT on transportation determined that ICT increases transportation security and reduces transportation costs.

The fact that the data covers the years 2013-2022 constitutes the limitation of the research. This date range has been preferred because it is not possible to reach all the data or it takes time. In the future, studies can be conducted on the effects of ICT on logistics loading or transportation performances.

Among the international transportation types that are the subject of research in Turkey, ICT affects the sea export the most, followed by the road export. ICT affects rail exports the least, followed by rail imports. This means that ICT systems have little impact on international rail transport. It is seen that the increase in the amount of GDP in the field of ICT will further improve international logistics. It also means that more ICT systems are needed in the railway field. In this case, studies should be carried out for ICT to have a greater impact on rail, air, road and finally maritime transport, respectively. It is seen that it would be more appropriate to make country investments in the field of ICT primarily in international railways and airlines.

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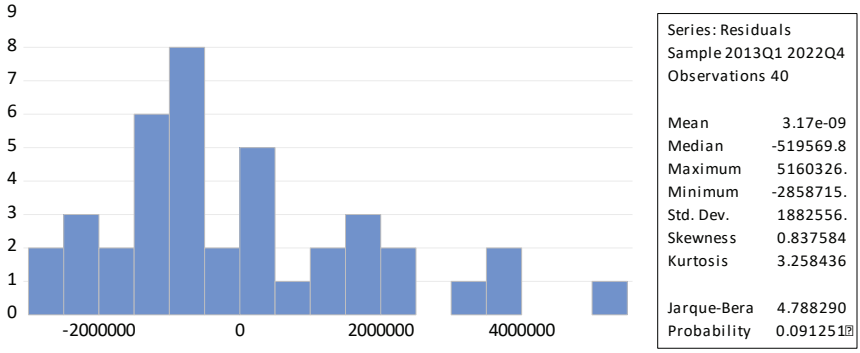
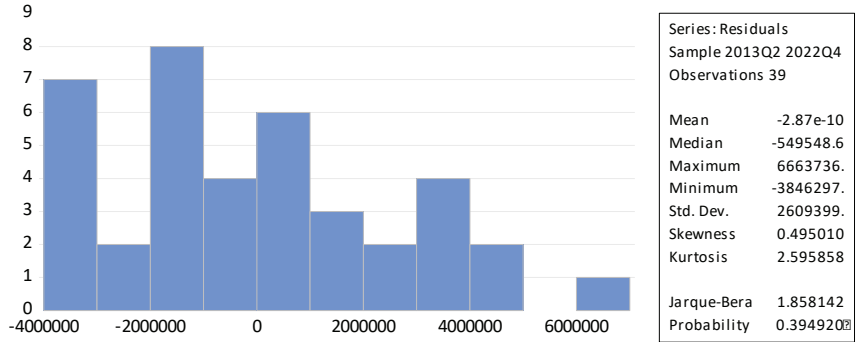
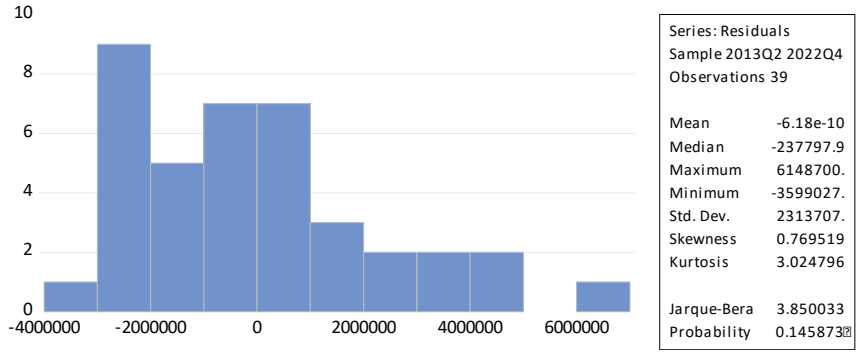
APPENDİCES



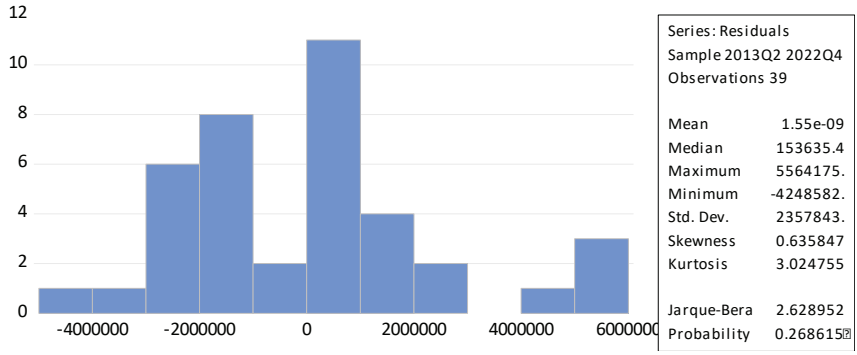
Appendix 1. *Normality Distribution of the Model Established between Seaway Exports and ICT*



Appendix 2. *Normality Distribution of the Model Established between Airline Exports and ICT*



Appendix 3. *Normality Distribution of the Model Established between Road Export and ICT*



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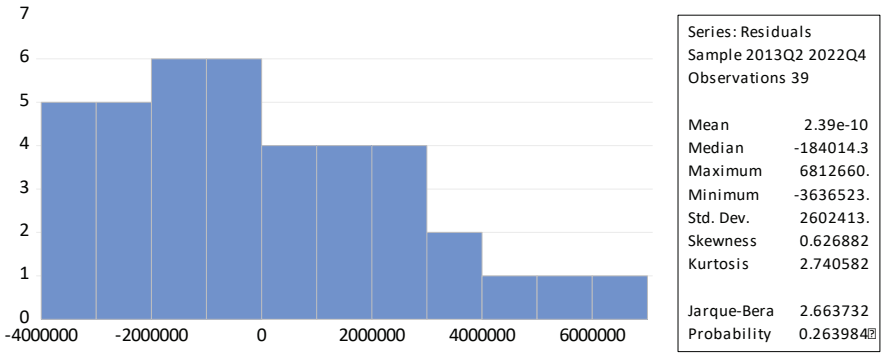

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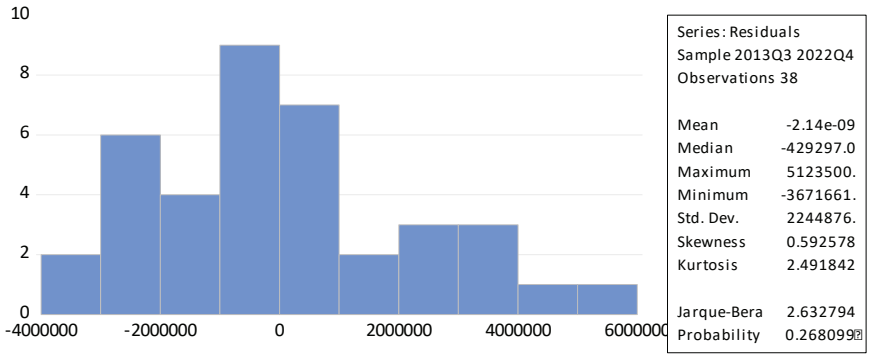
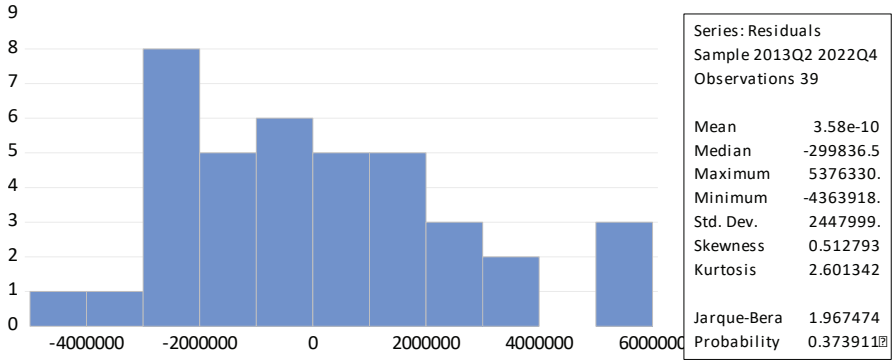


Appendix 6. *Normality Distribution of the Model Established between Airline Import and ICT*



Appendix 7. *Normality Distribution of the Model Established Between Road Import and ICT*

CHAPTER 4

INDUSTRIAL REVOLUTION AND ASSESSMENTS ON TURKEY

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INTRODUCTION

Industrial history examines developments in industrial production, processing and distribution technologies that began with the industrial revolution. The industrial revolution began in England at the end of the 18th century, and human and animal power gave way to innovations such as steam engines, weaving machines, the railway and the telegraph. In this period, production and trade increased rapidly and this situation laid the foundations of modern industrial society.

The industrial revolution is a global-scale development and has affected all the countries of the world. The industrial revolution in Turkey started in the last years of the Ottoman Empire and gained momentum in the Republican period. Turkey started to implement economic development and industrialization strategies, especially after the 1950s, and the industrial sector greatly expanded in this period. Turkey has an important industrial capacity, especially in sectors such as textile, food, chemistry, automotive and defense industries. In recent years, the technology sector in Turkey has been growing rapidly and world-renowned technology companies are investing in Turkey. However, the existence of some problems related to Turkey's economic stability affects the industrial development of the country (Sarı et al., 2020).

As a result, industrial history laid the foundations of the modern world and still plays an important role today. Although Turkey has faced many difficulties in the industrialization process, it has an important industrial capacity and this contributes to the economic development of the country. In this section, the historical development of the industrial revolution will be scrutinized, especially Industry 4.0 will be detailed and evaluations will be made on Turkey.

1. Historical Development of the Industrial Revolution

In the classification of industrial revolutions, which energy source was used in which period was decisive. When evaluated within this framework, it is known that coal and wood were used in the first industrial revolution, electricity and oil were used in the second industrial revolution, and nuclear energy was used in the third industrial revolution. Figure 1 explain informations about industrial revolutions.

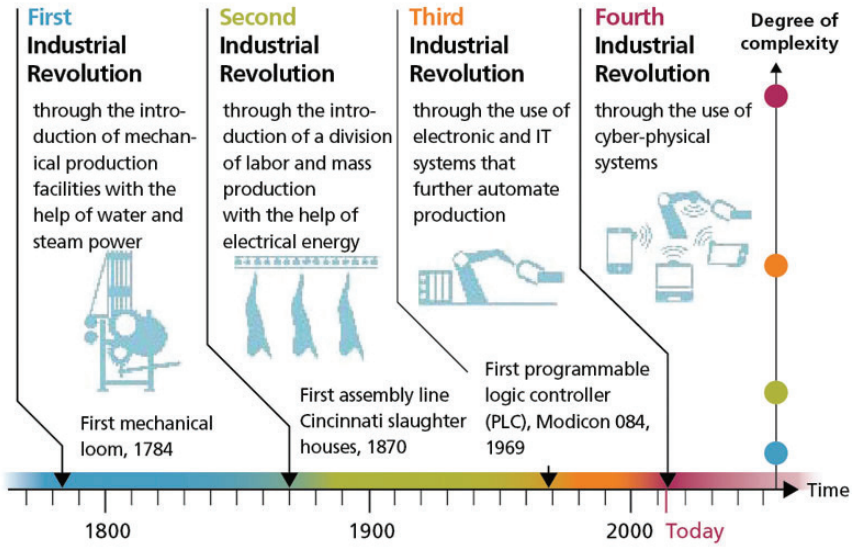

Figure 1: *Industrial Revolution*

Source: *https://www.thedualarity.com/industrial-revolution-4-0-2/*

1.1.Industry 1.0

The Industrial Revolution 1.0, i.e. Industry 1.0, takes place in the period between 1760 and 1840. It started in England in the 8th century. The fact that England had the largest colonies in the world brought along rich coal and iron mines, and this situation, which allowed it to expand in terms of both resources and markets, added richness to its wealth. When all of these possibilities are combined, it is no wonder that England led the first industrial revolution. The process of mechanization started with the use of coal in industry by converting it to steam power. Again in this period, capital accumulation increased, materials such as magazines, newspapers and books printed on paper and communication channels developed. In addition, the telephone, which was used to provide faster communication at the end of this period, had a great impact in the world (Yavari and Pilevari, 2020). The current economies of different continents have been characterized by major shifts that have changed. The industrial revolution was a period of significant economic and technological changes that began in the mid-18th century in Great Britain and then spread to other parts of the world, including Europe and North America. This period saw the development of new manufacturing processes and machines, such as the steam engine, which helped to increase productivity and efficiency in factories and mills (Bairoch, 1981). As a result of these changes, there was a shift from manual labor to machine-based manufacturing, and this led to the growth of large-scale industries and a corresponding increase in the production of goods. The rise of modern power supplies and machinery also facilitated

the expansion of industries, such as textiles, iron and steel production, and transportation. The industrial revolution had a profound impact on society and the economy. It led to the growth of cities, the expansion of trade and commerce, and the development of new forms of transportation and communication. The changes brought about by the industrial revolution also paved the way for the rise of capitalism and the growth of a global economy (Loy et al., 2021).

Industry 1.0, was characterized by the invention and use of machines powered by water and steam. The use of these machines dramatically transformed the manufacturing industry and revolutionized the way goods were produced. The invention of the steam engine by James Watt in the late 18th century, for example, allowed for the mechanization of factories and increased the production of textiles, iron, and other goods. The steam engine also facilitated transportation by powering steamships and locomotives, making it easier and more efficient to transport goods and people across long distances. The use of water power also played a significant role in Industry 1.0, with the development of water wheels and water turbines allowing for the mechanization of mills and factories. These machines could generate large amounts of power and helped to increase production capacity and efficiency. Overall, the breakthrough technologies of Industry 1.0 transformed the manufacturing and transportation industries and paved the way for further advancements in technology and industry. The use of coal as an additional fuel source further fueled the growth of these industries, allowing for even greater production capacity and efficiency (Lau and Yeung, 2020).

The rapid development of technology and industry has brought with it some problems. Reasons such as long working hours, oppression of child and female workers, unhealthy workplace and working conditions have come to the fore. The industrial revolution has led to more pressure, especially on workers who are seen as the lower class. These workers were forced to work long hours and in unhealthy working conditions. This situation caused the working class to become stronger and act consciously. Conflicts arose between the bourgeois class and the working class, which we call the proletariat. These conflicts rang the bells of the transition to socialist and communist societies. However, in 1833, the Factory Act was enacted in England to ensure that high standards are observed in all workplaces and to guarantee the safety and protection of all workers (Apriliyanti, 2022).

1.2. Industry 2.0

The second industrial revolution, also known as Industry 2.0, started in the 19th century, in the 1870s. The countries that pioneered my second

industrial revolution were America and Germany. With the rapid increase in the population in Europe, the population engaged in agriculture in the villages began to migrate to the cities. This situation has created a ready-made workforce opportunity for developed industries. The living standards of people who migrated from villages to cities have also changed. This situation has also increased the demand for consumer goods. In addition, many precious metals were brought to Europe with the discoveries made in this period. When considered in this context, the second industrial revolution refers to the social and economic changes between the years 1870-1914 (Ashton, 1997).

As mentioned before, the classification of industrial revolutions is evaluated in relation to the energy resources used at that time. In the second industrial period, there was a rapid increase in oil and electricity and steel production, which allowed the development of railways. This development affected the transportation and communication networks, and with the ease of distribution and transportation of goods, great gains were made in trade. The use of electricity and oil has also allowed the automotive industry to develop. In addition, thanks to the possibilities provided by the use of telegraph and radio, stock market and stock market were formed. While these developments were taking place, the acceptance of trade unions and the increase in the employment rate of white-collar workers were among the important developments of the period (De Vries, 1994; Montagna, 1981).

The Second Industrial Revolution, which took place between the late 19th and early 20th centuries. During this time, there were significant advancements in technology, particularly in the fields of electricity, communication, transportation, and manufacturing. One of the major breakthroughs during this period was the development of electric power and the widespread adoption of electrical machinery in industry. This allowed for the automation and mass production of goods on a scale that was not possible before. The development of the electric motor, for example, allowed factories to be more efficient, reliable, and cost-effective, leading to increased productivity and lower prices for consumers. Other notable technological advancements during this period include the invention of the telephone, the expansion of telegraph networks, the development of the internal combustion engine, and the creation of the assembly line, which revolutionized manufacturing and made it possible to produce goods on a much larger scale. Overall, the Second Industrial Revolution marked a significant shift in the way goods were produced, and it paved the way for many of the technological advancements that we still benefit from today (Hudson, 2014).

Industry 2.0, which is also known as the Second Industrial Revolution, was characterized by the widespread adoption of mass production techniques in factories. The development of the assembly line, which was pioneered by Henry Ford in the early 20th century, was a major innovation that allowed for the efficient and rapid production of goods. By breaking down the manufacturing process into smaller, more manageable tasks and assigning workers to each task, the assembly line enabled factories to produce goods at a much faster rate than ever before. This also helped to improve the quality of the products being produced, as each worker could focus on their specific task and become highly skilled at it (McCloskey,1981).

The second industrial revolution brought about significant advancements in industrial culture, including the development of new management techniques and programs to improve productivity and product quality. One of the most notable management techniques introduced during this time was lean manufacturing, which aimed to eliminate waste and streamline production processes. This involved analyzing every step of the production process to identify and eliminate inefficiencies and reduce costs. Another important development was the implementation of just-in-time (JIT) strategies, which involved producing and delivering products only when they were needed, rather than keeping large inventories on hand. JIT helped to reduce waste and improve efficiency by ensuring that resources were used only when necessary. The division of labor also became more refined during Industry 2.0, with companies using specialized workers for specific tasks to increase efficiency and productivity. This led to the development of more complex production processes and products, as well as the emergence of specialized industries and professions. Overall, the improvements in industrial culture during the second industrial revolution helped to transform the manufacturing industry and paved the way for even greater advancements in the future (Berg and Hudson, 1992).

1.3. Industry 3.0

Industry 3.0 is often referred to as the "Digital Revolution" or the "First computer age" because it marked a significant shift in the way manufacturing and production processes were carried out with the introduction of computer technology. During this period, computers became more accessible and powerful, allowing them to be used for a wider range of applications in the manufacturing industry (Schwab, 2017). This led to the development of computer-controlled machines and automation, which increased efficiency and productivity in manufacturing processes. Industry 3.0 also saw the introduction of new technologies such as programmable logic controllers (PLCs) and computer-aided design (CAD) systems, which further improved manufacturing processes and made them more efficient (Bloem et al., 2014).

Industry 3.0, also known as the Third Industrial Revolution, began in the late 1960s and continued through the 1970s and 1980s. This period was marked by the widespread adoption of computerization and automation in manufacturing processes. The Third Industrial Revolution was characterized by the development of technologies such as Programmable Logic Controllers (PLCs), which allowed for greater control and automation of industrial processes. This enabled factories to produce goods more efficiently and with greater consistency. Additionally, the Third Industrial Revolution saw the introduction of computer-aided design (CAD) and computer-aided manufacturing (CAM) systems, which further streamlined the manufacturing process. These technologies made it possible to design and produce complex products with greater accuracy and speed (Heaton, 2017).

However, they still relied heavily on human intervention and input. Information technology (IT) in many production processes) and electronics have started to be used and automation in production processes has been advanced. In addition to the use of renewable energy in manufacturing industries, automation processes have further developed with the development of connectivity and internet access (Alaloul et al., 2020). The prominent developments of this period are listed as follows; synthetic goods, computer technology, micro-electronics technology, fiber optics, telecommunications, bio-genetics, bio-agriculture and laser technology.In addition, facilitating communication and transportation with any part of the world with globalization is renewable and non-renewable in the world. resulted in rapid depletion of resources. This situation has made it necessary to take some measures to ensure the sustainability of the world. Some of these are the protection of the environment, the replacement of polluting industries with recycling production centers, the widespread use of renewable energy, and the green economy (More, 2002).

The electronics industry made significant strides in the second half of the 20th century, and the invention of electronic devices like integrated circuits and transistors played a crucial role in this progress. Integrated circuits allowed for the miniaturization of electronic components and made it possible to pack more functionality into smaller spaces. This led to the development of smaller and more powerful electronic devices such as personal computers, smartphones, and other portable devices. Transistors, on the other hand, replaced bulky vacuum tubes and allowed for the creation of smaller and more efficient electronic devices. This technology enabled the development of automated machines used in production processes, leading to greater accuracy, speed, and efficiency. These advancements in electronics have revolutionized the manufacturing industry, allowing for greater productivity and cost savings. However, they have also raised

concerns about the potential loss of jobs due to automation (McDonough and Braungart, 2017).

1.4. **Industry 4.0**

The first developments of Industry 4.0 began in the 1990s, following advances in the telecommunications and internet industry. This concept, called Industry 4.0, the Fourth Industrial Revolution or the Fourth Industrial Revolution, was used for the first time at the Hannover Fair held in Germany in 2011. The report prepared by a working group formed by Robert Bosch Gmbh and Henning Kagermann companies in 2013 was also presented at the Hannover Fair. This issue, which first came to the agenda in Germany and thus attracted the attention of the whole world, announces that there will be revolutionary changes in the production sector. In addition, adapting to Industry 4.0 is the most important strategy that companies will develop in order to keep up with global changes and to excel in fierce competition wars (Xu et al., 2018).

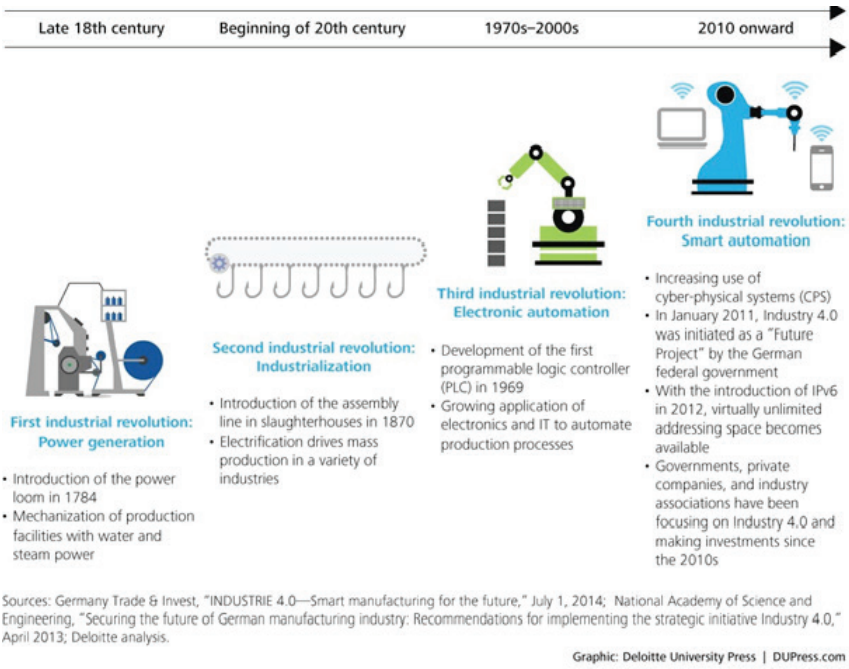

Figure 2: *Industrial Evolution with Key Development*

Source: https://www.dosupply.com/tech/2018/10/22/industry-4-0-and-the-future-of-jobs/

The Industrial Revolution 4.0, also known as Industry 4.0, is a new era of industrial manufacturing that emphasizes the integration of advanced technologies, such as the Industrial Internet of Things (IIoT), cloud computing, big data, artificial intelligence, and machine learning. IIoT is a key

component of Industry 4.0, which enables smart machines to communicate with each other and with humans, providing real-time data analysis, predictive maintenance, and decision-making capabilities (Sherwani et al., 2020).

The IIoT has four core elements as you mentioned (Rymarczyk, 2020).:

- Cloud computing and big data: Cloud computing allows businesses to store and access data and applications over the internet instead of local servers or computers. Big data refers to the large amounts of data generated by various sources, such as machines, sensors, and humans, that can be analyzed to extract insights and drive decision-making.

- Cyber-physical systems: Cyber-physical systems (CPS) are physical systems that are integrated with computing and communication technologies, such as sensors, actuators, and controllers. CPS enables real-time monitoring and control of industrial processes, allowing for increased efficiency and productivity.

- Machine learning and artificial intelligence: Machine learning and artificial intelligence (AI) are technologies that enable machines to learn from data and make decisions based on that learning. These technologies can be applied to industrial processes to optimize production, improve quality, and reduce costs.

- Internet of Things (IoT): The Internet of Things (IoT) refers to the network of physical devices, such as sensors, actuators, and other connected devices, that are embedded with software, sensors, and connectivity to exchange data with other devices over the internet. The IIoT refers specifically to the use of IoT in industrial applications, such as manufacturing, logistics, and supply chain management.

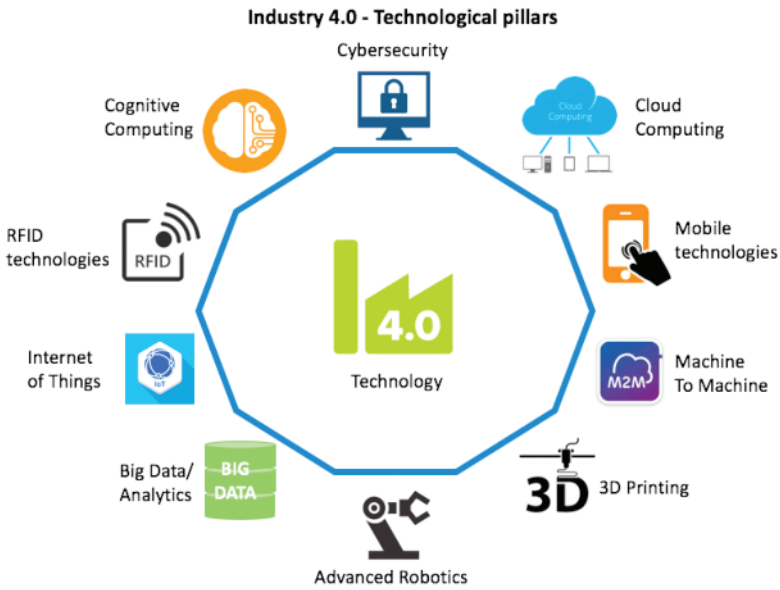

Figure 2: *Technological Pillars of Industry 4.0*

1.4.1. Industry 4.0: Key Features and Related Concepts

There are many different technologies that Industry 4.0 is associated with. Table 1 presents the key features of Industry 4.0 (Stăncioiu, 2017).

Table 1: Industry 4.0: Key Features

Industry 4.0 Features	General abilities of an Industry 4.0 production system
Interconnection	• The whole production system is interconnected • Systems are self-supported, diagnosed, and adjusted • Real-time flow of data over the supply chain
Integration	• Vertical: all departments act as one unit • Horizontal: from customer end to supplier start, everyone is connected and aware of the production chain • End-to-end: decentralized processes, real time access to information and control
Big-Data	• Forecasting and future prediction of market demand • Analysis of historical data to understand future expectations and challenges • Smart, data driven, and evidence decision support systems

Industry 4.0 is related to big data, cloud computing and artificial intelligence technologies, are explained in detail below (Popkova et al., 2019):

- Big data analytics plays an important role in many sectors today and has great potential in Industry 4.0, especially in production processes. Analysis of sensor data from production machines can help prevent machine breakdowns, which can keep production processes running smoothly, increasing production efficiency. In addition, thanks to big data analytics, manufacturers can identify critical points in their production processes and make improvements in their production processes. In addition, real-time data analysis and innovative solutions such as self-service systems, maintenance optimization and production management automation make it possible to manage production processes more effectively and take faster decisions. Big data analytics is also used in many sectors such as marketing, finance and health. Thanks to big data analytics in these sectors, valuable information can be obtained in many areas such as consumer behavior, market trends, disease diagnoses, and better decisions can be made by using this information correctly (Kenett et al., 2019).

- Cloud computing is defined as the use of hardware and software to provide services over the internet. These services are usually hosted on servers and made accessible to users via the internet. Smartphones are a common example of cloud computing. Phones can be connected to cloud computing services with an internet connection as well as processing power, storage and other resources. For example, users can access email service providers such as Gmail or Outlook over an internet connection and store messages on cloud servers. Photos and videos are another example of cloud computing. Some smartphones may not provide enough room to store high-quality photos and videos. Therefore, users can store these files in cloud computing services. Cloud computing forms the basis of Industry 4.0 technologies. These technologies include automation of production processes, data analysis and the use of other innovative technologies. Cloud computing provides a secure and scalable platform that can be used for storage and analysis of production data. Cloud computing forms the basis of Industry 4.0 technologies (Ooi et al., 2018). Industry 4.0 highlights the importance of cloud computing for collaborative supply chains. Cloud computing can provide benefits in a company's supply chain management in a number of ways. For example, cloud computing can help companies gain more control over their supply chains by providing a platform for the collection, analysis and sharing of supply chain data. Cloud computing is also a vital infrastructure for other technologies in Industry 4.0 (Khan et al., 2021). The use of technologies such as advanced robotics and machine learning is increasing, especially in sectors such as the manufacturing and automotive sectors. These technologies are used for automated production and logistics systems such as assembly lines and autonomous vehicles, increasing the efficiency of these systems. Cloud computing provides an

opportunity to unlock the potential of disruptive technologies for supply chain management, as it enables the rapid processing and analysis of supply chain data. In addition, cloud computing provides a secure environment for storing and sharing data (Kim, 2017).

- Artificial intelligence (AI) technology provides the capabilities of software and machines to sense, comprehend, act on, and learn from human operations. These technologies can be used to provide more efficient and smarter production in industrial production systems. AI can be used in many areas in industrial production systems. For example, robots used to increase productivity can be equipped with artificial intelligence technologies. In this way, robots become smarter and have learning abilities. This enables them to work more quickly, accurately and efficiently in the production process. In addition, artificial intelligence technology can be used to detect and fix errors in the production process earlier. In this way, the error rate in the production process can be reduced and production costs can be reduced (Lee et al., 2018). AI technologies can also collect and analyze data from the industrial production process and extract useful insights from this data.This data can be used for improvements in the manufacturing process. In addition, technologies such as artificial intelligence and machine learning can be used to detect and prevent defects in production lines and quality control. Thanks to these technologies, production errors and quality problems are detected and corrected in advance and production costs are reduced. For example, using image processing techniques, the quality of products can be checked and faulty products can be rejected automatically. In addition to these, big data analysis, another important component of Industry 4.0, can be combined with artificial intelligence and machine learning technologies to increase and accelerate the efficiency of the production process. Big data analytics can also be used to optimize stock levels and lead times used in supply chain management. As a result, AI and machine learning technologies are an essential tool for manufacturers looking to capitalize on the opportunities of Industry 4.0. These technologies can be used at every stage of the production process, increasing efficiency, reducing costs and improving quality. However, it is necessary to establish the appropriate infrastructure and train the employees for the use of these technologies (Dopico et al., 2016).

1.5. Industry 4.0 Advantages and Disadvantages

Industry 4.0 offers both many benefits and some potential harms compared to previous industrial revolutions (Gokalp et al., 2016; Zheng et al, 2018). The benefits of Industry 4.0 are (Vinodh et al., 2021):

- More efficient production processes: Thanks to Industry 4.0 tech-

nologies, production processes can be made more efficient. This reduces production costs and increases production speed.

- Increased automation: Industry 4.0 technologies allow the use of more automation and robotics. This reduces labor costs and helps workers get rid of demanding, dangerous and repetitive work.

- Better quality control: Thanks to Industry 4.0 technologies, product quality can be better controlled and errors can be detected in advance. This improves product quality and reduces recall costs.

- Supply chain efficiency: Thanks to Industry 4.0 technologies, the supply chain can be made more efficient. This can reduce inventory management, lead time and logistics costs.

However, Industry 4.0 technologies also have potential disadvantages (Zaidin et al., 2018):

- Unemployment: Industry 4.0 technologies can reduce labor demand as the use of automation and robotics increases. This can cause some jobs to be lost and increase unemployment rates.

- Privacy: Industry 4.0 technologies may raise privacy concerns as they have the ability to collect and analyze more data.

- Cybersecurity: Industry 4.0 technologies may become more vulnerable to cyber attacks as networked devices increase. This requires businesses to take cybersecurity measures.

- Technological dependency: Industry 4.0 technologies can increase the technological dependency of businesses. This can become challenging for small businesses that do not have the resources to adopt new technologies.

1.6. Turkey's Position in the Industry 4.0 Process

The development of the concept of Industry 4.0 reveals that the increased production speed and quality with globalization are not enough to provide competition alone. Those who offer products and services in line with the wishes of their customers will emerge victorious from this technological war. Apple's removal of the old world technology giant Nokia is a good example of this situation. Determining what customers want is possible with detailed data analysis. Although the Internet's penetration into human life makes it difficult to filter the accumulated information, those who analyze this process in the best way will be among the winners in the future.

The Fourth Industrial Revolution is an important issue that fuels competition between countries. The leading countries in the production and

use of robots, such as China, where the number of people is high and the labor force is cheap, and which has started the transition to the smart factory system, will be victorious in this competition. The rapid rise of Huawei, a Chinese company with a short history of 35 years and ahead of world giants, in the technology market forces deep-rooted companies such as Ericson and Cisco to review their strategies.

Turkey has been increasing its efforts to keep up with the digitalization and automation trends brought by Industry 4.0 in recent years. These efforts aim to help Turkey achieve greater efficiency, quality, speed and flexibility in its production processes (Özlü, 2017). The following topics can give information about Turkey's Industry 4.0 development (Arucu, 2020; Tecim and Tarhan, 2020; Salğar and Dereli, 2018; Atak, 2018):

• *Digital Transformation Strategy*: Turkey adopted the Digital Transformation Strategy in 2017. This strategy aims to accelerate Turkey's transition to the digital economy, develop its digital competencies and facilitate the transition to Industry 4.0.

• *New Generation Industrial Move Program*: Turkey launched the New Generation Industrial Move Program in 2018. This program aims to make Turkey more competitive in the industrial sector by using Industry 4.0 technologies.

• *Test and Application Centers*: Turkey has established a number of centers for testing and implementation of Industry 4.0 technologies. These centers include Bursa Technology Coordination and Innovation Center (BTM), Gebze Technology Institute (GTE) and Istanbul Chamber of Industry Industry 4.0 Center.

• *Smart Factories:* Turkey works for the development and dissemination of smart factories. These factories aim to optimize production processes using sensors, robots, artificial intelligence and other Industry 4.0 technologies.

• *Workforce Competencies*: Turkey focuses on the development of workforce competencies required for the use of Industry 4.0 technologies. For this purpose, various training and competence development programs are implemented.

• *Public-Private Cooperation*: Turkey attaches importance to cooperation between the public and private sectors for the dissemination of Industry 4.0 technologies. This cooperation aims to provide the necessary resources to promote the use of Industry 4.0 technologies and accelerate the dissemination of these technologies.

CONCLUSION

Industry 4.0 is an industrial revolution characterized by the intensive use of digitalization and automation technologies in production processes. This revolution is creating significant changes in the manufacturing industry and is expected to have a major impact on how production processes will be shaped in the future. Key features of Industry 4.0 include the internet of things (IoT), big data analytics, artificial intelligence, automated manufacturing and smart factories. These technologies provide higher efficiency, lower costs, fewer errors and higher quality in production processes. Also, the use of these technologies can automate repetitive work to enable people to do more creative and challenging work. The advantages of Industry 4.0 include making production processes more flexible, faster production, better management of the supply chain and more environmentally friendly production. These technologies also enable manufacturers to build closer relationships with customers, personalize products and better meet consumer needs. However, the implementation of Industry 4.0 also faces some challenges. These challenges include high costs, complexity of technology, security risks, workforce training and regulations. Also, the use of these technologies can cause some jobs to become too automated to be done by humans, causing people to lose their jobs. Industry 4.0 is an industrial revolution characterized by the intensive use of digitalization and automation technologies in production processes. This revolution is creating significant changes in the manufacturing industry and is expected to have a major impact on how production processes will be shaped in the future. Key features of Industry 4.0 include the internet of things (IoT), big data analytics, artificial intelligence, automated manufacturing and smart factories. These technologies provide higher efficiency, lower costs, fewer errors and higher quality in production processes. Also, the use of these technologies can automate repetitive work to enable people to do more creative and challenging work. The advantages of Industry 4.0 include making production processes more flexible, faster production, better management of the supply chain and more environmentally friendly production. These technologies also enable manufacturers to build closer relationships with customers, personalize products and better meet consumer needs. However, the implementation of Industry 4.0 also faces some challenges. These challenges include high costs, complexity of technology, security risks, workforce training and regulations. Also, the use of these technologies faces some challenges as some jobs become too automated to be done by humans. These challenges include high costs, complexity of technology, security risks, workforce training and regulations. Also, the use of these technologies can cause people to lose their jobs.

In conclusion, Industry 4.0 is a major revolution in the manufacturing industry and will shape production processes in the future. The use of these technologies will bring many advantages to manufacturers, but will also create some difficulties. Therefore, the implementation of Industry 4.0 must be carefully planned and implemented.

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CHAPTER 5

IS A COMMON EUROPEAN IDENTITY POSSIBLE IN THE EUROPEAN UNION?

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1. Introduction

Europeanness identity, the idea of "identity", which forms the foundation for the concept of citizenship, has also been subjected to many debates. The same debate has been made on the Europeanness identity and EU citizenship. Considering the treaties and agreements, youth, and education programs, even the production of common symbols and the effort to establish a media, it is understood that an attempt is being made to create a "Europeanness identity" within the EU. Nowadays, it is seen that there are multiple identities, such as multiple citizenships. In other words, multiple identities can be owned and used simultaneously under the circumstances. However, another polemic is focused on which of the national identities and the upper identity of Europeanness is the priority (Çilingir, 2007, pp.44-52). According to Diez, although there is a "Europe", many are European. Emphasizing Benedict Enderson's Imaginary Communities, Diez forms the basis of today's debates on Europeanness and identity, the question of a nation, that is, nation or Europe (Diez, 2004, p.494).

Contrary to the geopolitical conditions in the 1950s. On the one hand, the EU identity is based on the Union's ideas. On the other hand, the national identity understanding, which highlights the national identities of the nation, greatly impacted the conditions that led to the emergence of concepts such as Europe and Europeanness, as Smith speaks of (Smith, 1992, p.60).

The EU's effort to create a unique identity for political integration is mainly due to the problem of legitimacy. In this sense, it can be said that the Europeanness identity is a framework to be established for the Union to take a more democratic and legitimate base. In addition, it would be a good point and appropriate to add the decisions regarding the Union and citizenship included in the founding treaties since the Maastricht Treaty (1992) was concluded. The efforts to support the democratization of the developing candidate countries since the 1980s (Kaya, 2017, p.27). Continental Europe had been defined for many years by its history, geography, and various cultural characteristics. The identity of Europeanness had represented modernization before the EU was established. After the 1950s, it was reshaped and further strengthened by the integration process within the EU II. However, after the second World war, the idea of the EU, a civilization and culture project based on the rule of law and humanism, was seen by many as a myth. However, with the treaties concluded between various European states, this project turned into an international and intercultural integration study in which shared values were formed and shaped (Mayer and Palmovski, 2004, p.575).

Being on course for Europeanness as activism can be expressed as Europeanization. It is seen that this concept was also used for meanings such as democratization and Westernization (Buhari, 2009, p.120). It is observed that the concept of Europeanization, in addition to modernization, also refers to the change in the political and economic structures of the member and candidate countries (Yazgan, 2012, p.134). In its narrow sense, Europeanization means embracing and implementing the EU constitution and policies. In this context, the Union pressures political issues, party systems, local authorities, refugee policies and citizenship issues.

Since the definition of Europeanization in a broad sense also affects identities, the process shapes the political arrangements and the cultural and social structure. Within this scope, the changes experienced with embracing common symbols and values are called Europeanization in action. The political and cultural partnership also leads to the discussion of cultural and natural boundaries from time to time. Based on these definitions, it can be said that the identity of Europeanness states both a partnership in the field of history, geography, and culture, as well as a constitutional, institutional and legal union. It is seen that there is a relationship based on mutual interests between "the EU and the candidate countries". It is observed that the candidate countries and societies in the Europeanization effort look at this process from the point of view of their interests.

"Europeanization" can be defined as the internalization of European understanding, values, norms and policies of the state and citizens through socialization and shared learning to have new identities. For this reason, candidate countries and societies redefine their interests and, accordingly, their identities. It can be said that Europeanization is a situation preferred by member/candidate states in parallel with the benefits of the integration movement. Because the integration movement, which began with the customs union and extended to the economic monetary Union, requires new regulations introduced by standard policies. Thus, member states offer practical cooperation and cost advantages on issues they cannot cope with independently.

For this reason, it is observed that the EU and the candidate countries want Europeanization (Yazgan, 2013, p.135). It can be said that member states are also experiencing a process of Europeanization due to democratization and adaptation to the free market economy (Locksmith, 1974, p.45). It is observed that the issues of Europe and Europeanness that make up the content of Europeanization are a dynamic process that is still being experienced. In other words, it can be said that the citizens of the member states are still in the process of Europeanization.

2. What is Identity?

The fact that it is a multidimensional concept and that this multidimensionality requires interdisciplinary work has made the concept of identity one of the most complex and controversial concepts of social sciences (Türkbağ, 2003, p.205). More comprehensively, identity can also be defined as a social phenomenon and a system of relationships that take shape through interaction between one (İnanç, 2005, p.15). The concept of identity plays an essential role in individual lives and the life of societies. The concept of identity plays a vital role in connecting the individuals that build the society (Tekin, 2009, p.146). As it can be understood from the definition, the most basic function of identity is to distinguish an individual or a group from other individuals or groups. For this purpose, it determines the elements of the individual or group that are unique to it.

On the other hand, it also reveals the points where it is separated from others. In this regard, identity includes two concepts: a) me/us and b) the other(s). These two concepts are complementary concepts from the point of identity and are the two main constituent elements of the concept of identity. While the individual or group members reveal their common characteristics, on the other hand, they list the issues that distinguish them from the "other(s)". Therefore, identity consists of the sum of the similarities between those who have this identity and the points (differences) where they differ from 'others' (Douven and Decock, 2010, p.60). At this point, the third element that comes into play is that there is a consciousness that identity exists. This element, also called subjective consciousness, is seen not only as a complement to objective elements such as similarities and differences that make up identity but also as a natural result of these objective elements (Yurdusev, 1997, p.27). In other words, the emergence of the element of consciousness is due to the existence of objective elements. The fact that people have a shared sense of identity indicates that they share something in common, according to another opinion that emphasizes the importance of the element of consciousness, a belief that objective elements' existence will be sufficient to form an identity, although they do not exist. (Wintle, 1996, pp.5-6). In other words, the non-formation of identity consciousness will prevent identity formation. This psychological element appears as an ideology in politically organized communities such as ethnicity and nation (Douven and Decock, 2010, p.61). The three elements discussed above (us, the other, and the elements of identity consciousness) are present in all types of identity.

The identity concept's popularity and centrality are due to its multiplicity of meanings, codes, and naming mechanisms. The multiplicity of identity codes, the multidimensionality of the mechanisms of naming individuals through identity, the different meanings imposed on identity, and

the different political discourses generated via this way make it difficult to reach a theoretical compromise on the concept of identity. On the contrary, the concept of identity plays the role of perhaps the most important strategic weapon in the battles for theoretical and political positions in the world we live in (Keyman, 2005, p.25). When examined at the epistemic level, identity is a central phenomenon that forms the cultural basis of the method and style of explanation used to understand the world. In modern times, this phenomenon manifests itself in contradictions such as East-West, modern-traditional, and scientific-traditional. Nowadays, it performs as the epistemic constituent element of discourses such as war among civilizations, enemies, terrorists, Islam as the other, and cultural globalization. At the ontological level, identity serves as a concept that helps us understand the problems that arise in the analysis of the understanding of history, time, and space, especially in non-Western and different cultures and societies. Once again, while approaching non-Western cultures and societies, the cultural characteristic, which includes several concepts such as the new world order, orientalism, third world, underdevelopment, and poverty, shows us the importance of identity in the historical development of modern international relations. Academic and public debates on the management of a democratic world, in both today and modern times, do not seem to be succeeded without addressing the phenomenon of identity while searching for a democratic and just world and attempting to establish world peace. It also cannot succeed without solving the problems of identity that we experience and without criticizing the acts of otherizing the different and establishing a democratic negotiation and mutual understanding between different identities. In this regard, the phenomenon of identity is also of central importance at the normative level (Delanty, 2004, p.56).

3. Is Europeanness Possible? Europeanness with Its Different Dimensions

Although discussions on Europeanness identity and the borders of Europe began in the 1980s and intensified in the 1990s, this problem was referenced in the context of a partnership in history, geography, and culture since the Middle Ages. For instance, the concept of "Europeanness", which was limited to the Mediterranean and Don rivers in the 2nd century AD, gained the meaning of "Christian country" in the Middle Ages (Yurdusev, 1997, p.19). The Charlemagne era and Latin Christianity, which developed during this period, shifted the boundaries of the geographical area expressed by the concept to the West. Charlemagne," the King of Europe", Pope Jean VIII was referred to as the" European Leader" (Locksmith, 1974, p.46). Contradictions between the Ottoman Empire, which had been economically superior in Central Asia and the Mediterranean region, especially since the beginning of the 15. century, and Europe, which dom-

inated Africa and the East by different routes following the path enabled by geographical discoveries, left its mark on the idea of a newly formed Europeanness. These developments led to the definition of "other" being commercial-centred, that is, economically oriented and abandoning religious centre (Poyraz and Arıkan, 2003, p.64). Just at this time, a closed common market, which was created by the newly enriched bourgeoisie class and the mercantilist accumulation process in Europe, also formed the core for nationalism within the framework of rising nation-states (Oran, 1997, pp.29-30).

In other words, as an extension of the mental map of nationalism since the 15th century, the concepts of a foreigner or other found a response in the mentality of communities. Of course, the other in question receives different names depending on the dose and direction of the implicit threat. For example, Muslim and Turkish, Islam and Turkish religion, or *'religio Turcia'* were synonymous in Central Europe until the Age of Enlightenment" (Aydın, 1998, p.35). Of course, the intellectual foundations on which the European identity was nurtured were important reference point in the shaping of the other mentioned above. For instance, in Hegel's notion, Europe, which he called the Christian-Germanic world, is where history will end, and Europeans are the main subject of history. According to Hegel, universal history moves from the East to the West. Europe is the endpoint of universal history; on the other hand, Asia is the beginning point. Almost every philosopher interested in cultures other than Europe during the Enlightenment could compare European civilization and other "backward" cultures, resulting in Western superiority. Of course, this superiority of Western notions was reflected in the institutions and practices of the West. One of the theorists who made this distinction the most acute is undoubtedly Montesquieu. According to Montesquieu, using climatic conditions as a base, tropical climates cannot provide a suitable environment for democracy and the growth of individual rights and freedoms (Mukherjee and Ramaswamy, 2011, p.468).

Similarly, John Stuart Mill, especially in his articles titled *On Liberty* and *Considerations on Representative Government*, saw the despotic colonialism of the West as the essential tool to civilize the people of the East (Mill, 1998, pp.240-247). About 100 years later, which falls in the 1930s, Edmund Husserl argued that the crisis Europe had at that time was purely philosophical and reminded us of the universality of Western philosophy and rationality (Husserl, 1970, pp.1-5). In his speech at the Vienna Cultural Society in 1935, the limits of this universality and Europe were apparent:

> *"At the moment, we are asking ourselves: what are the features of the European soul? In other words, we do not distinguish Europe geographically but by the characteristics of the people living in these lands. In a spiritual sense,*

> *while lands such as the British colonies and the USA belong to Europe, the Eskimos, Indians, or Gypsies who attract attention at fairs and constantly travel across Europe are not European. The concept of 'Europe' corresponds to the integrity of spiritual life, activities, creativity, interests, and the meaningful institutions and organizations created by this integrity"* (Locksmith, 1974, p.273).

This Europecenteric narrative, which was the main subject of the debates about the Europeanness identity until the 1980s, has been strictly criticized by many philosophers/thinkers inspired by post-colonial theory since the 1990s. In this context, it can be argued that Turkey, faced with the normative power of the EU and the economic and military superiority of the West in general, also finds itself in a semi-postcolonial situation. Nevertheless, this dual contradiction between the superior West and the irrational and undeveloped East created by the Eurocentric perspective has deciphered the identity of Europeanness since the Middle Ages (Morozov and Rumelili, 2012, p.30).

By the 1950s, the debris left by the Second World War changed "Europeanness", which had been used to separate West and East culturally and geographically for centuries, into a project that had its raison d'être from reviving a continent that was just out of a war and from preventing countries in the continent from wringing each other's neck forever. The concept of "Europeanness" was reformed in the 1920s and 1930s under the roof of a united ideal Europe (*pan-Europeanism*) under the leadership of anti-war political figures such as Paul-Henri Spaak and Jean Luchaire. The concept preserved its anti-war spirit after the Second World War and added an essential component to its raison d'être: It aimed to keep Germany's unbridled economic rise under control and turn the "German problem", which primarily France suffered from, into a "European problem". The Schuman Declaration, May 9th 1950, the European Coal-Steel Union (ECSC) established in 1952, and the Treaty of Rome in 1957, considered the founding treaty of the European Union, constitute important milestones in achieving these basic goals through an elitist European organization.

Looking over the issue from an economic perspective, after the 1960s, when constituent policies of the EU, such as the Common Agricultural Policy (1962) and the Customs Union (1968), participated in the Union, "Europeanness" was introduced as a remedy for the political and economic crisis of the 1970s. The economic crisis that began with the collapse of the Bretton Woods System in 1971, the Vietnam War, and the 1973 Oil Crisis all had the potential to snowball into an identity crisis for Europe if it hadn't been for the fundamental idea of "European Identity", which was presented for the initial time at The Copenhagen Summit Conference in Copenhagen, Denmark in December 1973. The fall of the Bretton Woods

System was the impetus for the building of this wall. Instead of technical concepts such as a Customs Union or parity, it emerged as a more robust project to connect Europeans and consolidate the continent's place in the international arena with more "exciting" concepts such as belongingness and identity. What 1977 Mc. Dougall Report, submitted to the European Commission, proposed to overcome the crisis and Keynesian Economic Model to be implemented throughout Europe. This model's need for a group that is connected and in constant solidarity with each other also led up to this project (Stråth, 2002, p.5). The 1980s and especially the first half of the 1980s are remembered as a period when the European Union stumbled economically and therefore the ideal of a Single Market under the leadership of the Delors commission and, of course, Jacques Delors began to be practised. In this period, as Gill had mentioned before, the ideal market that could stand up to the neo-liberal competition led by the USA and that could enable the free movement of goods, services, capitals, and people radically changed the economic understanding of the European Union (Gill, 2003, p.3). The idea of transition to the single market envisaged in the Single European Act (1986). The concept of "regional development", which was very popular in the 1980s, put the issue of European identity in an economic context. The constituent elements uniting European regional and local politicians, employers, trade unions and other organizations became "lobbying in Brussels together" (Stråth, 2002, p.390).

When we look at the issue of Europeanness as a means of rapprochement and modernization, we could speak of a different Europeanness fantasy. The structure, which evolved from the Europe Community to the European Union and gained a three-pillar structure with the Maastricht Treaty signed in 1992, started questioning the concepts such as European citizenship and democracy. It had the purpose of changing the state of being "economically a giant but politically a dwarf", from which it suffered until that day. The "closer Union" discourse mentioned in the Constituent Treaty of Rome (*ever closer Union*) although it reflected the aspiration of a federative structure that would one day almost evolve into the United States for Jean Monnet and other Union founders in the 1950s, by the 1990s it reflected the Union's goal to become a more political nature and closer to its citizens. In other words, Europe is no longer just an institution that interferes with many areas, from the size of vegetables sold in the market to the issuance of identity cards, but also appears as a whole of values and an area of belonging. It can be argued that another distinctive feature of the fantasy of Europeanness in the 1990s was that these values and the perception of identity ensured effectiveness in the field of foreign policy as well as within the continent. In particular, during the process where Eastern Enlargement was on the axis of normative concepts such as democracy and modernization instead

of objectively determined interests, and Europe acted as a "modernization anchor" for candidate countries (Inotai, 1997, p.15), the most used concepts by Central and Eastern European Countries came off "return to Europe" and "the continents back together". The statement of François Mitterrand, who was the leader of the French Socialist Party in 1980, "What we call Europe today may be the second-best option that does not reflect all European history, geography and culture", should be perused in the light of this identity emphasis in the Eastern Enlargement (Haywood, 1993, pp.269-275). Another fundamental reason the Europeanness identity was a more important agenda topic in the 1990s than in the past is the democratic legitimacy problem. Which was not very important for a structure like the European Community (EC), was a significant problem for a system that claimed to be Peoples' Europe like the EU (Kaina and Karolewski, 2013, p.6). During this period, the close relationship between European integration and public opinion emerged as a more important variable than ever (Diez, 2005, p.496). The question of how democratic the EU institutions are and how they can represent the Europeans is at the centre of this debate. The emotional and cognitive indifference of the people to the EC was not a problem as there was a "permissive compromise" shown to the Community, and the elites were able to organize European unification. However, after the establishment of the EU, the people of Europe began to question whether there were *demos* to discuss democracy in Europe and what decisions were made behind closed doors in Brussels. Since the beginning of the 1990s, public support for the European project decreased, and the compromise became a "restrictive dispute" over time, leading to the conclusion that more was needed to keep those people together. According to Shore, the more people in Europe identify themselves with the Community and its institutions, the more the lack of authority and dignity that the Community complains about could be cleared up (Shore, 1993, pp.779-785). This can be possible with only the construction of collective identity and a supranational political myth above national identities and has its symbols. Those developments in Europe in those years also coincided with the "identity" debates and agenda that occupied the global agenda of the 1990s, which was mentioned earlier. As it was mentioned earlier, the most notable aspect of identity debates and conflicts that occurred in the 1990s was the fact that the notion of sense of community started to be characterized not just in aspects of ubiquitous membership, as it is in a liberal state, but also in terms of factors such as gender, color, and ethnicity. This was the most significant change that occurred during this time period. The debates and conflicts surrounding people's identities in the 1990s were marked by a number of distinctive characteristics, but this one stands out above the rest. Politics that are based on the idea of identification exhibit empathetic behavior toward other people and gain their power from the local, national, and international levels. We've replaced the fundamental

and established identity formations with an entirely new conceptual framework as a struggle and practice within the context of a broader knowledge of politics. This paradigm is based on the idea that politics is a practice and a battle. It also became an "open-ended process" that shaped what was sociable and society rather than a given and ethnic concept in the 1990s in Europe (Delanty and Rumford, 2005, p.92). That is, the Europe of the 1990s and the globalizing world is a construction process produced as a result of different actors, projects, discourses, different models of society and normative ideas, and in times of disputes and disobedience (Locksmith, 1974, p.6). In this regard, the greatest role in building a supranational European identity through symbols undoubtedly fell upon the European Commission. The Commission, which acts as the engine of European integration, has been producing active policies since the early 1980s to transform the totality of the values on which the Community is based and the common cultural heritage into a concrete cultural policy. In this context, political symbols, which Hobsbawn likens to sacred icons in religious ceremonies, play an important role (Hobsbawm, 2012, p.71). For instance, the well-known twelve-star flag, borrowed from the Council of Europe in 1984 as part of a proposal made by the Adonnino Committee, began to be used in 1986. The declaration of May 9thth as Europe Day, which was assumed when the Schuman Declaration was held at the 1985 Milan Summit (1950) and Europe began to be built, can also be seen as part of the image that the Community aims to build through symbolism. Similarly, according to Sonntag, the Euro banknotes used by more than half of the member states, Beethoven's *Ode to Joy* work, which is now considered a European Anthem, and even the office of the President of the Council of Europe that was created after the Lisbon Treaty are bearers of the ideological struggle that the European Union began through symbols (Sonntag, 2010, p.1). This indeed becomes an ideological struggle with a winner, a loser, a concession, and a victory–against the Eurosceptics, or the political tendency that is concerned about the erosion of national identities. Within the framework of this struggle, the emotional aspects of Europe are questioned at almost every opportunity, as in the context of the event that the twelve-star flag covering headings of all European newspapers on the 50th anniversary of the Treaty of Rome in March 2007, was quietly removed from the Treaty of Lisbon just three months later, just like other European symbols (Locksmith, 1974, p.15).

4. Formation of Europeanness Identity

In the EU, it is not enough to constantly make new treaties or revise existing treaties in line with the need for greater integration that is, deepening, in direct proportion to the increase in the number of members. The EU, which collectively carries out the processes of enlargement and deepening, has accepted the existing theories that the economic integra-

tion process has had success and will also contribute to political integration. According to Haas, one of the theorists of Neo-functionalism that is among the theories mentioned above, economic integration was expressed by Mitrany's branching theory of "spill over". According to the branching theory, the advantage obtained in an area will lead to similar advantages in other areas, and integration will be reflected in the next stage. For example, an economically integrated Europe will show the same development politically (Ari, 2008, p.444). However, because the member states did not compromise on nationalism, that is, on their own identity, political integration could not occur. The most important indicator of this is that citizens of EU member states do not feel European because they are in the EU (Gürkaynak, 2012, pp.450-451).

It is not enough for the EU that only the heads of state and governments of member states want political integration; it is essential for political integration that citizens also feel European under the roof of the EU. For this reason, the need for a "Constitution" was felt in line with the identity that wanted to be created on the way to political integration. The intergovernmental policies of the nation-states formed the EU among themselves in the process it went through until it put forward the concept of "Constitution". According to Yanıkdağ (2010, 117), the creation of the Union was carried out in a way that mirrored the wishes of each of the different republics. In contrast to the creation of treaties or accords that governed the relationship between different levels of government, the process at hand when the idea of a constitution was first discussed was not simply equivalent to that of a treaty or accord. Rather, the creation of a constitution was a distinct and unique process from that of a treaty or accord. The people of this nation came together to create this constitution so that their shared sense of identity may be mirrored in their interactions with one another (Selcuk, 2004, pp.59-61). In 2004, the leaders of state and government of the countries that make up the European Union signed a treaty that established a constitution for Europe (TCE). It was mandated that referendums be held so that individuals of member countries could have their voice heard on the issue. The "no" votes cast in France and the Netherlands caused the postponement of the scheduled referendums in those countries; as a result, both France and the Netherlands have now canceled their own referendums (Yanıkdağ, 2010, 130). Consequently, the "TCE" did not reach any fruition, and the "EU Constitution" was not approved. The rejection of the TCE showed that the people of Europe disagreed with the member states. Among the most constituent elements of political integration is to enable the citizens of EU member states to call themselves "European" rather than any other country identity by reducing the influence of nation-states. In addition, there is a sense of otherizing people who

are not citizens of EU member states. Because when you look at the definition of the concept of identity, it is essential to have distinctive features that differ from other people or groups. As seen from this definition, it is also a fact that it creates a perception of the "other" consisting of differences. The most dominant elements that form the cornerstones of the "European" identity that the EU wants to create can be listed as geographical location, religion and culture. First, if we are to talk about the geographical location from this point of view, the place mentioned as European territory is currently associated with the EU. Along with the number of countries that want to become members, the definition of Europe is also given within the EU's enlargement strategy (Özdemir, 2007, pp.94-105).

As stated in the EU Treaty, every country that feels to be European will also be prevented from trying to become a member of the EU (Gürkaynak, 2012, p.451). However, the fact that the EU has accepted the membership of the Central and Eastern European (CEE) countries also shows the importance of being geographically located on the European continent. However, although the geographical location positively affects the countries that have adopted the concept of "Europe" in front of their name, there is also a perception of a European that was put forward in terms of culture and religion. The most significant example of this situation in Turkey. Although Turkey's territory in Europe has been accepted, Turkey is not European from the viewpoint of the EU. The reason for this situation is that the religious element is to be the dominant identity determinant in Europe for centuries (Özdemir, 2007, 133). In this respect, the perception of "we" formed by the European identity, in this case, makes the CEE countries for the EU as "one of us" and otherizes Turkey as "them". In this case, the result is that the identity the EU is trying to create is inclusive for some countries while being exclusionary for some countries in terms of protecting its essence. While it is inclusive that the EU will accept membership after the fulfilment of the conditions such as the recognition of the rule of law, human rights, and democracy presented in the process of identity construction, the fact that geographically Europeanness has become a condition is an otherizing term (Rumelili, 2007-2008, p.53). In the process of building an EU identity, the September 11th syndrome is another problem that comes up as an othering situation. As a result of this terrorist attack on the United States on September 11thth, an "identity" perceived as an "enemy" by the United States was created. This identity is the religious and national identity of the terrorists believed to have carried out the attacks.

On the other hand, religious and national identities are the strongest determinants of identity (Kinvall, 2004, p.745). In the period after September 11thth, an attempt was made to form perception, especially against

countries with an "Islamic identity". In this case, countries with an "Islamic identity" are "otherized" for the United States. President Bush built an anti-Islamic identity by saying, either you are with us, or you are on the other side." This perception that was built on the international system affects the entire system. As the European Monitoring Center for Racism and Xenophobia (EUMC) stated in its report entitled "Muslims in the European Union: Discrimination and Islamophobia", Muslims living in Europe are exposed to discrimination as a minority and are excluded from rights such as housing, work, education just because of their religious or ethnic identity. Incidents of Islamophobia are observed with verbal or physical threats. The report states that exclusionary and xenophobic attitudes and behaviors towards Muslims should be seriously addressed. It is also stated in the same report that this situation has seriously put EU integration in trouble (European Monitoring Center for Racism and Xenophobia, 2006).

5. Conclusion

Unity and integrity cannot be fully internalized due to the exclusion or discrimination of other people or groups that do not have common characteristics. As a result, an identity of Europeanness is desired to be created and to create this identity. It is necessary to prioritize the dominant standard features. Another determinant of the perception of identity that the EU is building is that the countries in the Union are Christian. Considering that the concept of identity reveals "distinctive" features, it is known that an EU citizen who describes himself as a European person or people of different religions will naturally be otherized. However, Muslims have often been otherized (Michaels and Stevick, 2009, p.227). In this case, it seems that the exclusionary and otherizing aspect of the identity of Europeanness is more dominant than the inclusive aspect. Because the perception created for citizens to describe themselves as European means that people defined as "other" are excluded, discriminated against in the EU and otherized because of the group they belong to. Although it is constructed based on different ethnic and religious groups, "the other" brings the practices of discrimination and exclusion with itself, which in essence stems from hatred (İnanç and Çetin, 2011, p.5). This situation contradicts both the distinctive meaning of the concept of identity hidden within itself and the aspect of the EU that protects fundamental rights and prohibits discrimination as its results are exclusionary, discriminatory, and otherizing.

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CHAPTER 6

DIGITAL ACTIVISM AND HASHTAG FEMINISM

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Pointing out a solid and tangible acquisition of 'one' online movement in offline life, "Most say that, compared with five years ago, those who commit sexual harassment or assault at work are more likely to be held responsible and those who report it are more likely to be believed," says Anna Brown (2022) from Pew Research Center, referring the recently conducted research about Americans' thoughts regarding the #MeToo movement, which is almost a symbol of all feminist hashtag movements. With the rise of digital technologies and social media platforms, feminists have increasingly utilized these tools to connect, communicate, and mobilize against prevalent issues such as sexism, misogyny, and rape culture. Consequently, scholars have taken notice of the emergence and impact of digital feminist movements. In fact, it has taken a decisive and/or worthy to discuss the position in the midst of scholarly debates such as whether we have come to fourth-wave feminism or not and how we should name this shift in feminism. The movements such as #MeToo, #BeenRapedNeverReported, and The Everyday Sexism Project have become symbols and indicators of digital feminist activism for scholars in terms of their massiveness, widespread reach, transnational appeal, and their controversial features within feminism. With the effect of these features, the Journal of Feminist Family Therapy and the Women's Studies in Communication had their special issues on #MeToo in 2019, and the Review of Communication published a Themed Issue: Transnational Dimensions in Digital Activism and Protest dominantly composed of #MeToo studies.

In this chapter, we aim to portray the conversation around the #MeToo movement, in the scope of the Communication field. We can learn a lot about the possibilities for researching digital feminisms by taking up #MeToo as a case study because #MeToo exhibits a fair range of current approaches to exploring digital feminism. While researching this conversation allows us to make observations specific to both feminist discourse and context, and the characteristics of the #MeToo movement itself, recognizing that #MeToo is one of the many movements in feminism, which again we can count as one of the many democratic struggles that have found new life and new tactics through digital and social media, it has some common traits with other movements carried out in the digital environment. Hence, in this chapter, we argue that the impact of digital technologies on feminist activism should not be considered in isolation from both digital activism and the wider digital media ecology. Therefore, this chapter touches on some features that digital feminist activism and digital activism more broadly share due to the use of the same medium, however, the scope of the conversation examined here is limited to the #MeToo movement, rather than focusing specifically on any other online activism cases.

Since feminist hashtag activism is a part of the broad democracy struggles carried out in the digital environment and benefits from the same medium, it is useful to keep our perspective wide and negotiate what digital media offers to activism first. This perspective is also reflected in scholarly conversation about #MeToo.

DIGITAL MEDIA AND ACTIVISM: AFFORDANCES AND CONSTRAINTS

The entry of digital media into our lives has opened a new page for activists as well as affected all kinds of collective and individual actions in society. This new era, namely digital activism allowed activists and counter-publics to use digital media (mostly in addition to the traditional media) as key platforms for raising their voice in the public sphere, influencing the political and meaning-making process, mass mobilization, and political action. Rather than a sharp closure of mainstream media, as Treré states (2018), contemporary activists and counter-publics make use of a hybrid ecology. Castells suggests that social media is a powerful tool that enables anyone or any self-created network to have their voices heard and disseminate their views (Castells, 2015). This stands in contrast to Chomsky and Herman's conception of traditional mass media as a system of filters controlled by the powerful that restrict the ideas and perspectives available to the public (1988). The main difference that the digital environment offers activists is the possibility of creating user-generated content. In this way, individuals take control of digital platforms and distribute power and production among users, including activists themselves (Castells, 2012).

The undeniable fact that the emergence of cyberspace has created an arena for activism that encompasses important new elements has brought with it a host of affordances and constraints. Since these affordances and constraints are neither independent from each other nor their boundaries perfectly clear, it is a hard task to peruse them under separate headings. As a consequence of every single affordance opens up a constraint from a different perspective, this chapter will deal with both negative and positive aspects in the same or consecutive paragraphs together with their oppositions.

Reflecting the ongoing discourse in political communication, movement scholarship, and media studies regarding the impact of the internet on democracy struggles, there exist two predominant instrumental perspectives: digital/techno-optimists and pessimists. Those who hold a positive view of digital technologies see them as a means for revolutionary democratization, whereas pessimists view the restructuring of power dynamics in a new arena. These perspectives center around the question of

whether digital movements can truly bring about social change, a question that has been fiercely debated in relation to various movements such as #OccupyWallStreet, #ArabSpring, #BlackLivesMatter, and #MeToo. Clark-Parsons (2019) offers a counterpoint to the optimism of scholars such as Yocha Benkler, Manuel Castell, and Clay Shirky, whom she dubs "techno-optimists," and their faith in social media's ability to democratize access to information and tools for building movements and staging protests. On the other hand, techno-pessimists argue that networked activism is ineffective, often dismissed as "slacktivism," which provides individuals with a false sense of achievement or moral superiority without actually requiring any meaningful commitment or effort, and thus, detracts from real activism. These critics also contend that networked activism is prone to surveillance and lacks the capacity to establish enduring movements. Some critics argue that slacktivism represents a form of "clicktivism," where people engage with political or social issues by merely clicking on a website, liking a post, or sharing a hashtag, without any real commitment or sacrifice (Morozov, 2010). Others argue that it represents a form of "feel-good" activism that provides individuals with a sense of moral superiority without actually doing anything to address the underlying issues (Shirky, 2011). Some activists and scholars argue that the emphasis on social media and online activism has led to a decline in more traditional forms of activism, such as protests, marches, and grassroots organizing, which may be more effective at achieving real change (Bennett & Segerberg, 2012). Some go even further, stating that digital media are not a driver of revolution (Lim, 2018, p. 103) or social change (Papacharissi, 2015). Alongside these instrumental perspectives, a third approach challenges the instrumentalist approach itself by arguing that it oversimplifies the complex nature of networked activism and fails to appreciate both its affordances and limitations. This approach recognizes and negotiates the various dimensions of digital movements with their affordances and constraints.

The nature of digital media, aka social media, offers many "new dynamics for amplifying, recording, and spreading information and social acts" (Khazraee & Novak, 2018, p. 3) as well as both structural and tactical propositions for use in activist practices. Technological affordances that the internet has, enable digital activism to be persistent, replicable, scalable, and searchable (Papacharissi, 2015). Unlike traditional activism where the presence of human bodies is crucial, the internet provides partial anonymity (Treem & Leonardi, 2013) when it is necessary. Besides, its ability to enable direct participation, cross geographic boundaries, and reach large numbers of people, is also very effective in ensuring the visibility of social movements (Kavada, 2016). The Arab Spring serves as a reminder of the powerful role that social media can play in mobilizing large-scale protests.

By utilizing hashtags in both English and Arabic, participants were able to connect with each other and spread their message across multiple countries in North Africa and the Middle East. Unlike traditional media outlets, the internet offers ordinary individuals the opportunity to communicate in real time (Cammaerts,2015), sharing raw images, emotions, and ideas without censorship. With low barriers to entry, the internet enables anyone to engage in public speech and action, disseminating information with the goal of inspiring change. Its fast nature also provides activists with an advantage, allowing them to access and produce uncensored information before those in power can create spin or traditional media can moderate issues according to mainstream logic. In addition, unlike the opaque language of politicians, ordinary people can use concise rhetoric in social networks.

Social media platforms empower individuals to generate and share their own content, express their opinions on diverse topics and connect with others who share similar interests or characteristics (Xiong et al., 2019). These platforms enable users to share information with their personal networks and build communities based on shared values, beliefs, and experiences. By providing a space for open communication and diverse perspectives, social media has become a powerful tool for facilitating social change, promoting awareness of important issues, and empowering marginalized groups to have their voices heard. With the ability to reach a global audience in real-time, social media has transformed the way individuals interact with one another and engage with the world around them. As a result, these platforms facilitate the construction of collective identity (Khazraee & Novak, 2018) and inclusiveness (Kavada, 2016). These affordances benefit not only individual participants in social movements but also organizations that engage in hybrid activism. They foster interactivity between organizations and the public, encourage socio-political discussion and participation (Xiong et al., 2019), and promote democratic participation that prioritizes a horizontal, identity-based movement-building approach.

One of the arguments considered as an affordance is networked activism being easy. Because digital activism is pictured in minds with the image of a person sitting in front of the computer, or tapping on the phone, posting their thoughts, and calling it activism. To comprehend the debate surrounding the perceived ease of networked activism, it is necessary to consider the multiple factors that are used to determine whether digital activism, especially digital feminist activism, can be considered effortless. One of these factors is digital labor, which plays a significant role in discussions about the ease or difficulty of digital movements. At first glance, it might appear that the labor required to run a digital

feminist campaign is minimal since one simply needs to create a hashtag, post some content, and rely on the public to take over. However, this assumption oversimplifies the reality of the situation. However, Mendes, Ringrose, and Keller (2018) sweep us into the reality behind the scenes. Contrary to widespread belief, there is much more behind digital feminist campaigns than simply tweeting or posting on any social media platform. Invisible labor behind is shared between both the individuals who initiated the campaign and the feminist organizers who ensured the systematic continuation of it. When a digital feminist campaign gains momentum and visibility, a range of responsibilities awaits its initiators, such as preserving the continuity of digital content creation, participating in media interviews and debates, engaging in public talks and events, and writing/blogging. Feminist organizers, on the other hand, bear the responsibility of organizing offline pieces of training and street protests, managing official proceedings for legal sanctions (Gleeson, 2016: 5), creating engaging content, and developing new tactics by dedicating "several hours each day or week to these initiatives with little to no financial compensation or regularly scheduled breaks" (Mendes et al, 2018). Similar to other forms of user-generated content in digital media, the work of feminist activism is considered free labor, which is described as both voluntarily given and unwanted, enjoyed and exploited (Terranova, 2004: 74). This labor, again, is similar to other forms of "women's work," characterized by its effectiveness, precariousness, and exploitation (Mendes et al, 2018). Considering all of these factors, it is clear that digital feminist activism is not easy, as it entails the risk of rampant labor exploitation.

One of the roots of the arguments for the easiness of digital feminist movements is related to the safe feeling that the participants have in the climate of shared understanding created by these movements. Research by Mendes, Ringrose, and Keller (2018) suggests that online spaces with shared understandings provide a more accessible platform for engaging in feminist discussions than offline contexts. Unlike face-to-face interactions in real-life experiences, where individuals may feel isolated or unsupported in their feminist views due to institutionalized cultures of sexism in their social, academic, or professional circles, digital feminist activism creates a sense of solidarity and safety. Through online forums, social media groups, and other digital spaces, individuals can connect with like-minded individuals from around the world, sharing experiences and perspectives without fear of judgment or exclusion. At this very point, we should remember how arduous task it is for one to experience feminist perspectives, practices, and feelings. This not only means that it is difficult to live under patriarchy and power relations, but also that when you call yourself a feminist, you are assigned to be perceived as a difficult, unhappy

or at least hard to deal with by those around you, including family, friends, and colloquies. “This means that we can, at the very least, be found ‘hard’ or unpleasant to work with, enough to cost one’s living.” (Frye, 1983). While drawing her figure of feminist “killjoys” (the myth that feminists kill joy because they are joy-less), as Sara Ahmed (2016) very well put it, “You have to show that you are not difficult through displaying signs of goodwill and happiness.” Opposed to the sexist attitudes and biases that exist within established cultural institutions, digital spaces offer a secure environment where feminists can share their ideas, and opinions, and receive support, in contrast to the dismissive treatment they may face from others in their daily lives. The discussion around the internet being safe also reminds us of countries where women are restricted in civic space, and physical and legal coercion on offline activism, especially street protests, explicitly target freedom of expression, bodily integrity, and even the lives of activists, digital spaces offer an illusion of safer environment with the partial anonymity they provide.

These affordances such as the climate of shared understanding and partial anonymity -and physical distance- that we can gather under the umbrella of being ‘safe,’ encourage us to rethink the meaning of being ‘safe,’ where we encountered the terms digital repression and mediated misogyny. Digital media provide activists with nominal anonymity as well as important ways to expand state surveillance and a crackdown on activists. Morozov (2012) points out that with technological advancements such as face recognition software, user content analysis, and social media analysis, governments have gained new tools to repress dissidents and suppress political dissent. It is crucial to pay attention to the ways in which these technologies are being used to monitor and control citizens, particularly in authoritarian regimes where freedom of speech and assembly are often curtailed. With the ability to track individuals’ movements, monitor their online activity, and identify potential threats to the regime, these technologies have become a powerful tool for silencing opposition and maintaining the status quo. As such, it is important to critically examine the ethical implications of these technologies and advocate for transparency, accountability, and respect for human rights in their use. This repression, which includes actions or policies aimed at increasing the cost of offline activism, continues to exist online, even by adding new tactics and methods to the old ones. While governments apply traditional repression methods aiming to prevent, reduce, and/or control noninstitutional challenges such as protests, social movements, and activism, Feldstein (2021) cautions us that the advent of digital technology has introduced novel tactics to the authoritarian playbook, facilitating governmental manipulation of information that citizens consume surveillance of dissent and monitoring

of political opponents and censorship of communications. With the possibilities of these technologies, governments are able to pinpoint and apply the targeted persecution of online users. Digital repression practices have various dimensions, such as the use of traditional repression methods on digital activists, the use of digital tools to implement traditional repression methods or the development of information strategies designed to reduce protests. These practices appear in daily life as the arrest of Twitter users, and political bloggers (and sometimes accompanying torture and sexual violence); digital surveillance; harassment, violence, and discrediting campaigns against activists.

Similar to repression, the internet is covered under systems of power bringing more constraints for digital activism, and digital feminist movements. Margolis and Resnick (2000) remind us that "as the population of cyberspace has expanded, the politics of cyberspace has evolved from a self-regulating system dominated by internal concerns to a system in which politics that affect the Net and political uses of the Net predominate." Therefore, inequalities between classes, genders, sexual orientations, nations, religious beliefs, generations, and as such; oppression mechanisms, bureaucracy, and elite groups in offline life remain the same in online spaces. While we mentioned that the low cost of the internet makes it accessible, it is still a crystal-clear fact that income groups, the region of residence (rural/urban), the rate of conservatism and pressure varying by gender, the level of adaptation to technology among age groups, the restriction of the countries and governments determine the level of internet access. On top of these social structural constraints, social media algorithms also play a significant role in shaping users' experiences by determining which content to deliver based on their past behaviors, such as what they have watched, searched, and liked. By mining vast amounts of user data, these algorithms are able to create highly personalized and tailored feeds, which can both reflect and reinforce users' existing interests and biases. However, algorithms are as simple as they are complicated. Those in power use the ability to steer and change algorithms on social media to manipulate and bias the information users see (Tufekci, 2015). Governments hold significant market power and regulatory control over algorithms, playing a dual role as both consumers and regulators. With the ability to shape algorithmic use cases across a range of domains, from social welfare programs to law enforcement and national security, governments wield considerable influence over the development and deployment of algorithmic systems. Therefore, they can set standards, provide guidance, and use power over users. Moreover, the data mining practices used in these algorithms by corporate platform owners are far from being transparent. In addition to governmental control of the algorithms, politics in power may

also shut down the internet as it happened during the unrest and protests in India, Zimbabwe, and Pakistan.

Contrary to the safe climate of shared understanding in digital feminist campaigns, still, we are with Banet-Weiser who proofs us the double-edged sword of digital affordances and argues that the internet also makes room for popular misogyny, "as a structural force, is networked, expressed, and practiced on multiple platforms, attracting other like-minded groups and individuals" (Sener, 2021: Banet-Weiser, 2018). Misogyny, the hatred of women, is a pervasive problem that has gained traction across various media platforms. It involves the objectification and dehumanization of women, where women are treated as means to an end, rather than as individuals deserving of respect. This popular misogyny is expressed and practiced in a terrain of struggle, with various groups and individuals vying for power. Social media has enabled misogynistic groups to infiltrate feminist conversations, derailing them through online harassment and intimidation.

Unsurprisingly, studies have shown that a significant percentage of women activists have experienced abuse online, with sex and gender discrimination being the primary motivator (Barker & Jurasz, 2019). One form of this "mediated misogyny" (Vickery & Everbach, 2018) occurs is feminist activists being targeted as individuals. Trolling and online abuse with a wide range of practices – from seemingly mundane, ubiquitous, or 'low-level' comments such as "you are fat" or "ugly" to vitriolic, violent, and graphic rape and death threats (Mendes et al., 2018), are common experiences for those who participated in digital feminist movements. This mediated misogyny often takes the form of counter-narratives and counter-hashtags that seek to silence women's voices. For instance, the #yesallwomen hashtag campaign was met with the #notallmen campaign, which attempted to undermine women's experiences by claiming that not all men are responsible for misogyny. Similarly, when the #mencallmethings campaign exposed the harassment that women face online, some men deemed it offensive and attempted to shift the conversation away from gendered violence. However, such actions depoliticize the issue and ignore the systemic nature of misogyny (Megarry, 2017). Despite the toxic environment created by digital violence, women continue to engage in feminist activities on digital platforms like Twitter, as they report feeling safer and more comfortable expressing their views. Mendes, Ringrose, and Keller's (2018) contributions to the conversation shed light on the perspectives of women who participate in digital feminist movements and their determination to resist misogyny and fight for gender equality.

Digital platforms have fundamentally transformed the nature of collective action, prompting scholars to approach digital social movements

in two distinct ways: as a connective action, an aggregation of individual behaviors, and as a form of collective action in its own right. The former perspective sees contextual factors as less important than individual actions, whereas the latter views digital social movements as part of a broader struggle that necessarily involves processes of expanded collective interaction and mutual participation across interconnected groups of people in networks or fields of action. As messaging and communication have become more personalized on digital platforms, the meaning of collective action has shifted, prompting researchers to rethink traditional conceptions of social movements and activism (Bennett and Segerberg, 2013). This has led to a growing body of literature that explores the unique characteristics of digital social movements, including their reliance on networked forms of organization, their use of digital technologies to facilitate collective action and coordination, and their potential to mobilize diverse groups of individuals around shared causes and issues. One powerful tool for initiating connective actions in social movements is the use of hashtags, such as #MeToo. Xiong, Cho, and Boatwright (2019) note that Wang, Liu, and Gao have identified two mechanisms for the viral dissemination of hashtags: bottom-up mechanisms, driven by autonomous individuals and organizations, and top-down mechanisms, driven by content makers in media or politics seeking to promote information and set agendas. By leveraging the power of hashtags and bottom-up mechanisms, digital movements like #MeToo have the potential to empower individuals and organizations to coordinate and effect change without relying on traditional hierarchical structures, creating new possibilities for collective action in the digital age.

The next stage of the discussion on the mode of action (the shift from collective to connective action) held on the internet is questioning the effectiveness of digital movements and online feminist activism. Although the field of communication has been hosting an ongoing debate on the long-term effects of digital activism, so digital feminism, we seem to have reached a consensus on the promises of hashtag feminism to create feminist consciousness and built networks of solidarity. One of the most prominent examples of this is the #MeToo movement, which started with a tweet encouraging women to share their experiences of sexual harassment or assault by tweeting the words "me too." The movement quickly went viral, reaching 85 countries in just 24 hours, and has been called "Solidarity through social media" (Bussa, 2020). Through the use of the hashtag, individuals were given a platform to speak out about a previously taboo topic, shedding light on the extent of the problem. Mendes, Ringrose, and Keller (2018) argue that the solidarity experienced by participants in the #MeToo movement often transformed into a feminist consciousness,

allowing them to see sexual violence as a structural rather than a personal issue. This led to participants reporting their own experiences of sexual assault to the police, challenging the stigma surrounding reporting and making sexual assault more visible and knowable. While digital feminist activism may not always lead to tangible policy or legal changes, Mendes et al. (2019) remind us to value the affective benefits of the practice, as it can directly change and shape the experiences and views of individuals in profound ways.

One of the lasting impacts of the #MeToo movement on everyday life is related to its emphasis on visibility. This focus on visibility has been discussed in the field as part of a larger political struggle to expose and transform power structures, as described by Banet-Weiser (2015a) in her work on the politics of visibility. Thinking through the example of #MeToo, women have publicized their personal sexual violence experiences, which is the collective articulation of oppressive systems. De-privatization of personal experience here does not merely mean disclosure of sexual violence. If this process of opening it to the public sphere is successful, in the long run, the power relations and infrastructures behind sexual violence will also be exposed and undermined. This transformative potential in revealing women's personal experiences coincides with the "personal is political" discourse of second-wave feminism. The phrase 'The personal is political', coined by Carol Hanish in her 1969 essay which was published in the book 'Notes from the Second Year: Women's Liberation', is a central concept in feminist theory. It argues that issues that are traditionally thought of as personal or private, such as domestic violence, reproductive rights, and unequal pay, are actually rooted in larger societal structures and power dynamics. This means that individual experiences are not isolated incidents but reflect wider political and cultural systems. In the context of feminism, this concept suggests that women's personal problems are not unique to them as individuals but are shared by many women and therefore require collective action to be addressed. Similarly, these seemingly personal problems are the collective product of holistic mechanisms of oppression, and precisely for this reason, they must be brought into the social sphere.

Contemporary feminists have transformed the second-wave feminist principle of "personal is political" into a powerful tool in the public sphere, using hashtag feminism to bring attention to social injustices such as the #MeToo movement. Hashtag feminism is viewed as a form of activism that seeks to reshape the way we perceive and respond to these issues by altering public discourse and creating alliances among people at the intersection of various forms of oppression, which is called the politics of visibility (Brown et al., 2017).

However, while the politics of visibility have been effective in mobilizing public attention, the economics of visibility is a less desirable outcome. Without strong social movements advocating for social justice, individualistic systems of exchange prevail, where consumer culture's representation is perceived as the ultimate source of empowerment (Banet-Weiser, 2015, p.55). While the politics of visibility involves a collective effort to achieve political goals through representation, the economy of visibility confines political action to the realm of representation alone. The #MeToo movement highlights the shortcomings of the economics of visibility, where the media's focus on the experiences of white celebrities overshadows the systemic oppression of sexual violence. The movement's emphasis on celebrity stories limits political action to representation, ignoring the experiences of women of color and low-wage workers who suffer from disproportionate rates of assault (Hess, 2018). Critics also question whose visibility and voice are being represented, as the hashtag was initially championed by wealthy, white, heterosexual women with prominent public profiles and access to capital, leaving out many women around the world who lack political, social, and economic freedoms (Fileborn & Loney-Howes, 2019). This aspect of #MeToo embodies popular feminism, where different feminisms circulate in popular culture, with some becoming more visible than others (Deller, 2019). Thus, while the politics of visibility has some advantages, the economics of visibility is not a desirable outcome.

To summarize the earlier discussion in this chapter, digital platforms owned by corporations aim to maximize profits, and the visibility of hashtags used in online feminist movements can serve as a means of self-promotion. However, hypervisible feminist hashtags may be co-opted for non-feminist purposes, such as self-branding, as noted by Pruchniewska (2018). This raises questions about who has access to social media and who does not, as marginalized communities may lack the necessary technology to participate in networked visibility campaigns. The neoliberal nature of social media platforms can exclude underrepresented groups, compounding intersecting oppressions and reinforcing existing inequalities, as exemplified by the dominance of white women in the #MeToo movement. Overall, the economics of politics and the marketplace shape access to representation and visibility, perpetuating systemic inequalities.

DISCUSSION / TRANSNATIONAL FEMINISM

The concern which started with the discussion of politics of visibility and economies of visibility and then evolved into intersectionality in many ways encouraged us to think further and expand the meaning of intersectionality, where we encountered transnational dimensions of both feminism and digital feminist movements. While the absence of geographic

boundaries on the Internet is considered a very important affordance, and one of the reasons #MeToo has become almost the symbol of the digital feminist movements is that it has crossed the ocean and reached the support of women from other continents, so become a global movement, we flag that we should pay more attention to transnationality. Because what we faced while researching the literature around the #MeToo movement was the scarcity of studies focusing on the reflections of #MeToo in other countries, although it has received the support of women from many different countries and has been adapted to the women's movement in different parts of the world. Whenas, the #MeToo hashtag has trended in at least 85 countries (Strum, 2017), and encouraged people around the world to spread their stories of sexual assault. Crossing multiple boundaries, women from different parts of the world even used their languages to transcribe the movement. It became #BalanceTonPorc in France, #YoTambien in Mexico, Spain, and South America, #QuellaVoltaChe in Italy, #ונחנאמג in Israel, #انا_ امك (Ana Kaman) in Egypt, and #SusmaBitsin in Turkey (Lekach, 2017).

We assert that two reasons may lie under the problematic of the wimpy emphasis on transnational/ cross-border aspects of #MeToo in the field, the US-centric nature of the field of Communication, and the fact that we do not include a transnational perspective in the knowledge production processes of academia (perhaps as the structural organization that makes room for the former reason). According to a study by Chakravartty, Kuo, Grubbs, and McIlwain (2018), which analyzed the racial composition of primary authors and citations in journals from 1990 to 2016, non-White scholars are still underrepresented in communication studies in terms of publication rates, citation rates, and editorial positions. Their research encourages us to think of transnational feminism as an embracive approach. For this chapter, we use transnationality for both the application of transnational feminist theory to knowledge production in academia and the examination of the transnational/cross-border dimensions of the #MeToo movement.

Transnational feminism, as defined by Desai (2007), encompasses both the practices of women's movements globally and a theoretical perspective in which women collaborate to strategize and theorize for gender justice beyond national borders. Transnational feminism as a branch of feminist theory and activism seeks to understand and address the global and interconnected nature of women's experiences of oppression and inequality. It recognizes that women's experiences are shaped by multiple factors, including race, class, nationality, and sexuality. It seeks to understand and address the diverse experiences of women across the world. Transnational feminism emphasizes the importance of building alliances among women's movements across national boundaries. This solidarity can help to challenge global systems of oppression and work towards a

more just and equitable world for all women. Centering the experiences of marginalized women: Transnational feminism Since it seeks to center the experiences and voices of women from the Global South, who have been historically marginalized within mainstream feminist discourse, it has the potential to help to amplify their voices and work towards greater social and political change.

Taking into account both transnational feminism's promises and the contradictions themselves, we do believe in the potential of its roots for shedding light on our discussion. During the 1980s, in contrast to the universal sisterhood approach of Robin Morgan, Grewal and Kaplan (1994) worked on conceptualizing the theory of transnational feminism. Grewal and Kaplan (1994) critique Morgan's perspective in their book Scattered Hegemonies: Postmodernity and Transnational Feminist Practices, arguing that it romanticizes and idealizes women's experiences globally while presenting a singular, homogeneous understanding of gender issues and oppression. Similar to some of our critics on #MeToo not embracing diversity and lacking intersectionality, they argued that Morgan's work addressed the power differences, economic realities, ethnicity, sexuality, and oppressions among women across different regions in only limited ways.

Grewal and Kaplan (1994) also criticized Robin Morgan's view of women's liberation as a universalized, Western perspective that idealizes individuality and modernity. According to Grewal and Kaplan, gender oppression, power structures, and inequality are complex and diverse phenomena that cannot be understood through a single, homogenous lens. They argue that a one-size-fits-all approach to social change may have limited impact, as the needs and circumstances of women around the world are diverse and multifaceted. Judith Butler (2013) builds on this critique, highlighting how neoliberal feminism has historically privileged white, Western women and overlooked the problems faced by other marginalized communities. Transnational feminism, on the other hand, has the potential to address this limitation by embracing the diversity of experiences and perspectives among women around the world. By recognizing and valuing the distinct struggles and aspirations of different communities, transnational feminism can offer a more inclusive and intersectional approach to feminist activism and advocacy.

While the term "transnational" implies a critique of the nation-state and the violence perpetrated in its name, the concept has also sparked debates around contradictions in the practices that have been applied over time. Despite its original intention to critique globalizing forces, transnational feminism has been appropriated as a positive label to celebrate globalization. As a result, it may inadvertently be complicit in the very systems it sought to challenge. Moreover, as transnational

feminism has primarily emerged from the US academic sphere, it also perpetuates the unequal power dynamics in the global production of knowledge (Nadkarni & Gooptu, 2021). Others are also concerned about the link between transnational feminism and the tensions between universalism and cultural relativism. So, we should note that transnational feminism must navigate tensions between the universalist impulse to seek common ground across cultures and the cultural relativist impulse to respect and preserve cultural differences. These tensions can be difficult to reconcile. Moreover, transnational feminist movements can reproduce power dynamics that exist within broader social and political systems. For example, women from the Global North may have more access to resources and political power than women from the Global South. Transnational feminism must be aware of these power dynamics and work to build more equitable relationships within feminist movements.

With the awareness of both its promises and constraints, we prefer paying attention to what transnational feminism may offer us in the knowledge production process. Taking transnational feminism as being less about a definition than it is about a methodology (Nadkarni & Gooptu, 2021), we rely on the opportunities that transnational feminism may make room for more diverse methods in knowledge production. Combining with the issue of the Communication field being U.S.-centric and "So White" (Chakravartty, et al., 2018), the weak focus on both digital feminist movements from different countries and the implications of #MeToo on different parts of the world did not seem to be independent of these structural problems in our field.

CONCLUSION

Our concrete suggestions for not being lumped together with the lack of intersectionality in the field of Communication, which is also what we constantly criticize #MeToo, are, making more room for studies from different countries and cultures; instead of focusing primarily on #MeToo, paying more attention to the voices of women movements from different parts of the world, so applying the transnational feminism to our field. One and first indispensable step to eliminate the criticisms regarding inequalities during the knowledge production process is to employ a wide range of international/ diverse studies and research in influential scholarly journals and conferences, instead of keeping them in only international-themed events/publications. While we should note that the academic meetings that have already come together with the efforts to experience and establish transnational knowledge production processes are worthwhile, valuable, and promising, we do have a strong belief that as these experiences and shares increase, the depth of our discussions and both new themes and challenges we will encounter will diversify.

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CHAPTER 7

ECONOMIC AND FINANCIAL PERFORMANCE OF THE BALKANS: İNTEGRATED BWM-BASED CoCoSo METHOD

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Introduction

The Balkans or Balkan Peninsula is a geographical and cultural region located in the southeastern part of the European continent, east of the Italian Peninsula, west and northwest of Anatolia. Another term used for it is the Southeast Europe. The Balkans is a peninsula surrounded by the Adriatic Sea and the Ionian Sea in the southwest; the Mediterranean Sea in the south; the Aegean Sea and the Sea of Marmara in the southeast; and the Black Sea in the east. Despite the current consensus on the eastern, southern and western borders of the Balkans, or the Balkan Peninsula by geographical name, the northern borders are disputed. Some geographers consider the northern border to be the Danube and Drava rivers, others consider the border to the east of the Carpathian Mountains. The borders of the region from the northwest (the Gulf of Trieste) to the south and east are surrounded by seas: the Adriatic, the Ionian Sea, the Mediterranean Sea, the Aegean Sea, the Dardanelles, the Marmara, the Bosphorus, the Black Sea. The northwestern border, which continues from the Krka River in the village of Čatež ob Savi, runs west of the river's mouth, Gradiček, over the Vipava River, and crosses into Italy. The border, which joins the River Soča near Gorizia, connects to the Adriatic near Monfalcone on the shores of the Gulf of Trieste. The total area of the Balkans is 504,884 km² (tr.wikipedia.org, 2023).

Most of the countries in the region were not yet national and independent, as they were ruled under the Ottoman Empire for about 4 centuries until World War I. Later, with the exception of Greece and Turkey, a significant part of the region was included in the group of "Second World" countries, also called the "socialist bloc" after World War II. Today, there are 13 independent countries in this region. These countries are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Montenegro, North Macedonia, Hungary, Romania, Serbia, Slovenia and Turkey. While the entire territory of seven of these countries is located within the region, only a certain part of the territory of the others is located in the region. The countries whose complete territory is located in the Balkans are Bulgaria, Greece, Montenegro, Bosnia and Herzegovina, Kosovo, Albania and North Macedonia. The countries whose small territory is a part of the Balkans are Croatia, Hungary, Slovenia, Serbia and Turkey. Of these countries, the exception of Greece and Turkey, were the countries that had not yet switched to a market economy before 1989 and had a socialist economic system based on central planning. With the dissolution of the Soviet Union in the late eighties and the acceleration of economic globalization, these countries that abandoned the socialist economic system were called "transition economies". The aim of these countries was to be able to move from central planning and a socialist economic system to a capitalist economic system and a free market

economy as soon as possible. In line with this goal, countries in the region have taken important steps to transform into a market economy since the 1990s. Bosnia and Herzegovina, Croatia, Kosovo, North Macedonia, Montenegro and Serbia are independent countries that emerged with the dissolution of the former Yugoslav state. As of 2016, the most populous country in the region is Turkey with a population of 79.8 million, followed by Romania with a population of 19.7 million, Greece with a population of 10.8 million, Bulgaria with a population of 7.1 million and Croatia with a population of 4.1 million.

In the study, economic and financial (financial economics) performance of the Balkan countries was examined. In this context, annual change in GDP and annual change in consumer price, the ratios of "Government Balance to GDP", "Net FDI to GDP", "Gross Reserves to GDP", "Current Account Balance to GDP", "External Debt to GDP", "Credit to Private Sector to GDP" were analyzed. In this analysis, which compares the financial economic performances of the countries in the Balkans region, after the introduction section, previous studies in which the BWM (Best Worst Model) and CoCoSo (COmbined COmpromise Solution) methods employed are included in the section of literature review. Then the data and analysis method are explained theoretically. Later, the data set and findings are included in the following section. Finally, a summary of the findings is provided in the conclusion section.

1. Literature Review

There is no study in which the analysis of economic and financial performance of the Balkan countries is carried out by the integrated BWM and CoCoSo method. Both of these methods are regarded as multi criteria decision making (MCDM) techniques. Below is a summary of some of the studies in the literature on the financial economic situation of the Balkan countries conducted by different methods other than the integrated BWM and CoCoSo method.

In the literature, it is seen that the comparative analyses on the macroeconomic structure and characteristics of the Balkan countries are quite limited. A summary of the comparative analyses of the macroeconomic structure and characteristics of the Balkan countries is given below.

Akyol (2014) investigated the extent to which the Balkan countries, which are members of the European Union (EU), are affected by the financial crisis. Since 2009, the effects of the crisis have started to be felt in the Balkan countries of the EU. With the exception of Bulgaria, Greece, Romania and Croatia have been the countries most influenced by the crisis.

In particular, the Greek economy shrank throughout 2008-2013 and the Croatian economy in 2009-2013, entering a long recession phase. The Romanian economy contracted in 2009-2010 and the Bulgarian economy in 2009, but there was no strong recovery after 2010. It has been observed that Bulgaria follows a more moderate policy. In contrast, Romania and Greece have implemented much harsher austerity policies, which have led to a short-term improvement in fiscal balances, but this improvement has been temporary.

In order to test the Lucas Paradox, Demiral et al. (2015) investigated the factors affecting foreign direct investment in 9 Balkan countries for the years 2000-2012. The shooting model was estimated through balanced panel data set. The outcome of the research supported the Lucas Paradox. Regulations, country risk and China's growing attraction for foreign direct investment have hampered the performance of Balkan countries. However, the developments achieved by these countries in human capital, infrastructure and logistics have increased their share in foreign direct investment.

Biçici (2015) For the money supply of 11 countries in Central Asia and the Balkans, consumer price index changes and industrial production index data were examined with AR model. For this, the supply equation M2 was estimated, then the error terms were separated from this equation as positive and negative. Fixed effect regression analysis was performed by including positive and negative shocks obtained from error terms (shocks) into the inflation rate equation we use for industrial production and price level. It is understood that supply-side asymmetry exists in Central Asia and Balkan countries. Negative monetary policy shocks have a strong impact on output and a weak effect on prices. Positive monetary policy shocks have had a weak impact on output and a strong impact on prices.

Tüzemen and Tüzemen (2015) investigated whether twelve Balkan countries converged between 2000 and 2013 by panel data method. it was found that 12 Balkan countries did not converge to each other. It has become clear that these countries do not converge to Greece, which has been determined as the leading country.

Eken et al. (2015) compared the extent to which banks operating in twelve Balkan countries were affected by the global financial crisis. In the study, 213 banks were examined. The research covered the years 2006-2012. Credit, liquidity, interest, operation risks were analyzed. Banks were examined on the basis of EU and non-EU countries, as well as on the basis of asset size, operating region and countries. Montenegro, Bosnia and

Herzegovina and Macedonia have recovered better after the crisis. Kosovo, Greece, Slovenia, Romania, Bulgaria, Croatia, Serbia, Turkey, Albania and Macedonia saw deterioration in bank ratios in the post-crisis period.

In Akın (2017), in which the author compared the macroeconomic vulnerabilities of Balkan countries such as Bulgaria, Romania, Croatia, Greece and Turkey, he first investigated the places of these countries in the ranking of competition and ease of doing business. According to the 2016-2017 Global Competitiveness Index, Bulgaria, Turkey, Romania, Croatia and Greece are ranked from high to low in the competition ranking among 138 countries, while Romania, Bulgaria, Croatia, Greece and Turkey are ranked from the most to the lowest in the Ease of Doing Business report among 190 countries. Between 2007 and 2016, Bulgaria was the least vulnerable in foreign exchange reserves, budget balance and public debt, Croatia in current account balance and loan/deposit ratio, and Romania in domestic credit growth. Greece has been the most vulnerable country according to five of the six indicators (current account balance-foreign exchange reserve-budget balance public debt-domestic credit growth).

Balıkçıoğlu (2020) analyzed the macroeconomic fragility of Turkey and the Balkan countries comparatively for the period 2007-2017. In the study, 6 different indicators within the scope of financial fragility, financial fragility and external fragility were examined to measure macroeconomic vulnerability. The factors that cause fragility in the Turkish economy are the current account balance/GDP, the annual credit growth rate and the foreign exchange reserve/GDP. Bulgaria is the least vulnerable in foreign exchange reserves/GDP, budget balance/GDP and public debt/GDP, Kosovo budget balance/GDP, domestic credit growth. Greece is the most vulnerable country with vulnerabilities in current account balance/GDP, foreign exchange reserves/GDP, budget balance/GDP, public debt/GDP and domestic credit growth.

Ulusoy and Özçelik (2020) examined the financial and economic problems of the twelve Balkan countries after 1990. The macroeconomic performance of the countries were measured by employing some indicators such as financial development level, gross domestic product per capita, unemployment, growth rate, inflation, gross value added distribution, foreign trade statistics. The majority of Balkan countries struggled with the hyperinflation inherited from Yugoslavia in the first years of independence. As a result, they were successful in this struggle and were able to reduce inflation rates to single digits. Within the scope of the fight against inflation, Bulgaria, Kosovo, North Macedonia and Slovenia fixed their currencies to the Euro, established the Bulgarian Monetary Board, and Macedonia followed a tight monetary policy.

Konat (2021) examined if the Balkan countries faced with the trap of middle income in 2000-2019 by panel data analysis. The stationary test of the national income per capita series was applied by structural fracture panel unit root test. As a result of the research, it was determined that the Balkan countries were in this type of trap. Thus, it has been seen that there has been a horizontality in income per capita and a decline in the economic competitiveness of these countries.

Öncü (2021) investigated the factors affecting bank profitability between 2008 and 2017 in nine Balkan countries. The Balkan countries included in the study are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Serbia, Slovenia, Turkey and Greece. As a result of the study, cost income ratio, inflation and non-performing loans have a negative influence on the rate of return on equity and the rate of return on assets. In contrast, the size of economy has a positive influence on these ratios.

Some of the studies carried out with the BWM or CoCoSo method in the literature are shown below.

Özdağoğlu et al. (2020) applied the integrated CoCoSo and MARCOS technique to compare the performances of the universities in Turkey in 2019, and 5 different criteria consisting of articles, citations, scientific documents, doctoral students and teachers per student were used as performance criteria. 166 universities in Turkey were analyzed. As a result of the study, it was concluded that the URAP ranking and the method used in the study gave the same ranking.

Çilek (2022) used the CoCoSo method when analyzing deposit bank groups (public, private and foreign banks) in Turkey. In the study, the period of 2019-2021 was examined. The criterion weights were made by SV method and the performance ranking was made by CoCoSo method. As result, it was seen that the best performance was exhibited by domestic private banks. The lowest performance was exhibited by foreign banks in 2019 and 2020 and by public banks in 2021.

This study contributes to science as the first study in which the economic and financial performances of the Balkan countries is analyzed by employing the integrated BWM and CoCoSo method.

2. Methodology

Below, the steps of BWM, CoCoSo techniques are explained.

a. BWM Method

According to the Best Worst Method (BWM), first the best (most important, most desired) and worst (least important, least desired) criteria are determined by decision makers. Binary comparisons are then made between each of these two criteria (best and worst) to the other criteria. Here, it is aimed to find the consistency of optimal weights and matrices with a simple optimization model created using the comparison system. The application steps of the Best Worst Method are as follows (Rezaei, 2015; Rezaei, 2016; Akyüz et al., 2020; Koca & Akçakaya, 2021; Şimşek et al, 2023):

Step 1: Determination of evaluation criteria. The set of criteria (C1, C2,... Cn) expected to be evaluated by decision makers in solving the decision problem is defined. Because the performance of alternatives (A1, A2,... Am) will depend on the criteria set.

Step 2: Determining the best and worst criterion to be used in solving the decision problem. Here, the best criterion is considered as the most important criterion in the evaluation of alternatives in the decision problem; the worst criterion is considered to be the least important criterion in the evaluation of alternatives in the decision problem.

Step 3: Determining the preference of the best criterion according to all other criteria.

An odd number between 1 and 9 (1: equally important, 3: moderately important, 5: strongly important, 7: very strongly important, 9: absolutely very important) is used in the preference of the best over others (which can also be even numbers such as 2-4-6-8). Here, the AB vector is obtained as a result of the preference of the best over the others (Equation 1):

$$AB = (aB1, aB2, ..., aBn) \qquad \text{(Equation 1)}$$

Here, aBj is the preference value of the best criterion (B) relative to criterion j, and aBB=1.

Step 4: Determination of the preference of all other criteria according to the worst criterion. Here an integer value between 1 and 9 (1: equally important, 3: moderately important, 5: strongly important, 7: very strongly important, 9: absolutely very important) is used in favor of all other criteria over the worst criterion. (which can also be intermediate values such as 2-4-6-8). Here, the AW vector is obtained as a result of the preference of the others according to the worst criterion (Equation 2):

AW= (a1W, a2W,...,anW)T	(Equation 2)

Here, ajW is the preference value of criterion j relative to the worst criterion (W), and aWW=1.

Step 5: Determination of the optimal weights of the criteria. The optimal weights of each criterion (w1∗ , w2∗ ,...,wn∗) are determined. To determine the optimal weights of the criteria, the maximum absolute differences {|wB−aBjwj|, |wj−ajWwW|} for all j. criteria should be minimized.

It is formulated as follows in Model 1:

minmaxj= {|wB−aBjwj|,|wj−ajWwW|} s. t. Σwj=1 j	(Model 1)
wj≥0, for all j's	

This is transferred to the following linear programming model (Model 2):

minξL s. t.	(Model 2)
|wB−aBjwj|≤ξL for all j's	
|wj−ajWwW|≤ξL for all j's	
Σwj=1j, wj≥0 , for all j's	

The Model 2 is linear and has only one solution. By decoding the model, the optimal weights (w1∗ ,w2∗ ,...,wn∗) and $\xi L*$, which is the optimal value of ξL and is considered as the consistency ratio (CR), are obtained.

Table 1a. *Consistency Index Table*

a_{BW}	1	2	3	4	5	6	7	8	9
max ξ	0.00	0.44	1.00	1.63	2.30	3.00	3.73	4.47	5.23

After finding out the solution, the overall consistency is checked by the Consistency Index Table. Consistency ratio (CR) is calculated by Equation (3). A small CR value near to zero shows a high consistency, a high value closing to 1 means there is a low consistency (Ren et al., 2017).

$CR = \frac{\xi L*}{\text{consistency index.}}$	Equation (3)

b. CoCoSo Method

CoCoSo (COmbined COmpromise Solution) performance ranking method, which is one of the MADM techniques, was first designed by Yazdani, Zerate, Zavadskas and Turksis in 2019. The method is based on the consensus of alternatives and the determination of the best alternative.

The five implementation steps of the method are described below (Yazdani et al., 2019; Ulutaş, Karakuş and Topal, 2020; Özdağoğlu, Ulutaş and Keleş, 2020; Ecer and Pacamur, 2020; Ulutaş and Topal, 2020; Akbulut and Hepşen, 2021; Akgül, 2021; Deveci, Pamucar and Gokasar, 2021).

Step 1: The initial decision matrix is created. This matrix is created with the help of Equation (3). In the equation, m indicates the number of options (alternatives), the symbol "n" indicates numbers of decision criteria "i", the term "x_{ij}" indicates the value of alternative "i" according to criterion "j".

$$K = [x_{ij}]_{mxn} = \begin{bmatrix} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mn} \end{bmatrix} \qquad \text{Equation (3)}$$

Step 2: A normalized (standard) decision matrix is created. This matrix is formed by Equation (4) or Equation (5), depending on the target direction of the criterion. Equation (4) is applied for maximum (max) target direction criteria, and Equation (5) is applied for minimum (min) directional criteria. The term r_{ij} in the aforementioned equations refers to the normalized value.

$$r_{ij} = \frac{x_{ij} - \min x_{ij}}{\text{mak}\, x_{ij} - \min x_{ij}.} \qquad \text{Equation (4)}$$

$$r_{ij} = \frac{\text{mak}\, x_{ij} - x_{ij}}{\text{mak}\, x_{ij} - \min x_{ij}.} \qquad \text{Equation (5)}$$

Step 3: The weighted comparison sequence of each alternative is calculated with the help of Equation (6).

$$S_i = \sum_{j=1}^{n} (r_{ij} \ x \ w_j) \qquad \text{Equation (6)}$$

S, which is included in the equation, shows the weighted comparison sequence of the i alternative, and wj, j. shows the criterion weight of the criterion.

Step 4: The sum of the weight strength of the weighted comparison sequence of each alternative (P_i) is calculated using Equation (7).

$$P_i = \sum_{j=1}^{n} (rij)^{wj} \qquad \text{Equation (7)}$$

The values can be combined with three different addition ways. The addition ways are shown by Equation (8), Equation (9) and Equation (10), respectively.

kia: An addition way is for the alternative.

$$k_{ia}=\frac{P_i+S_i}{\sum_{j=1}^{m}(P_i+S_i)} \qquad \text{Equation (8)}$$

kib: The alternative is the b addition way for i.

$$k_{ib}=\frac{Sj}{\min Si}+\frac{Pj}{\min Pi} \qquad \text{Equation (9)}$$

kic: The alternative is the c addition way for i.

$$k_{ic}=\frac{\lambda S_i+(1-\lambda)P_i}{\lambda\, maxi\, S_i+(1-\lambda) maxi\, P_i} \qquad \text{Equation (10)}$$

λ: is the equilibrium value. This value ranges from 0 to 1; 0≤ λ ≤1. In the literature, the equilibrium value is usually calculated as 0.5.

Step 5: The final enumeration of alternatives is done with Equation (11).

$$k_i=\sqrt[3]{k_{ia}k_{ib}k_{ic}}+\frac{k_{ia}+k_{ib}+k_{ic}}{3} \qquad \text{Equation (11)}$$

k i: The final value for the alternativeis i.

According to the CoCoSo method, the alternative with the biggest final value is considered the best performing one in the selection problem.

3. APPLICATION

3.1. Data Set and Analysis

The statistics used in the study were compiled from the EBRD Transition Report Archive (web address: https://www.ebrd.com/publications/transition-report-archive). The aim is to compare economic and financial performances of the Balkan countries with each other and to find the most successful country. The number of Balkan countries is 13 by the end of 2022. Since Kosovo is the last independent country of these countries, analysis was made on the basis of 11 years of data instead of 14 years for this country. The countries included in the performance ranking are shown in the table below (Table 1).

Table 1. *Alternatives: Countries in Balkans*

Alternative	Code
Albania	a1
Bosnia and Herzegovina	a2
Bulgaria	a3
Croatia	a4
Greece	a5
Hungary	a6
Kosovo	a7
Montenegro	a8
North Macedonia	a9
Romania	a10
Serbia	a11
Slovenia	a12
Türkiye	a13

Source: EBRD Transition Reports (2008-2022).

In the study, the criteria that determine economic and financial economic performance were chosen as annual change in GDP and annual change in consumer price, the ratios of "government balance to GDP", "current account balance to GDP", "Net FDI to GDP", "external debt to GDP", "gross reserves to GDP", "credit to private sector to GDP". In the table below (Table 2), the performance criteria and whether these criteria are benefit or cost oriented and their weight can be seen. Criterion weights were calculated according to the BWM method. How they are calculated is explained in the following section.

Table 2. *Performance Criteria and Weights*

Criterion	Code	Max/Min	Weight
GDP Change (%)	c1	max	33.2%
Consumer Price Change (%)	c2	min	6.6%
Government Balance/ GDP	c3	max	10.0%
Current account balance/GDP	c4	max	8.0%
Net FDI /GDP	c5	max	19.9%
External debt/GDP	c6	min	5.7%
Gross reserves/GDP	c7	max	3.3%
Credit to private sector/GDP	c8	max	13.3%

Source: EBRD Transition Reports (2008-2022).

According to the table above, among the 8 selected criteria, the Consumer Price Change (%) and External debt/GDP criteria coded c2 and c6 are cost oriented. In other words, the fact that these criteria are small shows that the country's performance is high. In other criteria, it is aimed that the criterion is as high as possible.

3.2. Analysis of Determination of Criterion Weights

In the first stage of BWM method, the decision matrix was created by taking the averages of 8 criteria values related to economic and financial performances of the Balkan countries between 2008-2021. This matrix is shown in Table 3.

Table 3. *Decision Matrix for Balkan Countries (2008-2021)*

Criterion	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**
Alternatives	max	min	max	max	max	min	max	max
a1	3.03%	2.17%	-4.00%	-10.13%	-7.74%	51.04%	23.91%	36.64%
a2	1.95%	1.22%	-1.38%	-5.93%	-2.21%	48.58%	30.06%	57.74%
a3	1.91%	1.84%	-1.02%	-1.40%	-3.95%	80.26%	41.37%	59.68%
a4	0.64%	1.58%	-3.39%	0.36%	-2.86%	92.61%	29.57%	62.35%
a5	-1.77%	0.81%	-8.26%	-5.22%	-0.69%	204.56%	1.18%	101.68%
a6	1.76%	3.04%	-9.48%	0.51%	-1.40%	108.39%	27.47%	52.07%
a7	3.48%	2.11%	-2.46%	-7.79%	-4.00%	32.44%	12.32%	40.57%
a8	1.96%	1.94%	-5.01%	-19.94%	-13.73%	146.19%	23.03%	58.82%
a9	1.41%	1.63%	-3.34%	-3.09%	-3.06%	67.29%	26.07%	48.47%
a10	2.35%	3.39%	-4.39%	-4.65%	-2.51%	60.19%	21.19%	33.69%
a11	1.79%	4.85%	-3.34%	-7.08%	-5.48%	74.20%	30.85%	44.31%
a12	1.29%	1.32%	-4.35%	-1.23%	-1.24%	109.85%	1.97%	59.79%
a13	4.36%	10.52%	-2.33%	-4.61%	-1.26%	48.61%	12.64%	58.66%

Source: EBRD Transition Reports (2008-2022).

In this matrix, the rows represent alternatives (countries) and the columns show the criteria. This matrix includes 13 countries and 8 criteria. The values in the matrix refer to the 14-year arithmetic averages of the countries in the relevant criteria. All values are percentages.

Table 3a. *Calculation of Criterion Weights by BWM Method*

Criteria Number = 8	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7	Criterion 8
Names of Criteria	GDP Change (%)	Consumer Price Change (%)	Government Balance/ GDP)	Current Account Balance/GDP	Net FDI/GDP	External debt/GDP	Gross reserves/GDP	Credit to private sector/GDP
Select the Best	GDP Change (%)							
Select the Worst	Gross reserves/ GDP							
Best to Others	GDP Change (%)	Consumer Price Change (%)	Government Balance (of GDP)	Current account balance/ GDP	Net FDI/GDP	External debt/GDP	Gross reserves/ GDP	Credit to private sector/GDP
GDP Change (%)	1	6	4	5	2	7	8	3
Others to the Worst	Gross reserves/ GDP							
GDP Change (%)	8							
Consumer Price C.(%)	3							
Government Balance (of GDP)	5							
Current account balance/GDP	4							
Net FDI/GDP	7							
External debt/GDP	2							
Gross reserves/ GDP	1							
Credit to private sector/GDP	6							
Weights	GDP Change (%)	Consumer Price Change (%)	Government Balance (of GDP)	Current account balance/ GDP	Net FDI/GDP	External debt/GDP	Gross reserves/ GDP	Credit to private sector/GDP
	0.33	0.07	0.10	0.08	0.20	0.06	0.03	0.13
Ksi*	0.066							

In Table 3a, the criterion weights are determined according to the BWM method. For this, excel program was employed (BWM-solver.xls. Excel Solver https://www.youtube.com/watch?v=wfy8fxnZEWk)

According to the table, the most important criterion among the criteria selected in measuring the financial and economic performances of the Balkan countries is the GDP Change (%) criterion, which has a weight of 33 percent. It is followed by the External Debt/GDP criterion, which has a weight of 20 percent. The third most important criterion is the Credit to Private Sector/GDP criterion, which has a weight of 13 percent. According to the table, the least important criterion is the Gross reserves/GDP criterion, which has a weight of 3 percent. According to the table, Consistency ratio (Ksi*) is calculated by Equation (3) as 0.066. This value closes to zero that indicates there is high consistency.

3.3. Analysis of Performance Ranking

The CoCoSo method was used to rank economic and financial performance of the Balkan countries. This method is one of the relatively new MADM methods. In the first stage of this method, the matrix in Table 3 was arranged by taking the arithmetic average of the values of the Balkan countries between 2008-2021 to 8 criteria.

In the second stage, depending on whether the criterion is benefit or cost oriented, the decision matrix is standardized (normalized) by using Equality-2 or Equality-3. Thanks to the normalization process, all the values in the matrix are converted to any number between 0 and 1, making them comparable to each other. Equality-3 was used for the minimum directional (c2, c6 coded) criterion and Equation-2 was used for the other 6 criteria with maximum direction. The normalized decision matrix is set up in Table 4.

Table 4. *Normalized Decision Matrix*

Criterion	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**
Weights	**0.33**	**0.07**	**0.10**	**0.08**	**0.20**	**0.06**	**0.03**	**0.13**
Alternatives	**max**	**min**	**max**	**max**	**max**	**min**	**max**	**max**
a1	0.78	0.86	0.00	0.00	0.00	0.89	0.57	0.04
a2	0.61	0.96	0.00	0.00	0.00	0.91	0.72	0.35
a3	0.60	0.89	0.00	0.00	0.00	0.72	1.00	0.38
a4	0.39	0.92	0.00	0.99	0.00	0.65	0.71	0.42
a5	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
a6	0.58	0.77	0.00	1.00	0.00	0.56	0.65	0.27
a7	0.86	0.87	0.00	0.00	0.00	1.00	0.28	0.10
a8	0.61	0.88	0.00	0.00	0.00	0.34	0.54	0.37
a9	0.52	0.92	0.00	0.00	0.00	0.80	0.62	0.22

a10	0.67	0.73	0.00	0.00	0.00	0.84	0.50	0.00
a11	0.58	0.58	0.00	0.00	0.00	0.76	0.74	0.16
a12	0.50	0.95	0.00	0.00	0.00	0.55	0.02	0.38
a13	1.00	0.00	0.00	0.00	0.00	0.91	0.29	0.37

Source: Author.

At the third stage, the weighted Comparability Sequence and Si Matrix is arranged. The importance of the 8 criteria used in the analysis was determined by BWM method. This matrix was obtained by multiplying the criterion weights by the normalized values. It is presented in Table 5.

Table 5. *Weighted Comparability Sequence and Si Matrix*

Criterion	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	
Weights	**0.33**	**0.07**	**0.10**	**0.08**	**0.20**	**0.06**	**0.03**	**0.13**	
Alternatives	**max**	**min**	**max**	**max**	**max**	**min**	**max**	**max**	**Si**
a1	0.26	0.06	0.00	0.00	0.00	0.05	0.02	0.01	0.3925
a2	0.20	0.06	0.00	0.00	0.00	0.05	0.02	0.05	0.3877
a3	0.20	0.06	0.00	0.00	0.00	0.04	0.03	0.05	0.3842
a4	0.13	0.06	0.00	0.08	0.00	0.04	0.02	0.06	0.3871
a5	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.13	0.1992
a6	0.19	0.05	0.00	0.08	0.00	0.03	0.02	0.04	0.4115
a7	0.28	0.06	0.00	0.00	0.00	0.06	0.01	0.01	0.4217
a8	0.20	0.06	0.00	0.00	0.00	0.02	0.02	0.05	0.3471
a9	0.17	0.06	0.00	0.00	0.00	0.05	0.02	0.03	0.3282
a10	0.22	0.05	0.00	0.00	0.00	0.05	0.02	0.00	0.3363
a11	0.19	0.04	0.00	0.00	0.00	0.04	0.02	0.02	0.3199
a12	0.17	0.06	0.00	0.00	0.00	0.03	0.00	0.05	0.3119
a13	0.33	0.00	0.00	0.00	0.00	0.05	0.01	0.05	0.4419

Source: Author.

In the fourth stage, the Exponentially Weighted Comparability Sequence and Pi Matrix matrix is organized in Table 6.

Table 6. *Exponentially Weighted Comparability Sequence and Pi Matrix*

Criterion	C1	C2	C3	C4	C5	C6	C7	C8	
Weights	**0.33**	**0.07**	**0.10**	**0.08**	**0.20**	**0.06**	**0.03**	**0.13**	
Alternatives	**max**	**min**	**max**	**max**	**max**	**min**	**max**	**max**	**Pi**
a1	0.92	0.99	0.00	0.00	0.00	0.99	0.98	0.66	4.5458
a2	0.85	1.00	0.00	0.00	0.00	0.99	0.99	0.87	4.6990
a3	0.84	0.99	0.00	0.00	0.00	0.98	1.00	0.88	4.6989
a4	0.73	0.99	0.00	1.00	0.00	0.98	0.99	0.89	5.5830
a5	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	2.0000
a6	0.83	0.98	0.00	1.00	0.00	0.97	0.99	0.84	5.6093
a7	0.95	0.99	0.00	0.00	0.00	1.00	0.96	0.74	4.6366
a8	0.85	0.99	0.00	0.00	0.00	0.94	0.98	0.88	4.6361
a9	0.80	0.99	0.00	0.00	0.00	0.99	0.98	0.82	4.5868
a10	0.88	0.98	0.00	0.00	0.00	0.99	0.98	0.00	3.8234
a11	0.83	0.96	0.00	0.00	0.00	0.98	0.99	0.78	4.5554
a12	0.79	1.00	0.00	0.00	0.00	0.97	0.88	0.88	4.5155
a13	1.00	0.00	0.00	0.00	0.00	0.99	0.96	0.88	3.8290

Source: Author.

In the fifth stage, after the performance scores were calculated, the financial economic performance sequence of the mentioned countries was carried out. At this stage, first of all, the sum of the elements in the Weighted Comparability Sequence and Si Matrix is used by using Equality-4 for each country. Then, Exponentially Weighted Comparability Sequence and Pi Matrix was calculated using Equation-5. The values can be integrated with three different addition strategies. Then 3 different sums (kia, kib, kic) were calculated using Equality-6, Equality-7 and Equality-8 respectively. These 3 different totals were then converted into final performance points (K) with Equality-9. According to the performance score, the financial economic performance of the countries is ranked. All of these processes are summarized in Final Aggregation and Ranking in Table 7.

Table 7. *Final Aggregation and Ranking*

Alternatives	Ka	Ranking	Kb	Ranking	Kc	Ranking	K	Final Ranking
a1	0.079	7	4.24	6	0.82	7	2.36	6
a2	0.082	3	4.30	4	0.84	3	2.40	4
a3	0.081	4	4.28	5	0.84	4	2.40	5
a4	0.096	2	4.73	2	0.99	2	2.70	2

a5	0.035	13	2.00	13	0.36	13	1.09	13
a6	0.097	1	4.87	1	0.99	1	2.76	1
a7	0.081	5	4.43	3	0.84	5	2.45	3
a8	0.080	6	4.06	8	0.82	6	2.30	7
a9	0.079	8	3.94	9	0.81	8	2.24	8
a10	0.067	12	3.60	12	0.69	12	2.00	12
a11	0.078	9	3.88	10	0.81	9	2.21	10
a12	0.077	10	3.82	11	0.80	10	2.18	11
a13	0.068	11	4.13	7	0.71	11	2.22	9

Source: Author.

The above order, which is arranged by country code, is shown more clearly by converting the country code to the country name in Table 8 below.

Table 8. *Performance Ranking*

Code	Country (alternative)	Final Ranking
a6	Hungary	1
a4	Croatia	2
a7	Kosovo	3
a2	Bosnia and Herzegovina	4
a3	Bulgaria	5
a1	Albania	6
a8	Montenegro	7
a9	North Macedonia	8
a13	Türkiye	9
a11	Serbia	10
a12	Slovenia	11
a10	Romania	12
a5	Greece	13

Source: Author.

According to Table 8, based on the values between 2008 -2021, the top three highest performing countries in financial and economic aspects among the 13 Balkan countries were Hungary, Croatia and Kosovo, respectively. Greece took the last place in the performance ranking. Hungary, the best performing country, has been influenced by the fact that it has achieved very good results in the majority of the criteria. Croatia's success has been significant in that it has higher values in the Government Balance/GDP, Current Account Balance/GDP, Net FDI/GDP ratios than other countries.

Conclusion

The Balkans or Southeast Europe is a geographical and cultural region located in the southeastern part of the European continent. In this study, economic and financial performances of 13 economies in the Balkans region between 2008-2021 were compared. Of multi-criteria decision making techniques, BWM and CoCoSo methods were employed as research methods. Criterion weights were determined by BWM method. The CoCoSo method was applied for performance ranking.

In the study, GDP change, Net FDI to GDP, Consumer Price change, Government Balance to GDP, Current Account Balance to GDP, External Debt to GDP, Gross Reserves to GDP, Credit to Private Sector/GDP ratios were selected as the criteria determining financial and economic performance. According to the BWM method, the most important criterion among the criteria selected in measuring the financial and economic performances of the Balkan countries is the GDP Change (%) criterion, which has a weight of 33 percent. It is followed by the External Debt/GDP criterion, which has a weight of 20 percent. The third most important criterion is the Credit to Private Sector/GDP criterion, which has a weight of 13 percent. The least important criterion is the Gross reserves/GDP criterion, which has a weight of 3 percent. According to the CoCoSo method, the best performing countries among the 13 Balkan countries in terms of economic and financial aspects between 2008-2021 were Hungary, Croatia and Kosovo, respectively. Greece has the worst place in the performance ranking. Hungary, the best country, has been influenced by the fact that it has achieved to have the best results in the majority of the criteria. Croatia's success has resulted in that it has higher values in the Government Balance/GDP, Current Account Balance/GDP, Net FDI/GDP ratios than other countries.

Since the preferred evaluation criteria for the study and their degree of importance directly affect the result, it is useful to compare this study results with other multi-criteria decision-making techniques and different criterion weights.

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CHAPTER 8

AN APPLICATION FOR AGGREGATING THE CRITERIA WEIGHTS OBTAINED BY DIFFERENT OBJECTIVE WEIGHTING METHODS AND THEIR USE IN COPRAS

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1. Introduction

Multi-criteria decision making (MCDM) refers to a group of techniques for assessing a set of alternatives in light of several, usually conflicting criteria. Thus, given a set of alternatives (options) and a number of decision criteria, the purpose of MCDM is to provide a choice, ranking, description, classification, sorting, and, in most instances, an order of alternatives, from the most preferred to the least favored option. (Mulliner et al., 2016). Assigning weights to criteria is a crucial step that needs to be reconsidered in the majority of MCDM models. However, one of the main issues with MCDM is figuring out how to weight the various criteria (Pamučar et al. 2018; Vinogradova et al., 2018). The assessment of the criteria weights can be subjective, objective or hybrid (Ginevičius and Podvezko, 2005). The subjective methods calculate weights in accordance with the preferences of decision makers for the criteria. The opinion or intuition of the decision maker is reflected in weights created using subjective methods. Due to lack of information or experience, the decision maker may impact the findings of analyses or the rankings of alternatives based on weights (Ma et al., 1999). Furthermore, determining the subjective weights for the criteria takes a lot of time, particularly when there is disagreement among the decision makers regarding the issue at hand (Odu, 2019). On the contrary, the objective methods calculate weights on the basis of objective data (e.g. decision matrix). However, by using mathematical models to generate weights, objective methods frequently ignore the decision maker's subjective judgment (Ma et al., 1999). The question of how completely and objectively the small sample of alternative traits conveys the value of the criteria is also left unanswered for these methodologies. Obviously, the decision matrix entirely determines the outcome (Mukhametzyanov, 2021). In hybrid methods, subjective and objective weighting methods are combined. The decision matrix data and the preferences of the decision makers can both be used in the hybrid methods (Keshavarz-Ghorabaee et al., 2021).

Since only objective weighting methods will be used in this study, a few studies in the literature using objective weighting methods will be discussed below.

Using the weights obtained by the CRITIC (CRiteria Importance Through Intercriteria Correlation), equal weights (mean weight), and standard deviation methods, Diakoulaki et al. (1995) evaluated firms with regard to three ratios indicating the profitability, the market position, and the labor productivity in their study where they introduced the CRITIC method.

Zavadskas and Podvezko (2016) aggregated the entropy method and the CILOS (Criterion Impact LOSs) method to create a new method called

IDOCRIW (Integrated Determination of Objective CRIteria Weights). Using the weights obtained from these three objective weighting methods, office buildings were evaluated with TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), COPRAS (COmplex PRoportional ASsessment), and SAW (Simple Additive Weighting) methods.

The issue of selecting suitable methods for MCDM problems was addressed by Sałabun et al. (2020). Their study centered on comparing various methods used frequently in this area using simulation-based analysis. To carry out the research, VIKOR (VIseKriterijumsa Optimizacija I Kompromisno Resenje), COPRAS, TOPSIS, and PROMETHEE (Preference Ranking Organization METHod for Enrichment of Evaluations) II were chosen. Additionally, they employed various weighting and normalization strategies, such as the equal weights, entropy, and standard deviation methods. It was found that the equal weights method was not the best option for weighting criteria when compared to the entropy and standard deviation methods. They also found that using the entropy method produced smaller changes in the correlation between rankings.

To perform an assessment of the economy of Czech theaters, Vavrek and Bečica (2020) chose eleven criteria with regard to technical and financial efficiency. The coefficient of variation, standard deviation, and equal weights methods were used to evaluate the significance of the selected criteria. Technical criteria were given more weight by the standard deviation method, whereas the coefficient of variation method demonstrated that financial criteria are more important than technical criteria. The TOPSIS method was then used to determine the overall assessment.

Krishnan et al. (2021) calculated weights of criteria using CRITIC, D-CRITIC (Distance Correlation-based CRITIC), entropy, CILOS and IDOCRIW methods and compared them in their study, which introduced the D-CRITIC method.

In this study, three different objective weighting methods, namely entropy method, CRITIC method and MEREC (MEthod based on the Removal Effects of Criteria) will be addressed, and the weights obtained from these methods will be aggregated to obtain the final weights. Subsequently, seven smartphones will then be ranked with COPRAS using these aggregated weights.

Here is the remainder of the study: In the second section, the three objective weighting methods used in the study will be addressed. The third

section includes the application and the results. The study ends with the discussion and conclusion in the fourth section.

2. Methodology

The three objective weighting methods used in the study's application section are discussed in this section, followed by an explanation of the COPRAS method for ranking the smartphones. It is assumed that there are m alternatives and n criteria for the decision matrices in the explanations of the weighting methods.

2.1. Entropy method

This method was proposed by Shannon (1948). For quantifying contrast intensity and subsequently determining objective weights of criteria, the entropy measure has been suggested. The more distinct the scores of the examined alternatives are, the higher the weights that this method assigns. The same reasoning, when viewed from the opposite perspective, affirms that a criterion where all alternatives perform equally does not provide any additional information and should not be used in the decision making process (Diakoulaki et al., 1995). This method computes the weights of the criteria by using the following steps (Alinezhad and Khalili, 2019; Huang, 2008):

1) The decision matrix is created by using Eq. (1).

$$\mathbf{X} = \begin{bmatrix} x_{11} & \cdots & x_{1j} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{i1} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mj} & \cdots & x_{mn} \end{bmatrix}; \quad i = 1,2,\dots,m, \quad j = 1,2,\dots,n \tag{1}$$

2) By using Eq. (2), the decision matrix is normalized.

$$r_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}}; \quad j = 1,2,\dots,n \tag{2}$$

3) Eq. (3) computes the degree of entropy for each criterion.

$$e_j = -\frac{1}{\ln(m)} \sum_{i=1}^{m} r_{ij} \cdot \ln(r_{ij}); \quad j = 1,2,\dots,n; \ 0 \le e_j \le 1 \tag{3}$$

4) Eq. (4) calculates the degree of variation for each criterion.

$$d_j = 1 - e_j, \ \ j = 1,2,\dots,n \tag{4}$$

5) By using Eq. (5), the weights are calculated.

$$w_j^{(1)} = \frac{d_j}{\sum_{j=1}^{n} d_j} \tag{5}$$

2.2. CRITIC method

This method was introduced by Diakoulaki et al. (1995). It adds a second dimension to the concept of information generated by criteria in an MCDM analysis. This is the conflict between various criteria. Each decision situation is built around the fundamental MCDM concept of conflict. An MCDM problem where the alternatives perform identically across every evaluation criterion is uninteresting because it is clear which option to choose. In this instance, adding a new criterion that gives the alternatives a different ranking adds a substantial amount of information and fundamentally changes the decision making environment. The weights established by the CRITIC method take conflict and contrast intensity, both components of the decision problem's structure, into consideration (Diakoulaki et al. 1995). The steps that are used in this method to compute the weights of the criteria are as follows (Diakoulaki et al., 1995; Alinezhad and Khalili, 2019):

1) The decision matrix is created by using Eq. (6).

$$\mathbf{X} = \begin{bmatrix} x_{11} & \cdots & x_{1j} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{i1} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mj} & \cdots & x_{mn} \end{bmatrix}; \; i = 1,2,\dots,m, \quad j = 1,2,\dots,n \tag{6}$$

2) Using Eq. (7), the decision matrix is normalized.

$$r_{ij} = \frac{x_{ij} - x_j^-}{x_j^+ - x_j^-}; \quad i = 1,2,\dots,m, \quad j = 1,2,\dots,n \tag{7}$$

where $x_j^+ = \max_i x_{ij}$ and $x_j^- = \min_i x_{ij}$.

3) The correlation coefficient among criteria is calculated by using Eq. (8).

$$\rho_{jk} = \sum_{i=1}^{m}(r_{ij} - \bar{r}_j)(r_{ik} - \bar{r}_k) / \sqrt{\sum_{i=1}^{m}(r_{ij} - \bar{r}_j)^2 \sum_{i=1}^{m}(r_{ik} - \bar{r}_k)^2} \tag{8}$$

where $\bar{r}_j$ and $\bar{r}_k$ are the means of the jth and kth criterion, respectively. $\bar{r}_j$ is calculated by using Eq. (9), and $\bar{r}_k$ is computed similarly.

$$\bar{r}_j = \frac{1}{m}\sum_{i=1}^{m} r_{ij}\,; j = 1,2,\dots n \tag{9}$$

4) The standard deviation for each criterion is computed by using Eq. (10).

$$s_j = \sqrt{\frac{1}{m-1}\sum_{i=1}^{m}\left(r_{ij} - \bar{r}_j\right)^2}\,;\ j = 1,2,\dots,n \tag{10}$$

The index (C) is calculated by using Eq. (11).

$$C_j = s_j \sum_{k=1}^{n}\left(1 - \rho_{jk}\right);\ j = 1,2,\dots,n \tag{11}$$

5) Eq. (12) is used to calculate the weights of the criteria.

$$w_j^{(2)} = \frac{C_j}{\sum_{j=1}^{n} C_j} \tag{12}$$

2.3. MEREC

MEREC was introduced by Keshavarz-Ghorabaee et al. (2021). The removal effects of each criterion on the aggregated performance of alternatives are used by MEREC to calculate the weights of criteria, in contrast to other methods. In MEREC, a criterion is given more weight when removing it has a greater impact on the overall performance of the alternatives. In addition to weighting each criterion, this viewpoint may help decision-makers leave out some criteria from the decision-making process. A fresh viewpoint on choosing the weights of criteria can be gained by taking into account the variations and the performance of an alternative based on eliminating criteria. In other terms, MEREC is built on the idea of causality. This method computes the weights of criteria by using the following steps (Keshavarz-Ghorabaee et al., 2021):

1) The decision matrix is created by using Eq. (13).

$$\mathbf{X} = \begin{bmatrix} x_{11} & \cdots & x_{1j} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{i1} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mj} & \cdots & x_{mn} \end{bmatrix}; \; i = 1,2,\dots,m, \quad j = 1,2,\dots,n \tag{13}$$

2) The decision matrix is normalized for beneficial and non-beneficial criteria by using Eqs. (14) and (15), respectively:

$$r_{ij} = \frac{\min_i x_{ij}}{x_{ij}}; \quad i = 1,2,\dots,m, \; j = 1,2,\dots,n \tag{14}$$

$$r_{ij} = \frac{x_{ij}}{\max_i x_{ij}}; \quad i = 1,2,\dots,m, \; j = 1,2,\dots,n \tag{15}$$

3) Eq. (16) is used to determine the alternatives' overall performance.

$$S_i = \ln\left(1 + \left(\frac{1}{n}\sum_{j=1}^{n}\left|\ln\left(r_{ij}\right)\right|\right)\right); \quad i = 1,2,\dots,m \tag{16}$$

4) By removing each criterion, Eq. (17) calculates the performance of the alternatives.

$$S'_{ij} = \ln\left(1 + \left(\frac{1}{n}\sum_{k=1,k\neq j}^{n}\left|\ln(r_{ik})\right|\right)\right); \quad i = 1,2,\dots,m, \; j = 1,2,\dots,n \tag{17}$$

5) The effect of removing jth criterion is calculated by using Eq. (18).

$$E_j = \sum_{i=1}^{m}\left|S'_{ij} - S_i\right|; \; j = 1,2,\dots,n \tag{18}$$

6) The weights of the criteria are determined using Eq. (19).

$$w_j^{(3)} = \frac{E_j}{\sum_{j=1}^{n} E_j} \tag{19}$$

2.4. COPRAS

COPRAS was proposed by Zavadskas et al. (1994). This method uses following steps to rank the alternatives (Alinezhad and Khalili, 2019):

1) The decision matrix is created by using Eq. (20).

$$\mathbf{X} = \begin{bmatrix} x_{11} & \cdots & x_{1j} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{i1} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mj} & \cdots & x_{mn} \end{bmatrix}; \; i = 1,2,\dots,m \quad j = 1,2,\dots,n \tag{20}$$

2) Using Eq. (21), the decision matrix is normalized.

$$r_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}} \; ; \; j = 1, 2, \dots, n \tag{21}$$

3) Eq. (22) is used to weight the normalized decision matrix.

$$\hat{r}_{ij} = r_{ij} w_j \; ; \; i = 1, 2, \dots, m \quad j = 1,2,\dots,n \tag{22}$$

where w_j is the weight of the jth criterion.

4) The maximizing and minimizing indexes of each criterion are determined by Eqs. (23) and (24), depending on whether the criteria are beneficial or non-beneficial.

$$S_{+i} = \sum_{j=1}^{g} \hat{r}_{ij} \; ; \quad i = 1, 2, \dots, m \tag{23}$$

$$S_{-i} = \sum_{j=g+1}^{n} \hat{r}_{ij} \; ; \; i = 1, 2, \dots, m \tag{24}$$

where S_i describes the maximizing and minimizing indexes of the ith criterion, depending on the type of it, and g denotes the number of beneficial criteria and $n - g$ the number of non-beneficial criteria.

5) Using Eq. (25), the relative significance value of each alternative is computed by

$$Q_i = S_{+i} + \frac{\sum_{i=1}^{m} S_{-i}}{S_{-i} \sum_{i=1}^{m} \frac{1}{S_{-i}}} \tag{25}$$

6) The relative significance values of the alternatives are ranked from greatest to lowest, with the highest final value having the highest rank.

3. Application and results

This study used data from the top seven smartphones (SP1-7) determined for 2023 on a website to first compute criteria weights

employing three different objective weighting methods. These weights were then aggregated to obtain a single weight for each criterion. By using these aggregated weights, these seven smartphones were finally ranked with the COPRAS method. RAM and internal storage criteria were added in addition to those in the research by Krishnan et al. (2021) because these two are significant criteria when shopping for a smartphone. Thus, the criteria used in the study are price in US dollars (CR1), screen size in inches (CR2), pixels per inch (CR3), thickness in mm (CR4), weight in grams (CR5), RAM in GB (CR6), and internal storage in GB (CR7). Screen size, pixels per inch, RAM, and internal storage are beneficial criteria, whereas the other criteria are non-beneficial. Table 1 shows the data used in the study, and Table 2 provides the weights determined by the objective weighting methods and the ranking of the criteria according to these weights.

Table 1. Decision matrix (ZDNET, 2023; Versus, 2023)

Smartphone	CR1	CR2	CR3	CR4	CR5	CR6	CR7
SP1	1199	6.8	501	8.9	233	12	1000
SP2	1099	6.7	460	7.85	240	6	1000
SP3	899	6.7	512	8.9	212	12	512
SP4	299	6.1	429	8.9	178	6	128
SP5	699	6.7	525	8.5	205	16	512
SP6	850	6.7	426	6.9	187	8	512
SP7	1000	6.1	460	7.65	204	6	1000

Table 2. Weights obtained by the objective weighting methods and the ranking of the criteria

	CR1	CR2	CR3	CR4	CR5	CR6	CR7
Entropy weights	0.2184	0.0034	0.0110	0.0144	0.0181	0.2646	0.4700
Entropy ranking	3	7	6	5	4	2	1
CRITIC weights	0.1389	0.1442	0.1339	0.1542	0.1476	0.1211	0.1601
CRITIC ranking	5	4	6	2	3	7	1
MEREC weights	0.1567	0.0240	0.0353	0.0294	0.0532	0.1336	0.5678
MEREC ranking	2	7	5	6	4	3	1

The radar charts for the weights found using the entropy method, CRITIC method, and MEREC are shown in Figures 1, 2, and 3, respectively.

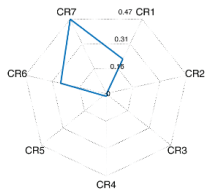

Figure 1. Radar chart or entropy method

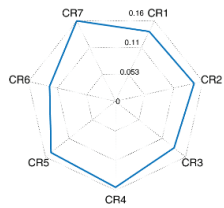

Figure 2. Radar chart for CRITIC method

Figure 3. Radar chart for MEREC

As can be seen from Table 2, all three objective weighting methods give different weights for the criteria. While the weights calculated by the entropy method and MEREC produce a ranking for the criteria that is reasonably similar, CRITIC method produces a very different ranking.

In this study, weight aggregation has been applied to compensate the different weights obtained by different objective weighting methods. There are several aggregation methods. However, in this study, aggregated weights for the seven criteria were determined using Eqs. (26) and (27) (Mukhametzyanov, 2021):

$$q_j = \left[\prod_{k=1}^{K} w_j^{(k)}\right]^{1/K} \qquad j = 1,2,\dots,n \tag{26}$$

where K is the number of available objective weighting methods. In this study, $K = 3$, as three different objective weighting methods are applied.

$$\widehat{w}_j = \frac{q_j}{\sum_{j=1}^{n} q_j} \tag{27}$$

The aggregated weight for each criterion is given in Table 3, and Figure 4 shows the radar chart for the aggregated weights. Internal storage has the highest weight, whereas screen size has the lowest weight.

Table 3. Aggregated weights for the criteria

CR1	CR2	CR3	CR4	CR5	CR6	CR7
0.2019	0.0274	0.0448	0.0484	0.0627	0.1950	0.4198

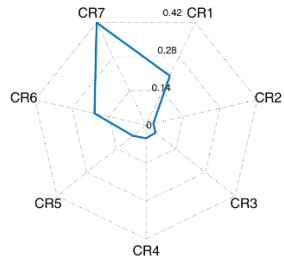

Figure 4. Radar chart for the aggregated weights

The degree of discrepancy between a set of estimated values and actual values can be measured using a variety of error metrics, such as mean absolute error (MAE), mean squared error (MSE), root mean squared error (RMSE), mean absolute percentage error (MAPE), and symmetric MAPE (sMAPE). These error measures can also be used to evaluate the precision of the data produced by various MCDM methods. Typically, the accuracy of a method increases with decreasing error values. Any error metrics must be used with a collection of actual values. To compare the three methods, sMAPE for each method was then calculated using Eq. (28) by taking these aggregated weights to be the actual weights. As opposed to MAPE, which penalizes negative error (when the estimated value is greater than the actual value) more severely than positive error, sMAPE was chosen out of a variety of metrics (Krishnan et al., 2021).

$$sMAPE^{(k)} = \frac{100\%}{n}\sum_{j=1}^{n}\frac{\left|w_j^{(k)}-\hat{w}_j\right|}{(w_j^{(k)}+\hat{w}_j)/2} \qquad k = 1,2,\dots,K \tag{28}$$

Table 4. sMAPE for each objective weighting method

Entropy	CRITIC	MEREC
77.82%	84.91%	27.78%

As can be seen from Table 4, the lowest sMAPE belongs to MEREC.

Table 5 shows the ranking obtained by COPRAS using the aggregated weights in Table 3. Since SP1 has the greatest relative significance value, SP1 is ranked first.

Table 5. Ranking by COPRAS using the aggregated weights

Smartphone	Q_i	Ranking
SP1	0.1689	1
SP2	0.1529	3
SP3	0.1327	5

SP4	0.1133	7
SP5	0.1522	4
SP6	0.1239	6
SP7	0.1562	2

4. Discussion and conclusion

In this study, three different objective weighting methods, namely entropy method, CRITIC method and MEREC, were considered and the weights obtained from these methods were aggregated. Weight aggregation has been applied to compensate the different weights obtained by different objective weighting methods. Then, seven smartphones were ranked with COPRAS using these aggregated weights. It was observed with sMAPE that the weights calculated with MEREC were closest to the aggregated weights. Since internal storage has the highest aggregated weight among the criteria and SP1, SP2, and SP7 have the highest internal storage, these three smartphones are anticipated to occupy the top three ranks when taking into account the ranking obtained using the aggregate weights in COPRAS. As SP4 has the lowest internal storage, this smartphone ranks the last. Although price is the second most important criterion according to the aggregated weights and RAM is the third most important criterion, the fact that the SP1 with the highest price has a larger RAM compared to the SP2 and SP7 places SP1 in the first place.

By employing various objective weighting methods used in the literature, such as standard deviation method, statistical variance procedure, CILOS, IDOCRIW, etc., future studies can explore how the aggregated weights will be impacted and how the ranking with COPRAS or various MCDM methods will change when these aggregated weights are used.

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CHAPTER 9

DOLLARIZATION IN TURKEY

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INTRODUCTION

Dollarization is primarily due to a lack of confidence in monetary policy. The ineffective and unsuccessful policies of central banks cause high unpredictable rates of inflation. The most important policy tool of monetary policy that supports the preservation of the value of the domestic currency in cross transactions is interest. On the other hand, inflation is the most basic indicator of savings when real and legal persons create their portfolios and make investments. All rationally expect their assets to be appreciated above inflation and to generate real returns. In a fragile economy like Turkey with high exchange rate volatility, unstable monetary and fiscal policies, it has become inevitable for people to accumulate assets and enter into debt relations with a currency with a more predictable future and a stronger economy. Economists and financiers call this phenomenon "Dollarization".

In 1971, with the end of fixed exchange rate system, a new system was sought. In the 1980s, the liberal trend that spread to the world from the United States of America, globalization and liberalization of capital mobility caused an intensification of dollarization in developing countries such as Turkey, which made inflation an integral part of its economy. The return of domestic and foreign currency to savings and investment cost have been important factors in dollarization.

Previous studies attributed the reason for dollarization to domestic dynamics. The causes of dollarization were inflation and exchange rates (Saraç, 2010; Darıcı, 2004; Us & Metin-Özcan, 2005; Terzi and Kurt, 2007; Sarı, 2007; Hekim, 2008; Yalta & Yalta, 2021; Aktaş & Aydınlık, 2022). Other important determinants of dollarization were interest rates (Yalta & Yalta, 2021), domestic and foreign currency interest margins (Sarı, 2007), political events (Bărbuță-Mișu, Güleç, Duramaz and Virlanuta, 2020), import, export, CDS premiums (Aktaş & Aydınlık, 2022).

This study aims to examine short run and long run relationships between dollarization (FED/(M1+M2)), USD/TL exchange rates, inflation and USD interest rates in the period of aformentioned events. The research focuses on causal effects of these macroeconomic variables. Based on availability of monthly data, econometric analysis covers the 2013m1-2022m8 period. Dickey Fuller test for unit root and bound test (Pesaran, Shin and Smith, 2001) for cointegration are used. Stability of the coefficients in the models is tested using cumulative sum (CUSUM) squared of residuals.

1. BACKGROUND

Political developments in the last decade had tremendous impact on Turkish economy. Brunson crisis (2015-2018) and F35 bargain of Turkish

government with the US government to release Brunson had mobilized exchange rates upwards in Turkey. Election of Trump had further elevated the issue. Dollarization increased from 58 percent 72 percent from Trump's election in November 2016 to his inauguration in January 2017. Trump had announced that they would hit Turkish economy which followed by Biden's statement to support Turkish opposition parties against the government. Extremely high volatilities in exchange rates and interest rates were observed after USD/TRY shock in August 2018 when Brunson was not released. USD/TL exchange rate went up about one TRY, USD interest rate 1.55 percent and dolarization rate 25 percent (CBRT, 2022a). Covid 19 pandemic also contributed to negatve effects on Turkish economy. USD/TRY exchange rate increased from 6.04 in March 2020 to 8.00 in November 2020. Over the same period, consumer price index increased from 57 percent to 230 percent and dollarization rate increased from 91 percent to 105 percent (CBRT, 2022a). And finally the expected war in Ukraine broke out in February 2022. A dramatic increase in energy prices were experienced months preceding the war due decline in energy flow to Europe. This has increased transportation cost at most in Turkey and an inflation shock was experienced in December 2021. Consumer price index in this month increased from 3.51 percent to 13.58 percent in a month. The most important determinants of high inflation were food and transportation. These were two extremely important future indicators of food and energy crisis for Turkey. USD/TL exchange rate increased from 9.14 to 13.53 and dollarization rate increased from 107 percent to 154 percent in two months (2021m10-2021m12). Monthly USD interest rate also increased from 2 percent to 3 percent which then went up to 8 percent in August 2022 (CBRT, 2022a).

In general outlook, Turkish government claimed that interest rate causes inflation and lowered lending rates from 12 percent in October 2022 to 10.50 percent in November 2022 (Trading Economics, 2022) whereas TSI inflation rate was 83.50 percent (CBRT, 2022b). This move flowed the cash to the banks and according to BRSA increased bank profits by 400 percent only in the first half of 2022 (Bloomberg, 2022a). As of October 22, weighted average consumer loan interest rates (flow data) ranged between 26.00-33.72 percent (CBRT, 2022c). On the other hand, weighted average of interest rates for one month timed deposits had a range of 16.83-19.11 percent in the 2022m1-2022m10 period (CBRT, 2022d). Profits of energy companies increased by about 524 percent (Bloomberg, 2022b).

2. LITERATURE REVIEW

Aktaş & Aydınlık (2022) used fixed and random effects for the 2007Q4-2019Q1 period and found that inflation, import, export, exchange rate and CDS premiums were determinants of deposit dollarization.

Yalta & Yalta (2021) used maximum entropy bootstrap method for 2013-2021 monthly data to investigate the relationship between dollarization, consumer price index, real exchange rate and volatility of interest rate. The impact of inflation rate on deposit dollarization showed variations before and after the new presidential system. The effect of inflation rate and exchange rate on deposit dollarization had weakened over time. Furthermore, interest rate volatility and economic confidence were important determinants of deposit dollarization.

Tufaner (2021) used regression and causality for the 2013m1-2021m2 period to examine the relationship between international reserves, the difference between domestic and foreign interest rates, the returns of financial investment instruments and the exchange rate. One-sided causality was found from international reserves and returns of financial investment instruments to dollarization.

Bărbuță-Mișu, Güleç, Duramaz, Virlanuta (2020) used iterative cumulative sum of squares and markov switching dynamic regression structural break models for the 2012m12-2018m12 period to examine the relationship between interest rates, exchange rate and dollarization. The authors found that speculative trading was not the cause of the dollarization of deposits in Turkey. Political events had a stronger influence over dollarization compared to economic events. Domestic citizens dollarized their deposits with the motivation to protect against political ambiguity rather than economic volatility. Dollarization could be averted in the short run with an increase in interest rates.

Hekim (2008) used OLS method for the 1992m1-2007m12 period and found the change in inflation and real exchange rates as the most important determinants of dollarization (FED/M2Y).

Sarı (2007) used VAR model for the 1990m01-2006m12 period and found that the exchange rate, domestic and foreign currency interest margins mutually affect the risk variable dollarization.

Terzi and Kurt (2007) used VAR model in the 1990m1-2006m4 period and found that the main reason for dollarization (FED/M2Y) was determined as inflation, exchange rate and money supply variables. Using OLS method for the 1992m01-2007m12 period.

Us and Metin-Özcan (2005) used ARDL model for the 1990m1-1999m12 period to show that the inflation rate was an important determinant of persistance in currency substitution.

Darıcı (2004) found that real exchange rate and inflation trigger currency substitution based on LS method for the 1990m3-2002m3.

Acar Balaylar & Abuk Duygulu (2004) used Granger causality test to analyze the relationships between M2 annual deposit interest rate, inflation, real exchange rate, nominal GNP, quarterly treasury bill interest rate for the 1987m01-2000m12 period, and found no long run relationship between the variables.

Civcir (2003) used Johansen cointegration test for the period 1986m01-1999m12 and found that the determinant of dollarization in the long run was the difference in real interest rates and the expected change in exchange rates.

Domac & Bahmani-Oskooee (2003) used VAR model for the period 1990m01-2001m12 and found that shocks in dollarization (FED/M2Y) first decreased the Central Bank monetary base as the public switched from domestic to foreign money holdings and then created an expansion in the monetary base.

Adanur (2001) used Granger causality test for the period 1990m01-2000m12 and found causality from inflation to dollarization (FED/M2Y).

Akçay, Alper & Karasulu (1997) used GARCH model for 1987m01-1995m12 and found that currency substitution increased exchange rate instability.

Yamak and Yamak (1997) used LS for the 1990m01-1997m12 period to show statistically significant and positive relationship between expected changes in exchange rates and dollarization (FED/M2Y).

Küçükkale (1996) also used LS method and found a significant relationship between FX demand and inflation expectation for the period1986m01-1995m07.

Özkaramete Coşkun (1999) found a positive relationship between dollarization (FED/Total deposits) and rates of change in exchange rates, broad money supply, inflation.

Ertürk (1991), based on LS method for the period 1986m01-1988m07, determined a linear relationship between inflation increase, devaluation expectations, and increase in foreign currency interest rates and foreign currency demand.

Hakioğlu (1988) analyzed the relationship between foreign exchange deposits (FED) and current deposits for the period 1984m12-1987m09 using LS method and found that TL was substituted with foreign currencies.

3. CONCEPTUAL FRAMEWORK

In its broadest sense, dollarization is the use of foreign currency instead of the national currency to fulfill all the functions and use of money in any country. The use of foreign currency in commercial, financial transactions with a means of calculation, store of value against the official national currency is called both dollarization and currency substitution. Dollarization and currency substitution are used as synonyms in the literature. However, the domestic currency has lost all its functions in currency substitution and left these features to foreign currency, while dollarization has emerged as a result of the loss of the domestic currency's ability to store and calculate value. Residents of countries experiencing chronic inflation are first starting to use foreign currency as a tool to

accumulate assets or as a unit of calculation function. Since the exact amount of foreign currency in circulation cannot be known, the dollarization rate of the country is considered as an indicator of the rate of currency substitution.

3.1. Full Dollarization

Dollarization is categorized by looking at the ratios to the dimensions in which it is experienced in the economy. Full dollarization is the fact that it has an important place in the domestic financial system and that a foreign currency trusted by economic units is declared as a legal payment instrument (Sarı, 2007). Countries that legally accept full dollarization mean that they have abandoned their national currencies and voluntarily relinquished their authority to determine monetary policy.

3.2. Partial Dollarization

Partial dollarization is explained by the fact that the public and all economic sectors create foreign currency assets in their portfolios, and the public and private sectors accumulate assets and liabilities in foreign currency. Countries that allow partial dollarization in the financial system encourage domestic and foreign residents to keep their savings within the domestic financial system by attracting capital flows to their system and minimizing capital flight without capital control.

3.3. Currency Substitution

In the literature, it is called currency substitution when real and legal persons contractually use foreign currency instead of domestic currency (Sarı, 2007). It arises due to the differences between domestic and foreign inflation rates, in line with the desire to protect the purchasing power of the domestic currency due to high inflation. Gresham's Law describes this phenomenon as a reverse operation. He stated that good money drives out bad money.

Yeyati and Sturzeneger (2003) defined currency substitution as the effect of the expected return on holding foreign currency directly, rather than being a function of the expectation of return on assets with interest from foreign currency. Since the main reason for currency substitution is unstable, volatile and high inflation, it is thought that the problem of currency substitution can be solved by keeping inflation and expectations at reasonable levels and controlling them. This approach could not be confirmed by empirical studies in the literature (Sarı, 2007).

Currency substitution is attributed to the negative relationship between the domestic currency demand and the inflation rate (Yeyati and Sturzenger, 2003). Long-term inflation and the depreciation of the domestic currency are shown as the reasons for the increase in the

dollarization rate in the economy. In order to reverse this situation, it is considered necessary to maintain a stable low inflation in the long term and the appreciation of the domestic currency against international currencies.

3.4. Asset Dollarization

Asset dollarization is the term given to the use of foreign currency as a means of storing value and accumulating assets. The interest it expects to save on foreign currency and the rate of return it expects to obtain against the depreciation of the domestic currency due to the decrease in purchasing power lies at the basis of asset substitution. If foreign currency rates rise and there is an inflationary environment in the country, if people who have savings do not receive the real return they expect, asset substitution gains momentum.

One of the most prominent dollarization indicators of countries is the wide-ranging (M2Y) money supply and the total amount of deposits in foreign currency. Dollarization rate can be calculated as the second divided by the first (Metin-Özcan and Us, 2009).

In developing countries like Turkey, as a result of various financial and economic crises, the trust in the real economy decreases, and investors withdraw their assets from the financial system and keep them in a physical environment called under the pillow. This brings the dollarization of liabilities, which we will discuss in the continuation of the study, to a level that cannot be met.

3.5. Liability Dollarization

The situation of all economic actors, including the finance sector, firms and the treasury, to have liabilities in foreign currency is referred to as liability dollarization in the literature. If economic actors have liabilities in foreign currency and do not have sufficient foreign currency assets, they increase their sensitivity to exchange rate volatility (Sarı, 2007). Liability dollarization is seen as a type of dollarization seen in developing countries with high current account deficits and foreign borrowing as investment financing. Liability dollarization ratio is calculated by (FX Loans / Total Loans) + (FX and FC Indexed Domestic Debt / Total Domestic Debt) + (Total External Debt / GDP)

3.6. Financial Dollarization

Financial dollarization is the combination of asset dollarization and liability dollarization. It is impossible not to see financial dollarization in a place where liability dollarization is experienced. Financial dollarization occurs as a result of proportionally high dollarization of assets and liabilities in the balance sheets of market makers and sectors. Financial dollarization occurs when economic units create assets in foreign currency

to protect their savings and assets against inflation (asset dollarization), on the other hand, foreign currency borrowing (liability dollarization) caused by the faulty works and failures of the market and institutions. (Yılmaz, 2005). The risk of fragility in the financial structure along with capital flows in developing countries has made financial dollarization a research topic.

As economists examine economic crises, how the currency mismatch of economic units due to liability dollarization, how imbalances in balance sheets threaten financial stability and how important it is in crises are observed. Looking at the sectors one by one, the assets of the companies that went into crisis and went bankrupt are mostly in domestic currency and their liabilities are mostly in foreign currency. The reason for this is not because of the firm's indebtedness, but in case of sudden and high depreciation of the domestic currency as a result of the high dollarization of the country. The real debt stock in foreign currency increases compared to its assets, and as a result, it is expected that the investments decrease with the contraction in domestic production. Foreign currency liabilities of all sectors operating domestically, including the public and banks, are among the important indicators that show the level of dollarization (Akıncı et al., 2005).

3.6.1. Causes of Financial Dollarization

3.6.1.1. Dollarization Hysteria

Even though countries such as Peru, Bolivia and Argentina, which experience high and continuous inflation, have a relatively stable economic structure by implementing relatively effective monetary policies and reducing the inflation rate, partial dollarization is still high in these countries. In the literature, this situation is called 'Dollarization Hysteria'. Oomes (2003) defined dollarization hysteria as the increase in the purchasing power of the national currency and the partial dollarization that does not decrease despite the decrease in inflation. It is seen that once the savers get used to holding foreign currency deposits, they did not change their portfolios in the short and medium term, and they could not break their expectations, as the factors causing them to hold foreign currency deposits disappeared.

Even if the exchange rate volatility experienced in the past is prevented and a calmer exchange rate and inflation rate is ensured, savers avoid breaking their foreign currency deposits unless they expect that this environment will maintain its stability (Luca and Petrova, 2003).

The dollarization seen after the unsustainable exchange rate policy is directly proportional to the expected inflation. As a result of the loss of confidence in monetary policy, financial stability deteriorates, volatility increases and the high level of dollarization continues. If the monetary policy controls inflation, the perception of households and companies

deteriorates as a result of the inability to allocate confidence, the expected inflation increases, and in parallel, the dollarization hysteria increases.

3.6.1.2. High Inflation and Price Volatility

Price volatility is an important cause of dollarization and its increase over time (Ize and Powell, 2005). Confidence in the national currency decreases, with frequent economic crises and high inflation.

Considering the correlation between inflation and dollarization, the reflection of changes in exchange rates on inflation in the short term makes it necessary to ensure stability in real exchange rates (Gençay, 2007). The inability to achieve stability in real exchange rates increases the volatility costs in exchange rates, increases prices as a result, and causes the dollarization rate to increase even more (Ize and Powell, 2005).

It has been determined that dollarized economies have a high rate of reflecting the volatility in exchange rates to inflation. Honohan and Shi (2001) claimed that with the regression model, each 10% increase in dollarization burns out as an 8% increase in inflation. This relationship can also be analyzed for Turkey.

Even if there is a positive correlation between CPI and the USD/TL exchange rate (CBRT, 2022a), it is not possible to characterize the cause of inflation on the exchange rate until 2012. This tells us that the event that caused inflation has other reasons specific to Turkey. However, households and firms preferred to save foreign currency in order to protect their assets from these price increases.

The Turkish economy has experienced instability in macroeconomic policies due to structural weakness. Structural reforms have not been implemented or sustained for a well-functioning market economy. Long-term budget deficits and high inflation problems destabilized the local currency in maintaining its value and lost its credibility over time. The deficits in the budget show that there is no planned expenditure, and every unit of expenditure made by the public, which has the largest expenditure item, is reflected in inflation. Before stabilization in financial markets is achieved, it is expected to provide stability in the public sector and to create a regulatory effect on the market.

3.6.1.3. Fundamental Sin

Borrowing a foreign currency other than the domestic currency is called fundamental sin. Capital flows occur from countries with current account surplus and low borrowing rates to countries with low incomes. The difficulty in using it to control consumption due to capital flows from high-income countries to low-income countries stems from the fact that it does not borrow abroad with its own currency. The depreciation of the real exchange rate with the increase in foreign currency liabilities and foreign

debt of a country will cause the debt level to increase in terms of domestic currency. Borrower countries will have difficulty in rebalancing to domestic exchange rates, but will have to borrow new money to pay off their debt or hold foreign currency in their reserves to repay their debts.

Countries whose national currency is not seen as a reserve currency in the international financial system will have to use foreign currency or gold to pay off their foreign debts.

There is a difference in meaning between external liability and external debt. External debt is the borrowing made out of national currency, which flows from countries with surplus funds to countries with fund deficits. If the maturity of these borrowings is less than one year, it is called "short-term external debt". External liabilities, on the other hand, refer to liabilities such as external debt, foreign loans and deposits in the form of foreign exchange deposits to real and legal persons not resident in Turkey (Eğilmez, 2021).

Foreign currency borrowing has increased continuously since 2012. There are two ways in which the central government can pay off its debts that are due, by re-borrowing or using its reserves. The reserves are able to meet the short-term debts. The ratio of short-term external debt has the largest share in debt liabilities (CBRT, 2022). Since 2012, the debt coverage ratio of reserves has been decreasing. We know that the rise in 2019 increased with the 3rd quarter of 2018 and with swap agreements in 2019.

As a result of cheap foreign exchange, low inflation and low interest rates applied to the currency, the central government stopped borrowing in its own currency and started to borrow in foreign currency. Considering the amount of this borrowing, with the view that the foreign exchange prices will stay at these levels and the interest rates will not rise in the short term, the use of reserves and borrowing, as well as FX open positions have increased day by day.

The central government does not have large items of income other than Central Bank that issues the national currency and the taxes it collects on the local currency. Therefore, it will pay its foreign currency liabilities with the foreign currency it will purchase using the local currency. As the real exchange rate depreciates, the central government will have to buy using more domestic currency for the level of foreign currency owed.

The real exchange rate is a basket exchange rate index that is weighted based on certain criteria from various foreign currencies. It is formed as a result of calculating the real exchange rate index as an average without taking into account the high volatility during the year. The domestic currency has been in a downward trend since 2010. This loss of value in the domestic currency forces the state, companies and households who want to pay their debts to exchange more local currency and buy foreign

currency. Increasing money supply to meet the domestic money demand will cause inflation after a while.

When we look at the CPI-based real exchange rate index (CBRT, 2022a), there is a downward trend line, as well as volatility on some dates, and the overhanging of the line shows that there is an excessive depreciation in the domestic currency. It is observed that the TL has lost more than 20% of its value during the sagging dates. Along with these value losses, it has been determined that real and legal persons evaluate every exchange rate decrease in the direction of purchase.

3.6.1.4. Risk Management

In the banking sector, they have to resort to foreign currency loans or investment & savings in foreign countries in order not to fall short of their foreign currency deposits (Honohan and Shi, 2001).

Due to the increase in foreign currency deposit rates, foreign currency positions in banks' assets have increased. The most important factor in the balance sheet of banks that determine credit dollarization, that have local currency income but extend foreign currency loans, plans to reduce their open positions in order to avoid exchange rate risk is called risk management.

3.6.1.5. Distrust in Monetary Policy

Time series of deposit ınterest rate and inflation (Trading Economics, 2022) shows that the depositors who save in domestic currency get real returns with a limited maturity period, and sometimes they get returns below the inflation rate. It has become a normal situation for real and legal persons to hold foreign currency in order to protect their purchasing power.

According to CBRT (2022a) data monthly percentage change in CPI and USD/TL exchange rate, USD/TL exchange rate increased more than inflation in 25 months out of 52 months, and depreciated during the 18-month period compared to the previous period. However, excessive valuations provide higher returns than deposits on annual averages. The decreases experienced are caused by the FX deposits that were melted in the rises stemming from the rises experienced in the previous months. It is possible to follow from the news streams that the monthly data rising one after the other is due to the political and subsequent economic problems in the country.

Özkaramete Coşkun (1999) calculated the monthly percentage changes in the exchange rate. The relationship between percentage change in FX deposits and USD/TL exchange rate based on CBRT (2022a) data was analyzed by considering the criteria in Özkaramete Coşkun's article.

It is clearly seen in the graphs that real and legal persons lose their foreign currency savings when the USD/TL exchange rate rises, and replace the foreign currency they sell when the exchange rate decreases. A stable exchange rate and anti-inflationary policies will reduce the rate at which savers resort to arbitrage, and then they will stop using it as an asset storage tool, although they do not need it. Akcay et al. (1997) investigated the effect of deposit dollarization on exchange rate stability in Turkey using the EGARCH-M model and found that currency substitution increases exchange rate instability.

There was a rapid change in savings as a currency in deposits. The negative divergence continued for a while with the balance reached in mid-2019, and then reverse dollarization started with the change in the economic management in November 2020. However, dismissal of the Central Bank President by the executive and deteriorated stability by the markets spoiled the positive atmosphere. Since the allocation of trust is a long-term event, it is necessary to ensure the continuity of the right policies, to use the communication channels effectively and to manage the money market in line with the policy in order to regain the lost gains.

It is possible to analyze the confidence of real and legal persons in monetary policy by looking at the maturity structure of foreign currency deposit accounts.

According to BRSA FX deposit maturities data in the 2015-2021m3 period, foreign currency deposits have increased continuously throughout the process. However, during this period, we see that there is a decrease by half in maturities of 1 year and above, and the demand accounts held for arbitrage doubled. The definite conclusion that we can draw in general is to say that the maturity of the deposits has shortened. This result means that savers lose their confidence in the economy over time and their expectations are realized in a shorter time.

The fact that deposits are short-term and foreign currency loans are long-term creates difficulties in obtaining loans, increases the costs of the loans given, and causes inconsistency in the balance sheets in foreign currency in the banking sector (Gençay, 2007). Oya Gençay, in her study in 2007, stated that financial dollarization has decreased in the Turkish economy since 2001, the share of one-month FEDs has decreased, and medium and long-term foreign currency loans have increased.

If we look at the domestic short-term loans in February 2021 period, we see that while the long-term loans increased by 1.307 million US dollars in the January 2021 period, the long-term loans decreased by 249 million US dollars. While short-term loans obtained from abroad increased by USD 20 million, long-term loans increased by USD 415 million.

The share of short term liabilities in total liabilities decreased from 43% in 2008 to 25% in 2015, subsequently increased to 33% in 2020 and decreased to about 32% in February 2021.

According to CBRT January 2021 data, assets increased by USD 1.182 million, while liabilities increased by USD 1.493 million. Net FX Position Deficit was realized as USD 155,343 million and increased by USD 311 million compared to January 2021 period.

The fact that liabilities and assets do not increase at the same rate causes deterioration in the balance sheets and an increase in the current account deficit. In case the savings cannot meet the liabilities, foreign borrowing will increase. After a while, with the increase in exchange rates, economic actors with foreign exchange surplus will not want to sell their foreign currency speculatively. Companies that want to pay their due foreign currency loans will choose to allocate a larger share of their profitability and buy foreign currency.

If we look at the past 5 years today, after the increase in exchange rates experienced in 2018, a decrease is observed due to foreign currency loan utilization rates or lending rates. Likewise, it is understood that this demand shifted to domestic currency loans despite high interest rates. The share of foreign currency loans in total loan made a wide bump from USD 160 million in January 2017 to USD 185 million in August 2018. Subsequently declined to steady at about USD160 million over the last two years when total loan was about USD 640 milyon.

Portfolio flows of non-residents, which we call hot money and which are generally short-term, are important foreign currency inputs of the country. The most frequently used instruments are stocks and GDS.

This review was based on the part of Kal's (2019) study, which deals with capital inflows. Partnering with companies with stocks is due to their expectations that the company has a future. GDS (Government Domestic Debt Securities) is an investment made in line with the expectations of the country's future financial structure and economy.

Markets are not entities with emotions. Markets price negative news and expectations without waiting for their realization. If it happens, it takes time for the exiting foreign investor to return. In our country, it has been observed that foreign investors have made a net portfolio exit for the last 3 years. For this reason, we are faced with constantly increasing exchange rates in our country. Because when the foreign investor sells the securities in their hands, they exit the market by buying foreign currency. This causes the exchange rates to rise from the general level, the debt stock to increase and the residents to lose their confidence in the stability of the domestic currency.

Who covers the foreign exchange demanded after these portfolio sales? We can answer this question by looking at the trends in portfolio flow of non-residents (net movements) the first 5 months of 2021 (CBRT, 2022a).

After the change in the economic management in November, the capital flow has taken place. This positive expansion was reflected first on

stocks and then on GDS. As a result, with hot money inflow, the new administration's determined attitude and a stable outlook with the right policies, there was a decrease in foreign USD/TL exchange rates from November 2020 to March 2021 and regressed to July 2020 prices.

As a result of the deterioration in domestic, international portfolios and domestic capital outflows with the change of the President of the Central Bank in March 2021, the exchange rate prices reached the lowest level of 7.28 in this period, but rose to 8.34 in one night.

Domestic residents evaluated the declining exchange rate prices with the change in economic management on November 8, 2020, as a buying opportunity and evaluated them in the direction of purchase until January 8, 2021.

According to BRSA, the rising exchange rate prices with the change of the Governor of the Central Bank on March 20 caused a dissolution of approximately 10 billion dollars in foreign currency deposits in one week (March 19-26, 2021 based on real persons+commercial institutions+official and other institutions data).

The fact that official institutions do not sell any foreign currency, on the contrary, the increase in deposits as a result of purchases shows that the foreign exchange demand of foreign residents is met by domestic real and commercial institutions. Real persons and commercial institutions provided foreign currency to this demand by melting 3.55 percent of their deposits.

4. METHOD

4.1. Data

The overview of dollarization in the first part of the study is based on the data extracted from Banking Regulation and Supervision Agency (BRSA), Central Bank of Turkey Economic Data (CBRT) and TR Ministry of Treasury and Finance.

For short run and long run regression analysis, monthly USD exchange rate, CPI, FED and TRY deposits and weighted average interest rates applied to USD deposits (flow%) all were obtained from CBRT Electronic Data Distribution System (EVDS). Since M2Y was not available, asset dollarization (AD) data is calculated by FED/(M1+M2) where FED is foreign exchange deposits (demand and time deposits) and TRY is TL deposits, M1 is the sum of currency outside banks, demand deposits (TRY and FX), CBRT and banks, and M2 is the sum of FX and TRY time deposits. USD interest rates and TRY interest rates show similar behavior in the 2013m1-2021m6 period.

Table 1 demonstrates the codes of the variables to be used in the models.

Table 1: Variable codes and definitions

Variables	Codes	Definition
Asset dollarization	AD	Monthly total foreign exchange deposits divided by the sum of M1and M2.
Exchange rate	EXCR	Monthly CPI based USD/TRY exchange rates
Interest rate	USDIR	Weighted average interest rates applied to monthly USD deposits (flow %)
Inflation	CPI	Monthly consumer price index

Behaviors of dollarization and CPI variables are observed in Figure 1. In Figure 1a, monthly CPI has two temporary shocks in the 2013m1-2022m8 period. It shows a level stationary behavior about one percent up to 2021m6 before the second shock in 2021m12. The two shocks in the same months were also observed in dollarization time series (FED/(FED+TRY)). But they were not evident in FED/(M1+M2) time series. Dollarization in either form seems to follow an upward drift in the same period. The second is used in this study.

Since monthly level CPI includes negative values (see Figure 1a) and logarithms of the negative values are undefined, logarithms were not taken. Instead, new monthly CPI series (2003=100) of Turkish Statistics Institute was used (see Figure 1b) and logarithms were taken. Logarithms are taken to more flatten or linearize the series (compare Figure 1a and Figure 2a).

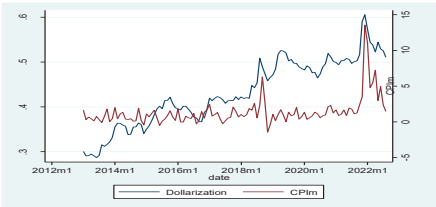

Figure 1a: Dollarization and CPI

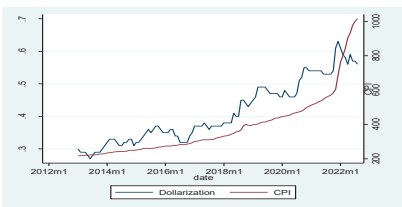

Figure 1b: Dollarization and new CPI

Pairwise graphs of the variables in logarithms are demonstrated in Figure 2. Log of USD interest rates in Figure 2d seems to have a random walk with no positive or negative drift. The first difference (see Figure 3d) seems to have zero mean. Constant should be included in the model. Log of dollarization and log of USD/TL exchange rates in Figure 2b follow an upward and downward drifts but not deterministic time trend and both seem to be difference stationary.

Figure 2a: Exchange rate and CPI

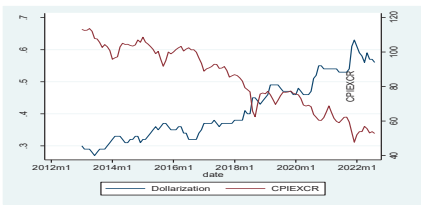

Figure 2b: Dollarization and EXCR

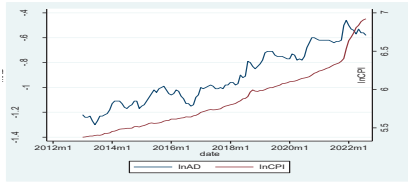

Figure 2c: Dollarization and CPI

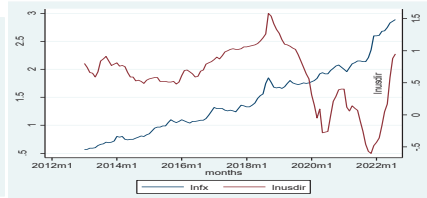

Figure 2d: Dollarization and USDIR

Graphs of first differences are demonstrated in Figure 3. First difference of lnAD in Figure 3a looks like white noise with zero mean. In Figure 3b and Figure 3c, first differences of lnCPI and ln EXCR seem to have nonzero means.

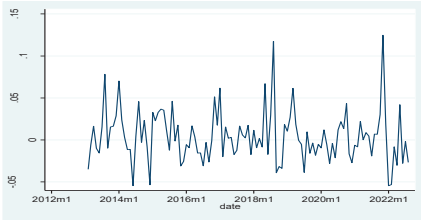

Figure 3a: Δ stationary lnAD

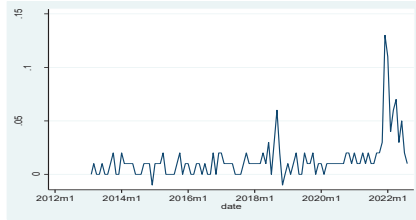

Figure 3b: Δstationary lnCPI

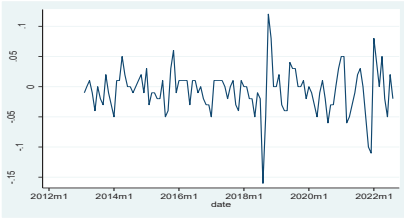

Figure 3c: Δstationary lnEXCR

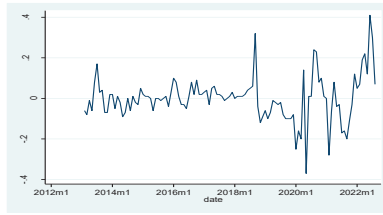

Figure 3d: Δstationary lnUSDIR

Macro economic variables show that volatility changes over time. Error term variances are both related to the error terms of past periods and show fluctuations. Due to large differences in exchange rates and dollarization rates, logarithms of level data are taken. Although large variance inflation factors are inevitable especially for exchange rates, heteroscedasticity of error terms can be corrected.

Based on graphical visualization, only I(1) (difference stationary) variables are expected. However, unit root tests are needed for verification and further analysis is needed for model selection based on cointegration.

4.2. Unit Root Tests

Table 2 indicates augmented Dickey Fuller test results for each variable for model specification.

Table 2: ADF Test Results and Stationarity

Variables	Optimal lag	Test statistic	%5 CV Interpolated DF	McKinnon p value for z(t)	Stationarity
lnAD	2	-6.019	-2.889	0.0000	I(1)
lnEXCR	3	-7.098	-2.889	0.0000	I(1)
lnUSDIR	3	-3.573	-2.889	0.0058	I(1)
lnCPI	2	-2.991	-2.889	0.0357	I(1)

Asset dollarization (lnAD), CPI based reel effective exchange rates (lnEXCR), USD interest rates (lnUSDIR) and consumer price index (lnCPI) became stationary after first differencing, i.e. I(1). Thus, Autoregressive Distributed Lag (ARDL(p,q)) model can be specified to determine the effects of exogenous (regressors, independent) variables on dependent variable.

4.3. Econometric Model

In general, an ARDL(p,q) model has a form (Pesaran et al. 2001) of

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{q} \beta_i' \Delta X_{t-i} + \gamma_1 Y_{t-1} + \gamma_2 X_{1,t-1} + \gamma_3 X_{2,t-1} + \gamma_4 X_{3,t-1} + \varepsilon_t \quad \varepsilon_t \sim iid(\mu, \sigma^2) \tag{1}$$

where Y is the vector of the variables in the study, ε_t is disturbance (white noise) term and X is a vector of exogenous variables, i is the number of the variables in the model, p and q are optimal lag orders of Y and X, α and β are ARDL short run coefficients, and γ_i are ARDL long run coefficients.

ARDL model includes lagged values of endogenous and exogenous variables. For cointegration, bound test of Pesaran, Shin and Smith (2001) is used to determine whether there is cointegration or not based on hypotheses H_0:No cointegration and H_1:There is cointegration. More specifically, $H_0: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$ and $H_1: \gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq 0$ where γ_i are long run coefficients of the variables and i is the number of variables.

Where F statistic less than the critical values for the upper bounds, there is no cointegration. In this case, ARDL model is estimated for short run relationship. Where F statistic greater than the critical values for the upper bounds, there is cointegration. In this case, error correction model (ECM) is estimated for long run relationship.

Long run terms in (1) are combined as error correction term ($\hat{e}_{t-1}$) to generate ECM model as

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{q} \beta_i' \Delta X_{t-i} + \lambda \hat{e}_{t-1} + \varepsilon_t \tag{2}$$

Where cointegration is $\hat{e}_{t-1} = Y_{t-1} - (\beta_0 + \beta_1 X_{1,t-1} + \beta_2 X_{2,t-1} + \beta_3 X_{3,t-1})$ lagged OLS residuals and adjustment $\lambda = 1 - \sum_{i=1}^{p} \alpha_i$ and cointegration. If a short run parameter is significant, there is a short run causality from the explanatory variable to dependent variable. If t statistic of λ is significant, there is Granger-causality in at least one direction. If λ is positive and significant, then the model is said to be unstable and explosive. Significance implies that there is a long run causality among the variables but no long run convergence. Significant long run coefficient implies that there is long run causality from independent variable to dependent variable. This means independent variable Granger-causes dependent variable in the long run. On the other hand, a significant short run coefficient implies short run causality from independent variable to dependent variable. Stability of the coefficients in the models is tested using cumulative sum (CUSUM) squared of residuals. To observe stability CUSUM squared graph is generated.

Before bound test is employed for cointegration, optimal lag is selected based on the information criteria AIC, HQIC and SBIC, and LR test. For monthly VAR models, the Akaike Information Criterion (AIC) criteria is recommended for optimal lag selection because it produces the most accurate structural and semi-structural impulse response estimates for realistic sample sizes (Ivanov & Kilian, 2001).

Thus, before model selection, optimal lag selections for monthly data based on AIC are found. When AD is dependent variable, optimal lags for asset dollarization (AD), real effective exchange rate (EXCR), CPI and USD interest rate (USDIR) are (1 1 0 2). ARDL short run models indicate optimal lags automatically based on AIC. Then these optimal lags are used in the error correction and bound test ARDL models to determine whether there is cointegration or not.

Table 3: Cointegration and Specified Models

Dependent variable	Opt Lag	F-stat	Cointegration	Model
lnAD	1 1 0 2	3.93	No	ARDL-SR
lnCPI	4 4 2 0	3.02	No	ARDL-SR
lnEXCR	2 4 4 3	8.97	Yes	ECM-LR
lnUSDIR	3 1 4 2	2.36	No	ARDL-SR

Table 3 shows bound test results for the variables of the study. F-stat was less than I(1) upper bound except for EXCR. Thus, ECM long run model was specified for lnEXCR as dependent variable and ARDL short run model was specified for the other variables as dependent variables. The results are shown in Table 3. Since all models are not ECM, VECM cannot be run.

5. ECONOMETRIC MODEL APPLICATIONS

5.1. Dollarization as Dependent Variable

Interpretations of the model estimation results are the same as OLS interpretations. Bound test with asset dollarization as dependent variable does not reject the null hypothesis of no cointegration. Thus, short run ARDL model can be written as

$$\Delta lnAD_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta lnAD_{t-i} + \sum_{i=0}^{q1} \beta_{1i}\, \Delta lnEXCR_{t-i} + \sum_{i=0}^{q2} \beta_{2i}\, \Delta lnCPI_{t-i} + \sum_{i=0}^{q3} \beta_{3i} \Delta lnUSDIR_{t-i} + \varepsilon_t \quad (3)$$

Bound test results for dollarization as dependent variable show an F-value (3.91) to be less than the upper bound critical values at 5, 2.5 and 1 percent. But the F value was greater than the upper bound critical value at 10 percent. Thus, there is no levels of relationship (no cointegration) and the short run ARDL(1 1 0 2) regression model is run. In this model, optimal lags (1 1 0 2) means p=1, q1=1, q2=0 and q3=2. The estimated coefficients and statistics of the short run regression model is shown in Table 4.

Table 4: Short run ARDL model results for dollarization

lnAD	Optimal lag	Coefficient	se	t
lnAD L1	p=1	.888	.049	18.06*
lnEXCR	q_1=0	-.535	.067	-7.96*
lnEXCR L1	q_1=1	.378	.079	4.81*
lnCPI	q_2=0	-.030	.024	-1.29
lnUSDIR	q_3=0	-.072	.026	-2.80*
lnUSDIR L1	q_3=1	.122	.043	2.81*
lnUSDIR L2	q_3=2	-.050	.027	-1.86
constant		.769	.283	2.72*

All significant short run coefficients are in line with theory. The coefficient of the first lag of lnAD is positive and significant. A percantage change in the first lag of AD is associated with a 0.888 percent increase in AD whereas a percentage increase in EXCR decreases AD by 0.535 percent.

Diagnositics showed that there was no evidence of serial correlation based on DW d-statistics (1.81) which was confirmed by Beuch-Godfrey LM autocorrelation test (p-values are shown in Table 5). Breusch-Pagan/Cook-Weisberg test for heteroskedasticity did not reject the null hypothesis of constant variance. The variables had no unrestricted heteroskedasticity based on Cameron-Trivedi's decomposition of IM test and White test. There was no autoregressive conditional heteroscedasticity (ARCH) effect based on LM test. Residuals were normally distributed based on JB test.

Table 5: Diagnostics for dollarization model

	Chi^2(df)	p-value
White Test	46.91	.0860
Breusch-Godfrey LM (lags)	1.409(1)	.2352
	1.765(2)	.4138
	1.836(3)	.6071
	3.887(4)	.4215

Figure 4 indicates that the short run model is not stable because there is divergence from the five percent stability bounds.

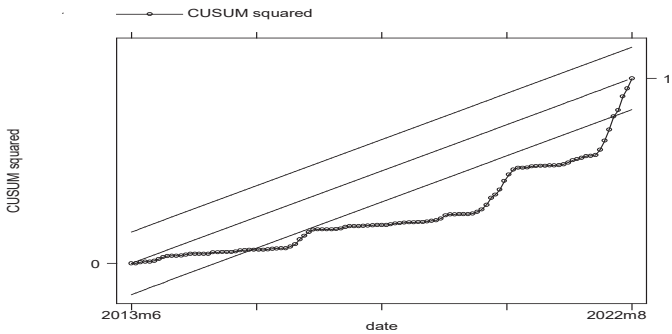

Figure 4: Cusum Square Test For Stability of Dollarization

5.2. CPI as Dependent Variable

Bound test with CPI as dependent variable does not reject the null hypothesis of no cointegration. Thus, short run ARDL model can be written as

$$\Delta lnCPI_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta lnCPI_{t-i} + \sum_{i=1}^{q} \beta_{1i}\, \Delta lnEXCR_{t-i} + \sum_{i=1}^{q} \beta_{2i}\, \Delta lnUSDIR_{t-i} + \sum_{i=1}^{q} \beta_{3i} \Delta lnAD_{t-i} + \varepsilon_t \quad (4)$$

Table 6: Short run ARDL model results for inflation

lnCPI	Coefficient	se	t
lnCPI L1	1.55	.094	16.58*
lnCPI L2	-.626	.177	-3.54*
lnCPI L3	.361	.159	2.27**
lnCPI L4	-.335	.079	-4.24*
lnAD	-.055	.042	-1.30
lnAD L1	.179	.057	3.12*
lnAD L2	-.160	.060	-2.68*
lnAD L3	-.000	.061	-0.00
lnAD L4	.064	.043	1.47
lnEXCR	-.141	.040	-3.51*
lnEXCR L1	-.007	.060	-0.12
lnEXCR L2	.102	.043	2.38**
lnUSDIR	-.004	.002	-1.42
constant	.497	.188	2.64*

Table 6 shows the results of Model (4). All short run coefficients are significant except for interest rate. Every 10 percent increase in the first lag of CPI is associated with a 15.50 percent increase in current CPI whereas for every 10 percent increase in the first lag of dollarization, inflation increases by about 1.79 percent in the short run. For every 10 percent increase in EXCR, CPI decreases by 1.41 percent in the short run. For every 10 percent increase in the second lag of EXCR, CPI increases by 1.02 percent in the short run.

Diagnositics showed that there was no evidence of serial correlation based on DW d-statistics (1.87) which was confirmed by Beuch-Godfrey LM autocorrelation test (in which p values are 0.09, 0.245, 247, 387 for lags 1, 2, 3, 4). Variables were homoskedastic based on Cameron-Trivedi's decomposition of IM test and White test. There was no autoregressive conditional heteroscedasticity (ARCH) effect.

Cusum squared graph showed divergence from five percent stability bounds, thus the model was not stable.

5.3. Exchange Rate as Dependent Variable

ARDL short run model indicates automatic optimal lag selection as (2 4 1 2) for lnEXCR, lnAD, lnCPI and lnUSDIR respectively. Running ARDL error correction and bound test with these optimal lags indicates an F-test value (6.08) greater than upper bound critical values (3.77, 4.35, 4.89, 5.61). This rejects the null hypothesis of no cointegration. Thus, error correction model is run with N=112 for the 2013m5-2022m8 period. The results of model (5) are demonstrated in Table 7.

$$\Delta lnEXCR_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta lnEXCR_{t-i} + \sum_{i=1}^{q} \beta_{1i}\, \Delta lnAD_{t-i} + \sum_{i=1}^{q} \beta_{2i}\, \Delta lnCPI_{t-i} + \sum_{i=1}^{q} \beta_{3i} \Delta lnUSDIR_{t-i} + \lambda \hat{e}_{t-1} + \varepsilon_t \qquad (5)$$

In Table 7, error adjustment term is negative and significant. Thus, the model is expected ro be stable. To observe stability, CUSUM square graph is generated. Significance of adjustment term implies that there is long run convergence among the variables and previous errors will be corrected in the present period. The speed of adjustment is 23.6 percent which means that 23.60 percent of errors will be corrected in one period. Only long run coefficient of lnCPI is significant. This implies that there is long run causality from CPI to EXCR, i.e., CPI Granger-cause EXCR in the long run. On the other hand, short run model indicates significant coefficients for dollarization, exchange rate and cpi. This implies short run causality from these variables to EXCR.

For every 10 percent increase in CPI, reel effective exchange rate decreases by 7.86 percent in the long run. For every 10 percent increase in the first and third lags of CPI, real effective exchange rates increases by 11.12 and 5.34 percent in the short run. For every 10 percent increase in dollarization, real effective echange rate decreases by 5.67 percent in the short run. For every 10 percent increase in current USD interest rates, real effective exchange rate decreases by about one percent and for every 10 percent increase in the first lag of USD interest rates, real effective exchange rate increases by 0.79 percent.

Table 7: Long run EC model results for exchange rates

lnEXCR	Coefficient	se	t
Adjustment			
lnEXCR L1	-.236	.060	-3.94*
Long Run			
lnAD	.198	.283	0.70
lnCPI	-.786	.197	-4.00*
lnUSDIR	.022	.025	0.89
Short Run			
lnEXCR LD	.171	.106	1.62
lnCPI D1	-.529	.206	-2.56**
lnCPI LD	1.112	.221	5.06*
lnCPI L2D	-.353	.243	-1.47
lnCPI L3D	.534	.207	-2.25**
lnAD D1	-.567	.082	-6.88*
lnAD LD	-.141	.106	-1.33
lnAD L2D	-.130	.097	-1.35
lnAD L3D	-.211	.099	-2.13*
lnUSDIR D1	-.098	.027	-3.58*
lnUSDIR LD	.079	.027	2.86*
lnUSDIR L2D	.040	.030	1.34
Constant	2.12	.378	5.61*

Diagnositics showed that there was no evidence of serial correlation based on DW d-statistics which was confirmed by Beuch-Godfrey LM autocorrelation test and variables were homoskedastic based on Cameron-Trivedi's decomposition of IM test and White test. There was no autoregressive conditional heteroscedasticity (ARCH) effect.

Although cusum squared graph in Figure 5 shows divergence from five percent stability bounds, the model is not stable although there is a reversion back to stability strip.

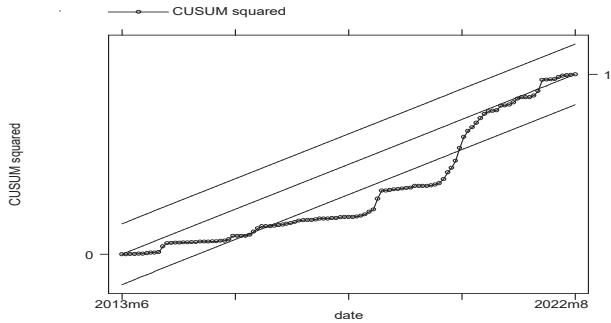

Figure 5: Stability of real effective exchange rate

5.4. USD Interest Rate As Dependent Variable

Bound test with USD interest rate as dependent variable does not reject the null hypothesis of no cointegration. Thus, short run ARDL model can be written as

$$\Delta lnUSDIR_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta lnUSDIR_{t-i} + \sum_{i=1}^{q} \beta_{1i}\, \Delta lnEXCR_{t-i} + \sum_{i=1}^{q} \beta_{2i}\, \Delta lnCPI_{t-i} + \sum_{i=1}^{q} \beta_{3i} \Delta lnAD_{t-i} + \varepsilon_t \quad (6)$$

Table 8 shows model estimation results which indicate that short run coefficients of two previous lags of USDIR, AD and EXCR are significant. CPI is not significant, thus inflation does not cause interest rates. Every 10 percent increase in the first lag of USDIR is associated with a 12 percent increase in current USDIR in the short run. For every 10 percent increase in real effective exchange rates, USD interest rates decreases by 10.68 percent in the short run.

Table 8: Short run ARDL model results for USD interest rates

lnUSDIR	Coefficient	se	t
lnUSDIR L1	1.204	.095	12.72*
lnUSDIR L2	.092	.153	0.60
lnUSDIR L3	-.327	.091	-3.57*
lnCPI	-.263	.736	-0.36
lnCPI L1	.662	1.31	0.50
lnCPI L2	.002	1.36	0.00
lnCPI L3	1.895	1.19	1.58
lnCPI L4	-2.337	.657	-3.55*
lnAD	-.500	.331	-1.51
lnAD L1	.524	.336	1.56
lnEXCR	-1.068	.331	-3.22*
lnEXCR L1	.153	.487	0.31
lnEXCR L2	1.024	.338	3.02*
constant	-.223	1.26	-0.18

Diagnositics showed that there was no evidence of serial correlation based on DW d-statistics (2.02) which was confirmed by Beuch-Godfrey LM autocorrelation test. Breusch-Pagan/Cook-Weisberg test for heteroskedasticity did not reject the null hypothesis of constant variance. The variables were homoskedastic based on White test. There was no autoregressive conditional heteroscedasticity (ARCH) effect based on LM test. Residuals were normally distributed based on JB test.

Cusum squared graph showed divergence from the five percent stability bounds. Thus, the model was not stable although there was a reversion back to stability.

CONCLUSION

This study investigated the relationship between macroeconomic variables, namely dollarization, real effective exchange rate, consumer price index (inflation) and USD interest rate. The signs of the coefficients were in line with the theory.

We showed that there was short run causality from exchange rate and interest rate to dollarization; from dollarization, inflation and interest rate to exchange rate; from exchange rates to interest rates; and from dollarization and exchange rates to inflation. Inflation does not cause interest, but it causes exchange rates in the long run. It seems that no model is stable. However, CPI based real effective exchange rate seems to be more stable despite high CPI. A monetary policy lowering CPI would stabilize exchange rates.

The reason for the residents of Turkey to accumulate their assets in foreign currency is due to interest rates and exchange rate volatility in the short run. Dollarization in previous period had the stongest effect on dollarization in current period. For every 10 percent increase in previous lag of dollarization, dollarization increased by about nine percent. The

effect of exchange rate was less. For every 10 percent increase in previous lag of real effective exchange rates, dollarization increased by about four percent. Although the effect of inflation did not show significance on dollarization, the upward trend of inflation caused foreign currency deposits to remain intact. The effect of USD interest rates was lower than that of real effective exchange rates.

Domestic residents' evaluation rates of these interest rates are very low. High TRY interest rates provided only a periodical hot money flow from outside. In the interest rate hike in September 2018, when the policy rate was increased from 17.75 to 24 percent, there was a decrease in foreign currency deposits ($1.70 billion), but the foreign exchange sold in a two-week period was replaced.

When non-residents wanted to convert their cash, which was generated by selling their securities with the decision to withdraw their capital from the markets, exchange rates increased. However, domestic residents did not meet this demand, but there was a limited decrease in deposits. There were purchases due to the decrease in the exchange rate. The percentage meltdown in deposits of domestic residents was a much higher exchange rate level than expected. The fact that foreign currency purchases at the highest exchange rate in history, when the study was conducted, showed no positive views on the future. As of the first week of June 2021, more than half of domestic residents' deposits was in foreign currency.

The rate of short-term liabilities of the economy administration should be reduced as soon as possible and steps should be taken to reduce borrowing interest rates. By using interest, one of the monetary policy tools, a permanent decrease in the exchange rate cannot be achieved, and volatility cannot be narrowed. Turkey is a country that can produce a current account surplus by closing all its liabilities together with the asset stock of its residents. First of all, the economy management has to present a strong and stable Turkish Lira in the future projections of the savers.

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CHAPTER 10

TRANSFERABLE UTILITY GAMES AND THE EXISTENCE OF CORE ALLOCATIONS

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1. Introduction

Cooperative games models and study the collaboration and cooperation of agents at which people form coalitions (Shapley 1953, Shapley 1969, Moulin 1988). A transferable utility version of a cooperative game consists of a finite set of agents and a value (characteristic) function which assigns a real number to every coalition. The real number assigned to a coalition by the value function is called the worth of the coalition, so the worth of a coalition (or what a coalition can achieve in a cooperative game) can be expressed by a single number. Given a transferable utility game, the main concerns are what coalitions will form and how the worth of a coalition will be distributed among the players of the coalition (Moulin 1988, Peters 2008) .

For a given transferable utility game it is assumed that the grand coalition (which contains the set of all agents) forms. The assumption that the grand coalition forms is plausible if it is considered that larger coalitions have bigger values. Then, the main concern is how the value of the grand coalition will be distributed to the set of all agents. A distribution of the value of grand coalition is called an allocation. We want that an allocation to be stable in the sense that no coalition of the player set blocks it. An allocation which is not blocked by any coalition is called a core allocation.

A transferable utility game may not have a core allocation. So, the conditions guaranteing the existence of core allocations have been studied in the literature. We focus on the existence of core allocations in this paper and revisit conditions (convexity and balancedness) that guarantee the existence of core allocations. Convexity is a sufficient but not a necessary condition. Balancedness is both a necessary and sufficient condition for the existence of a core allocation.

Shapley (1971) showed that if a transferable utility game is convex then it has non-empty core allocations. That is, convexity is a sufficient condition for a transferable utility game to have a core allocation. However, convexity is not a necessary condition, i.e., it is possible that a transferable utility game is a non-convex game and it has empty core allocation. A transferable utility game is convex if it satisfies that each player's marginal contributions to larger coalitions do not decrease.

Bondareva (1962) and Shapley (1967) showed that a transferable utility game has a non-empty core if and only if it is balanced, i.e., balancedness is a necessary and sufficient condition for the existence of a core allocation. So, the balancedness condition is weaker than convexity,

that is, every convex transferable utility game is balanced but the converse is not true.

The paper is organized as follows: In Section 2, we first introduce the formal definitions of transferable utility game and give examples of unanimity game, majority game, and gloves game, and then we provide the core concept with examples. In Section 3, we introduce convexity condition with examples of convex and non-convex transferable utility games. In Section 4, the necessary and sufficient condition, balancedness, is introduced and examples of balanced and non-balanced transferable utility games are given. Section 5 concludes.

2. Transferable Utility Games and Core Allocations

Let $N = \{1,2,\dots,n\}$ be a finite set of agents with $n \geq 2$ and a non-empty $S \subseteq N$ denote a coalition of N. Let $v: 2^N \to \mathbb{R}$ be a value (characteristic) function that specifies a real number $v(S)$ for each coalition $S \subseteq N$ and we assume that $v(\emptyset) = 0$. For any non-empty coalition $S \subseteq N$, the value $v(S)$ is the worth of coalition S.

Definition 1. ***Transferable Utility Game***

A transferable utility (TU) game is a pair (N, v) that consists of a finite set of agents $N = \{1,2,\dots,n\}$ and a characteristic function v that assigns a value for each coalition of N.

We now provide some examples of transferable utility games.

Example 1. ***Unanimity game***

Let $N = \{1,\dots,n\}$ be a finite set of agents. The value function $v: 2^N \to \mathbb{R}$ is such that it assigns the value of one to the grand coalition N and for any other coalition it assigns the value of zero. That is, for the grand coalition N we have $v(N) = 1$ and for any other coalition $S \subsetneq N$ we have $v(S) = 0$.

The pair (N, v) is now a unanimity game, where a positive value is obtained if the society as a whole unanimously agree (only the grand coalition has a positive value).

Example 2. ***Majority game***

Let $N = \{1,\dots,n\}$ be a finite set of agents. The value function v assigns the value of one to every coalition with majority and zero otherwise, that is, for any $\emptyset \neq S \subsetneq N$, $v(S) = 1$ if $|S| > n/2$, and $v(S) = 0$ if $|S| \leq n/2$. That is, only coalitions with majority have a positive value of one and other non-majority coalitions have a value of zero.

The pair (N, v) is called the majority game.

Example 3. ***Gloves game***

Let $N = \{1, \dots, n\}$ be a finite set of agents. Each agent has either a right-hand glove or a left-hand glove. Let $L \subseteq N$ denote the set of agents each of whom has a left-hand glove and $R \subseteq N$ denote the set of agents each of whom has a right-hand glove.

Note that $L \cup R = N$. The value function v is defined as follows: for any $\emptyset \neq S \subsetneq N$, $v(S) = min\{|S \cap L|, |S \cap R|\}$. The value of a coalition is equal to the number of pairs of gloves it has. For instance, consider a coalition with five agents such that three agents have left-hand gloves and two agents have right-hand gloves. The number of pairs of gloves that this coalition has is two, so the value of this coalition is two.

2.1 Core Allocations

We provide the definition of a core allocation and give some examples of transferable utility game with empty and non-empty core allocations in this section.

Given a transferable utility game (N, v), **a payoff distribution (an allocation)** is a vector $x = (x_1, x_2, \dots, x_n) \in \mathbb{R}^n$ which assigns a real payoff for each agent in the society. That is, the grand coalition N forms and its value $v(N)$ is allocated to members of N, where an agent $i \in N$ gets $x_i \in \mathbb{R}$.

We say that an allocation $x = (x_1, x_2, \dots, x_n)$ is **efficient** if $\sum_{i \in N} x_i = v(N)$, and an allocation $x = (x_1, x_2, \dots, x_n)$ is **individually rational** if for each $i \in N$, $x_i \geq v(\{i\})$.

Let (N, v) be a TU game and $x = (x_1, x_2, \dots, x_n) \in \mathbb{R}^n$ an allocation, a coalition $S \subseteq N$ **blocks** the allocation x if $v(S) > \sum_{i \in S} x_i = x_S$. When a coalition $\emptyset \neq S$ blocks an allocation $x = (x_1, x_2, \dots, x_n)$, coalition S leaves from society and generates the value $v(S)$ itself and then players in S distribute this value among themselves in a way that each player in S gets strictly better off.

Definition 2. ***Core allocation***

Let (N, v) be a transferable utility game. An allocation $x = (x_1, x_2, \dots, x_n) \in \mathbb{R}^n$ is a **core allocation** (or is in the core) for (N, v) if it

is not blocked by any coalition, i.e., for every $S \subseteq N$ we have that $\sum_{i \in S} x_i \geq v(S)$. Let $Core(N, v)$ denote the set of all core allocations for (N, v). Then,

$$Core(N, v) = \{x \in \mathbb{R}^n | \sum_{i \in N} x_i = v(N) \text{ and for each } S \subseteq N, \sum_{i \in S} x_i \geq v(S)\}.$$

Note that for an allocation x to be a core allocation $2^n - 1$ inequalities (one inequality for each coalition) have to be satisfied. Moreover, for a core allocation $x = (x_1, x_2, \dots, x_n)$ we have that $\sum_{i \in N} x_i = v(N)$, i.e., a core allocation must be efficient. We also note that a core allocation is individually rational, that is, no singleton player can block a core allocation.

A transferable utility game might not have a core allocation as shown in the following example.

Example 4. ***A TU game*** $(\boldsymbol{N}, \boldsymbol{v})$ ***with*** $\boldsymbol{Core}(\boldsymbol{N}, \boldsymbol{v}) = \emptyset$**.**

Consider a transferable utility game (N, v), where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = 3/4$, $v(\{1,3\}) = v(\{2,3\}) = 2/3$, and $v(N) = 1$.

An allocation $x = (x_1, x_2, x_3) \in Core(N, v)$ if the following inequalities are hold

$x_1 \geq 0$, $x_2 \geq 0$, $x_3 \geq 0$, $x_1 + x_2 \geq 3/4$, $x_1 + x_3 \geq 2/3$, $x_2 + x_3 \geq 2/3$, and

$x_1 + x_2 + x_3 = 1$.

Inequalities $x_1 + x_2 \geq 3/4$, $x_1 + x_3 \geq 2/3$, and $x_2 + x_3 \geq 2/3$ imply that

$2(x_1 + x_2 + x_3) \geq 25/12$. So, we have that $x_1 + x_2 + x_3 \geq 25/24$ which is impossible since we have $x_1 + x_2 + x_3 = v(N) = 1$. Hence, there is no core allocation for this game, i.e., $Core(N, v) = \emptyset$.

The following example shows that the majority game with three players has no core allocations.

Example 5. ***A Majority game with three players***

We consider Example 2 with three players. Let $N = \{1,2,3\}$ and coalitions with at least two players have a value of one and other coalitions have a value of zero. So, the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = v(\{1,3\}) = v(\{2,3\}) = v(N) = 1$.

An allocation $x = (x_1, x_2, x_3) \in Core(N, v)$ if the following inequalities are hold

$x_1 \geq 0$, $x_2 \geq 0$, $x_3 \geq 0$, $x_1 + x_2 \geq 1$, $x_1 + x_3 \geq 1$, $x_2 + x_3 \geq 1$, and

$x_1 + x_2 + x_3 = 1$.

Inequalities $x_1 + x_2 \geq 1$, $x_1 + x_3 \geq 1$, and $x_2 + x_3 \geq 1$ imply that

$2(x_1 + x_2 + x_3) \geq 3$. So, we have that $x_1 + x_2 + x_3 \geq 3/2$ which is in contradiction with that $x_1 + x_2 + x_3 = v(N) = 1$. Hence, there is no core allocation for this game, i.e., $Core(N, v) = \emptyset$.

We now see that a glove game with three players has a unique core allocation.

Example 6. ***A Glove game with 3 players***

We consider Example 3 with three players, i.e. $N = \{1,2,3\}$, and players 1 and 2 each has a right-hand glove and player 3 has a left-hand glove. A coalition having a pair of gloves has worth one, i.e., a coalition having a right-hand glove and a left-hand glove generates a payoff one, and zero otherwise.

The value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = 0$, $v(\{1,3\}) = v(\{2,3\}) = 1$, and $v(N) = 1$.

An allocation $x = (x_1, x_2, x_3) \in Core(N, v)$ if the following inequalities are hold

$x_1 \geq 0$, $x_2 \geq 0$, $x_3 \geq 0$, $x_1 + x_2 \geq 0$, $x_1 + x_3 \geq 1$, $x_2 + x_3 \geq 1$, and

$x_1 + x_2 + x_3 = 1$.

Inequalities $x_1 \geq 0$, $x_2 + x_3 \geq 1$, and $x_1 + x_2 + x_3 = 1$ imply that $x_1 = 0$, and

inequalities $x_2 \geq 0$, $x_1 + x_3 \geq 1$, and $x_1 + x_2 + x_3 = 1$ imply that $x_2 = 0$.

Then $x_1 = 0$, $x_2 = 0$, and $x_1 + x_2 + x_3 = 1$ imply that $x_3 = 1$. So, there exists a unique core allocation which is $(x_1, x_2, x_3) = (0,0,1)$, i.e., $Core(N, v) = \{(0,0,1)\}$.

3. Convexity

We see that a core allocation might not exist for transferable utility games. Shapley (1971) defined convexity and showed that a convex

transferable utility game has a core allocation, i.e., convexity suffices for a transferable utility game to have a non-empty core allocation.

Definition 3. ***Convexity***

A transferable utility game (N, v) is **convex** if for any coalitions $S, T \subseteq N$ we have

$$v(S \cup T) + v(S \cap T) \geq v(S) + v(T), \quad (1)$$

or, equivalently, for each player $i \in N$ and each $S \subseteq T \subseteq (N \backslash \{i\})$ we have

$$v(T \cup \{i\}) - v(T) \geq v(S \cup \{i\}) - v(S). \quad (2)$$

In order to get the inequality 2 from inequality 1, we consider coalitions $S \cup \{i\}$ and T where $S \subset T \subset N$ with $i \notin T$, then from inequality 1 we have that

$$v\underbrace{((S \cup \{i\}) \cup T)}_{(T \cup \{i\})} + v\underbrace{((S \cup \{i\}) \cap T)}_{S} \geq v(S \cup \{i\}) + v(T),$$
$$v(T \cup \{i\}) + v(S) \geq v(S \cup \{i\}) + v(T),$$
$$v(T \cup \{i\}) - v(T) \geq v(S \cup \{i\}) - v(S).$$

The difference between $v(T \cup \{i\})$ and $v(T)$ is the marginal contribution of agent i to coalition T and the difference between $v(S \cup \{i\})$ and $v(S)$ is the marginal contribution of agent i to coalition S. Then, since $S \subset T$, inequality 2 means that an agent has higher marginal contribution to larger coalitions.

Shapley (1971) showed that if a transferable utility game is convex then it has a non-empty core allocations. That is, convexity is a sufficient condition for a transferable utility game to have a non-empty core allocations.

Example 7. ***A convex TU game***

Consider a transferable utility game (N, v), where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = v(\{1,3\}) = v(\{2,3\}) = 1/3$, and $v(N) = 1$.

In order to show that this TU game is convex, we will show that inequality 2 is satisfied for each player $i \in N$. For player 1, we first determine all coalitions S and T that satisfy

$S \subseteq T \subseteq (N \backslash \{1\})$: $[S = \emptyset,\ T = \{2\}]$, $[S = \emptyset,\ T = \{3\}]$, $[S = \emptyset,\ T = \{2,3\}]$, $[S = \{2\},\ T = \{2,3\}]$, and $[S = \{3\},\ T = \{2,3\}]$.

For $[S = \emptyset,\ T = \{2\}]$, we have $v(T \cup \{1\}) - v(T) = v(\{1,2\}) - v(\{2\}) = 1/3$,

$v(S \cup \{1\}) - v(S) = v(\{1\}) - v(\emptyset) = 0$, and $1/3 > 0$.

For [$S = \emptyset$, $T = \{3\}$], we have $v(T \cup \{1\}) - v(T) = v(\{1,3\}) - v(\{3\}) = 1/3$,
$v(S \cup \{1\}) - v(S) = v(\{1\}) - v(\emptyset) = 0$, and $1/3 > 0$.

For [$S = \emptyset$, $T = \{2,3\}$], we have $v(T \cup \{1\}) - v(T) = v(\{1,2,3\}) - v(\{2,3\}) = 1 - 1/3 = 2/3$, $v(S \cup \{1\}) - v(S) = v(\{1\}) - v(\emptyset) = 0$, and $2/3 > 0$.

For [$S = \{2\}$, $T = \{2,3\}$], we have $v(T \cup \{1\}) - v(T) = v(\{1,2,3\}) - v(\{2,3\}) =$
$1 - 1/3 = 2/3$, $v(S \cup \{1\}) - v(S) = v(\{1,2\}) - v(\{2\}) = 1/3$, and $2/3 > 1/3$.

For [$S = \{3\}$, $T = \{2,3\}$], we have $v(T \cup \{1\}) - v(T) = v(\{1,2,3\}) - v(\{2,3\}) =$
$1 - 1/3 = 2/3$, $v(S \cup \{1\}) - v(S) = v(\{1,3\}) - v(\{3\}) = 1/3$, and $2/3 > 1/3$. So, inequality 2 is satisfied for player 1. In a similar way, it can easily be shown that inequality 2 is also satisfied for players 2 and 3. Hence, this game is a convex game.

Example 8. ***A non-convex TU game*** $(\boldsymbol{N}, \boldsymbol{v})$ ***with*** $\boldsymbol{Core}(\boldsymbol{N}, \boldsymbol{v}) = \emptyset$**.**
We reconsider Example 4, where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = 3/4$, $v(\{1,3\}) = v(\{2,3\}) = 2/3$, and $v(N) = 1$.

Recall that we have $Core(N, v) = \emptyset$ for this game. In order to show that this TU game is not convex, we will show that inequality 2 is violated for an agent $i \in N$ and coalitions S and T such that $S \subset T \subset (N \backslash \{i\})$. Let $i = 1$, $S = \{2\}$ and $T = \{2,3\}$. We now show that $v(T \cup \{i\}) - v(T) < v(S \cup \{i\}) - v(S)$.

$v(T \cup \{i\}) - v(T) = v(\{2,3\} \cup \{1\}) - v(\{2,3\}) = v(\{1,2,3\}) - v(\{2,3\}) = 1 - \frac{2}{3} = 1/3$,
$v(S \cup \{i\}) - v(S) = v(\{2\} \cup \{1\}) - v(\{2\}) = v(\{1,2\}) - v(\{2\}) = \frac{3}{4} - 0 = 3/4$, and $1/3 < 3/4$. So, this game is not convex.

Remember that this game has no core allocations (see Example 4), i.e., $Core(N, v) = \emptyset$. So, a transferable utility game with no core allocations is not a convex game.

Example 9. ***Majority game with three players is not a convex***

game.

We reconsider Example 5, where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = v(\{1,3\}) = v(\{2,3\}) = v(N) = 1$.

We showed that there is no core allocation for this game, i.e., $Core(N, v) = \emptyset$ (see Example 5). We now show that this game is not convex, that is, the inequality 2 is violated for an agent $i \in N$ and coalitions S and T such that $S \subset T \subset (N \backslash \{i\})$. Let $i = 2$, $S = \{1\}$ and $T = \{1,3\}$. We now show that $v(T \cup \{i\}) - v(T) < v(S \cup \{i\}) - v(S)$.

$v(T \cup \{i\}) - v(T) = v(\{1,3\} \cup \{2\}) - v(\{1,3\}) = v(\{1,2,3\}) - v(\{2,3\}) = 1 - 1 = 0$,

$v(S \cup \{i\}) - v(S) = v(\{1\} \cup \{2\}) - v(\{1\}) = v(\{1,2\}) - v(\{1\}) = 1 - 0 = 1$, and $0 < 1$. So, this game is not a convex game.

We now provide an example to show that the convexity condition is not necessary for a transferable utility game to have a core allocation. So, we will provide a non-convex game with non-empty core allocation.

Example 10. ***A glove game with 3 players-a non-convex TU game*** $(\boldsymbol{N}, \boldsymbol{v})$ ***with*** $\boldsymbol{Core}(\boldsymbol{N}, \boldsymbol{v}) \neq \emptyset$**.**

We reconsider the glove game given in Example 6. Recall that $N = \{1,2,3\}$ and the value function v is as follows:

$v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = 0$, $v(\{1,3\}) = v(\{2,3\}) = 1$, and $v(N) = 1$.

We show that this TU game is not convex, i.e., inequality 2 is violated for an agent $i \in N$ and coalitions S and T such that $S \subset T \subset (N \backslash \{i\})$. Let $i = 1$, $S = \{3\}$ and $T = \{2,3\}$. We have $v(T \cup \{i\}) - v(T) = v(\{1,2,3\}) - v(\{2,3\}) = 1 - 1 = 0$,

$v(S \cup \{i\}) - v(S) = v(\{1,3\}) - v(\{3\}) = 1 - 0 = 1$, and $0 < 1$. So, this game is not convex.

Recall that this game has a unique core allocation (see Example 6), i.e., $Core(N, v) = \{(0,0,1)\}$. So, convexity is not a necessary condition for a transferable utility game to have a non-empty core allocations.

4. Balancedness

We first define balanced collections of coalitions and have some examples of balanced collections of coalitions.

A family of coalitions $\mathcal{B} = \{S_1, \dots, S_k\} \subseteq (2^N \backslash \{\emptyset\})$ is **balanced** if for each $S \in \mathcal{B}$, there exists a non-negative weight (balancing weights) δ_S

such that

$$\text{for each } i \in N, \sum_{S \in \mathcal{B}: i \in S} \delta_S = 1.$$

A **partition** of N is a collection of coalitions $\{S_1, S_2, \dots, S_K\}$ ($K \leq |N|$ is a positive integer)

such that (i) for any $k \in \{1, \dots, K\}$, $S_k \neq \emptyset$, (ii) $\bigcup_{k=1}^{K} S_k = N$, and (iii) for any $k, l \in \{1, \dots, K\}$ with $k \neq l$, $S_k \cap S_l = \emptyset$.

Every partition of player set N is balanced where the balancing weight for each coalition in the partition is one. For instance, let $N = \{1,2,3\}$. Consider the family of coalitions $\widehat{\mathcal{B}} = \{\{1\}, \{2\}, \{3\}\}$ which is a partition. This collection is balanced where $\hat{\delta}_{\{1\}} = \hat{\delta}_{\{2\}} = \hat{\delta}_{\{3\}} = 1$.

For $N = \{1,2,3\}$, consider the collection of coalitions $\widetilde{\mathcal{B}} = \{\{1,2\}, \{1,3\}, \{2,3\}\}$ which is not a partition. This collection of coalitions is balanced where the balancing weights are $\tilde{\delta}_{\{1,2\}} = \tilde{\delta}_{\{1,3\}} = \tilde{\delta}_{\{2,3\}} = 1/2$. Since each player is a member of two coalitions in $\widetilde{\mathcal{B}}$, for each $i \in N$ we have that the sum of balancing weights for coalitions containing player i is one, e.g., coalitions $\{1,2\}$ and $\{1,3\}$ contain player 1 and for agent 1 we have $\tilde{\delta}_{\{1,2\}} + \tilde{\delta}_{\{1,3\}} = 1/2 + 1/2 = 1$.

We note that the union of balanced collections of N is balanced. For instance, for $N = \{1,2,3\}$, we know that $\widehat{\mathcal{B}} = \{\{1\}, \{2\}, \{3\}\}$ and $\widetilde{\mathcal{B}} = \{\{1,2\}, \{1,3\}, \{2,3\}\}$ are balanced collection of coalitions. We now consider their union $\mathcal{B}' = \widehat{\mathcal{B}} \cup \widetilde{\mathcal{B}} = \{\{1\}, \{2\}, \{3\}, \{1,2\}, \{1,3\}, \{2,3\}\}$. The collection $\mathcal{B}'$ is balanced where the balancing weights are as follows:

$$\delta'_{\{1\}} = \frac{\hat{\delta}_{\{1\}}}{2} = \frac{1}{2}, \quad \delta'_{\{2\}} = \frac{\hat{\delta}_{\{2\}}}{2} = \frac{1}{2}, \quad \delta'_{\{3\}} = \frac{\hat{\delta}_{\{3\}}}{2} = \frac{1}{2},$$

$$\delta'_{\{1,2\}} = \frac{\tilde{\delta}_{\{1,2\}}}{2} = \frac{1}{4}, \quad \delta'_{\{1,3\}} = \frac{\tilde{\delta}_{\{1,3\}}}{2} = \frac{1}{4}, \quad \delta'_{\{2,3\}} = \frac{\tilde{\delta}_{\{2,3\}}}{2} = \frac{1}{4}.$$

For agent 1, we have $\sum_{S \in \mathcal{B}': 1 \in S} \delta'_S = \delta'_{\{1\}} + \delta'_{\{1,2\}} + \delta'_{\{1,3\}} = 1/2 + 1/4 + 1/4 = 1$,

for agent 2, we have $\sum_{S \in \mathcal{B}': 2 \in S} \delta'_S = \delta'_{\{2\}} + \delta'_{\{1,2\}} + \delta'_{\{2,3\}} = 1/2 + 1/4 + 1/4 = 1$, and

for agent 3, we have $\sum_{S \in \mathcal{B}': i \in S} \delta'_S = \delta'_{\{3\}} + \delta'_{\{1,3\}} + \delta'_{\{1,3\}} = 1/2 + 1/4 + 1/4 = 1$.

We note that the balancing weights $(\delta'_S)_{S \in \mathcal{B}'}$ for the collection of coalitions $\mathcal{B}'$ is not unique. That is, we can find other balancing weights

$(\delta''_S)_{S\in\mathcal{B}'}$ for the collection of coalitions $\mathcal{B}'$. Let $\delta''_S = 1/3$ for every coalition $S \in \mathcal{B}'$. Then, since every player is a member of three coalitions in $\mathcal{B}'$, we have for each $i \in N$ that $\sum_{S\in\mathcal{B}':i\in S} \delta''_S = 1/3 + 1/3 + 1/3 = 1$.

A balanced collection of coalitions is **minimal** if it does not contain a proper sub-collection which is balanced. For instance, the balanced collection $\mathcal{B}'$ is not minimal since it contains proper sub-collections $\widehat{\mathcal{B}}$ and $\widetilde{\mathcal{B}}$ that are balanced. The balanced collections $\widehat{\mathcal{B}}$ and $\widetilde{\mathcal{B}}$ are minimal since none of them contains a proper sub-collection which is balanced.

Definition 4. ***Balancedness***

A transferable utility game (N, v) is **balanced** if for each balanced family of coalitions $\mathcal{B}$ (with balancing weights δ_S for each $S \in \mathcal{B}$),

$$\sum_{S\in\mathcal{B}} \delta_S v(S) \leq v(N). \tag{3}$$

We say that a transferable utility game (N, v) is **minimally balanced** if the inequality 3 holds for every minimal balanced family of coalitions.

Bondareva (1962) and Shapley (1967) showed that a transferable utility game (N, v) is (minimally) balanced if and only if its core allocations is non-empty, i.e., $Core(N, v) \neq \emptyset$. Hence, balancedness is both a necessary and sufficient condition for a TU game have a non-empty core allocations.

Example 11. ***A TU game (N, v) which is not balanced.***

We reconsider Example 4, where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = 3/4$, $v(\{1,3\}) = v(\{2,3\}) = 2/3$, and $v(N) = 1$.

We showed that $Core(N, v) = \emptyset$ for this game (see Example 4) and it is not a convex game (see Example 8). Since $Core(N, v) = \emptyset$ for this game, we can say that this game is not balanced (by Bondareva, 1962 and Shapley, 1967).

In order to show that this game is not balanced, we will find a balanced family of coalitions $\mathcal{B}$ (with balancing weights δ_S for each $S \in \mathcal{B}$) such that the condition $\sum_{S\in\mathcal{B}} \delta_S v(S) \leq v(N)$ is violated. Let $\mathcal{B} = \{\{1,2\},\{1,3\},\{2,3\}\}$. This collection of coalitions $\mathcal{B}$ is balanced where the balancing weights are $\delta_{\{1,2\}} = \delta_{\{1,3\}} = \delta_{\{2,3\}} = 1/2$. We now have that

$$\sum_{S\in\mathcal{B}} \delta_S v(S) = \delta_{\{1,2\}} v(\{1,2\}) + \delta_{\{1,3\}} v(\{1,3\}) +$$

$\delta_{\{2,3\}}v(\{2,3\})$,

$$= (1/2)(3/4) + (1/2)(2/3) + (1/2)(2/3),$$
$$= 3/8 + 2/6 + 2/6,$$
$$= 25/24.$$

That is, $\sum_{S\in\mathcal{B}} \delta_S v(S) = 25/24 > 1 = v(N)$, so this game is not balanced.

Example 12. ***Majority game with three players is not a balanced game.***

We reconsider Example 5, where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = v(\{1,3\}) = v(\{2,3\}) = v(N) = 1$.

We showed that there is no core allocation for this game, i.e., $Core(N, v) = \emptyset$ (see Example 5), and this game is not a convex game (see Example 9). So, by Bondareva (1962) and Shapley (1967), we can say that this game is not a balanced game.

In order to show that this game is not balanced, we will find a balanced family of coalitions $\mathcal{B}$ (with balancing weights δ_S for each $S \in \mathcal{B}$) such that the condition $\sum_{S\in\mathcal{B}} \delta_S v(S) \leq v(N)$ is violated.

Let $\mathcal{B} = \{\{1,2\}, \{1,3\}, \{2,3\}\}$. This collection of coalitions $\mathcal{B}$ is balanced where the balancing weights are $\delta_{\{1,2\}} = \delta_{\{1,3\}} = \delta_{\{2,3\}} = 1/2$. We now show that for this balanced family, $\sum_{S\in\mathcal{B}} \delta_S v(S) > v(N)$.

$$\sum_{S\in\mathcal{B}} \delta_S v(S) = \delta_{\{1,2\}}v(\{1,2\}) + \delta_{\{1,3\}}v(\{1,3\}) + \delta_{\{2,3\}}v(\{2,3\}),$$
$$= (1/2)(1) + (1/2)(1) + (1/2)(1),$$
$$= 1/2 + 1/2 + 1/2,$$
$$= 3/2.$$

That is, $\sum_{S\in\mathcal{B}} \delta_S v(S) = 3/2 > 1 = v(N)$, so this game is not a balanced game.

Example 13. ***A glove game with three players is balanced.***

We reconsider the glove game in Example 6, where $N = \{1,2,3\}$ and the value function v is as follows: $v(\{1\}) = v(\{2\}) = v(\{3\}) = 0$, $v(\{1,2\}) = 0$, $v(\{1,3\}) = v(\{2,3\}) = 1$, and $v(N) = 1$.

We showed that this TU game is not convex (see Example 10) and it has a unique core allocation where $Core(N, v) = \{(0,0,1)\}$ (see Example 6). Since this game has a non-empty core allocation, we can say that this game is balanced by Bondareva (1962) and Shapley (1967).

In order to show that this game is balanced, we will show that for all minimal balanced collection of coalitions the balancedness condition is satisfied (i.e, the inequality 3 holds).

We know that every partition is a trivially minimal balanced collection of coalitions, and a non-trivial and minimal balanced collection of coalitions is $\mathcal{B} = \{\{1,2\},\{1,3\},\{2,3\}\}$. So, the set of all minimally balanced collection of coalitions are $\mathcal{B} = \{\{1,2\},\{1,3\},\{2,3\}\}$ (with balancing weight 1/2 for each coalition) and the set of all partitions ($\mathcal{B}_1 = \{\{1\},\{2\},\{3\}\}$, $\mathcal{B}_2 = \{\{1,2\},\{3\}\}$, $\mathcal{B}_3 = \{\{1,3\},\{2\}\}$, $\mathcal{B}_4 = \{\{1\},\{2,3\}\}$, $\mathcal{B}_5 = \{\{1,2,3\}\}$).

For $\mathcal{B}_1 = \{\{1\},\{2\},\{3\}\}$, we have that
$\sum_{S\in\mathcal{B}_1} \delta_S v(S) = \delta_{\{1\}} v(\{1\}) + \delta_{\{2\}} v(\{2\}) + \delta_{\{3\}} v(\{3\}) = (1)(0) + (1)(0) + (1)(0) = 0 < 1 = v(N)$.

For $\mathcal{B}_2 = \{\{1,2\},\{3\}\}$, we have that
$\sum_{S\in\mathcal{B}_2} \delta_S v(S) = \delta_{\{1,2\}} v(\{1,2\}) + \delta_{\{3\}} v(\{3\}) = (1)(0) + (1)(0) = 0 < 1 = v(N)$.

For $\mathcal{B}_3 = \{\{1,3\},\{2\}\}$, we have that
$\sum_{S\in\mathcal{B}_3} \delta_S v(S) = \delta_{\{1,3\}} v(\{1,3\}) + \delta_{\{2\}} v(\{2\}) = (1)(1) + (1)(0) = 1 = v(N)$.

For $\mathcal{B}_4 = \{\{1\},\{2,3\}\}$, we have that
$\sum_{S\in\mathcal{B}_4} \delta_S v(S) = \delta_{\{1\}} v(\{1\}) + \delta_{\{2,3\}} v(\{2,3\}) = (1)(0) + (1)(1) = 1 = v(N)$.

For $\mathcal{B}_5 = \{\{1,2,3\}\}$, we have that
$\sum_{S\in\mathcal{B}_5} \delta_S v(S) = \delta_{\{1,2,3\}} v(\{1,2,3\}) = (1)(1) = 1 = v(N)$.

For $\mathcal{B} = \{\{1,2\},\{1,3\},\{2,3\}\}$, we have that $\sum_{S\in\mathcal{B}} \delta_S v(S) = \delta_{\{1,1\}} v(\{1,2\}) + \delta_{\{1,3\}} v(\{1,3\}) + \delta_{\{2,3\}} v(\{2,3\}) = (1/2)(0) + (1/2)(1) + (1/2)(1) = 1 = v(N)$.

So, for every minimal balanced collection of coalitions, the inequality 3 holds. Hence, this game is balanced.

Recall that this game is not a convex game (see Example 10). So, a

convex game is balanced, but the converse is not true (i.e., a balanced game might not be convex).

5. Conclusion

We study the existence of core allocations for transferable utility games. A transferable utility game is defined by a pair that consists of a finite set of players and a value (characteristic) function assigning a value to each coalition of the set of players. For a given transferable utility game, the main concerns are what coalitions will be formed and how the value of each coalition will be distributed among the players of the coalition. It is implicitly assumed that the grand coalition forms and then the main concern is how the value of the grand coalition will be distributed among the set of all players. A distribution of the value of grand coalition is called a core allocation if it is not blocked by any coalition, that is, the sum of the individual allocations for every coalition is as big as the value of the coalition. So, no coalition has an incentive to block the allocation of the grand coalition by leaving society and distributing the value that they generate in the coalition among themselves.

We see that some transferable utility games has no core allocations, e.g., Example 4 and Example 5 (majority game with three players). So, we revisit the conditions that guarantee the existence of core allocations for transferable utility games.

The convexity condition is a sufficient condition for the existence of a core allocation. Convexity condition means that a player's marginal contribution to a coalition does not decrease as the coalition gets larger. We see in Example 8 that majority game with three players is not a convex game and it has no core allocations. Convexity condition is too strong to be a necessary condition for the existence of a core allocation. So, convexity is a sufficient but not a necessary condition for a transferable utility game to have a core allocation. So, there exists non-convex transferable utility games with non-empty core allocations, e.g., Example 10 (a glove game with three players).

A necessary and sufficient condition for a transferable utility game to have a non-empty core is the balancedness condition. So, majority game with three players is not a balanced game since its core is empty (Example 12), and a glove game with three players is a balanced game since its core is nonempty (Example 13). Moreover, every convex transferable utility game is balanced but a balanced transferable utility game might not be convex.

A majority game with three players (Example 5) is neither a convex game nor a balanced game, and it has empty core allocations. The glove game with three players (Example 6) is a balanced game (hence it has non-empty core allocations) but it is not a convex game.

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CHAPTER 11

AN ANALYSIS OF THE STRATEGIC RELATIONS BETWEEN RUSSIA AND CHINA FROM THE PERSPECTIVE OF INTERDEPENDENCE[1]

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Introduction

The fact that while obtaining their current strong positions in the international environment, the mutual relations of Russia and China, which were in a weaker position following the Cold War, became the strongest. This was analyzed based on the theory of interdependence by this study. In this article, it is argued that the two countries need to maintain cooperation in terms of satisfying their national and regional interests, and they enter a cycle of interdependence due to their inability to maintain the continuity of power in situations where they cannot show cooperation. In addition to the cooperation and strategic partnerships that emerged between the two countries, the fields of competition that developed during the process were also re-evaluated within the framework of the change in the level of interdependence between the parties. As the levels of interdependence in the aforementioned process are examined, it has been found that there is a shift from vulnerability to sensitivity and from symmetry to asymmetry between the two parties.

In the light of the analyzes performed, it has been concluded that the mutual relations and interactions of both countries, which started as a result of the search for a multipolar order in the international sense, still continue to the extent that they avoid serious competition in the current situation, and despite the changes in the level of interdependence, they will continue to develop their relations based on interdependence for their interests in the matters where they feel lack of power.

The fluctuating Russian-Chinese relations over the course of history entered a new period of relations after the collapse of the Soviet Union, which has also shaped the subject of this study. Russia-China relations have shown significant improvement in the post-Soviet period. Both sides expressed their dissatisfaction with the unipolar world order following the Cold War and placed the discourse of multipolar world ideologies in their political centers on the way to the steps taken for cooperation between Russia and China. In the new world order based on multipolarity, in which China and Russia want to be involved, the most important partners of these two countries are seen to be themselves. Both countries are quite uncomfortable with the current political conjuncture, and they want to consolidate their superpower positions through the power fields they are developing. It is so natural for these two actors acting in this way to show cooperation to enhance their mutual political interests. Considering the geographical proximity of Russia and China, the need for each other's resources and the possibility of rapid access to these resources provide abundant areas of cooperation between them. The biggest reasons why the two countries tend to cooperate with each other and develop their partnerships are to balance the influence of USA in the region and the global

arena, to possess military equipment and advanced defense technologies, to maintain trade and investment ties, to reach a secure import-export network of the targeted resources. This situation is considered to be a win-win opportunity for both parties. The fact that Russia and China, the two important actors of Eurasia, are neighboring countries and complement each other in the above-mentioned points also presents beneficial outcomes for both sides.

In other words, both parties have resources that can be important to each other. While China has material resources, Russia has different political and regional advantages and energy resources. The areas where Russia is considered to be relatively superior are the areas where China is relatively weak. The fact that Russia is an energy supplier and has a developed defense industry constitutes those areas that China wants to develop. Having a desire to grow in terms of its political activity, Russia is aware that it will not be able to achieve success in the policies it wants to produce by itself as its economic opportunities are not sufficient. However, it is trying to keep its interests in the region at the maximum level by taking advantage of China's economic superiority. China cannot ignore the influence Russia has in Central Asia. On the other hand, China has difficulties in achieving success in projects where it does not cooperate with Russia on regional and global issues.

In the study, the basic arguments of the principle of interdependence and the strategic development of Russia-China relations are to be discussed from the past to the present, and the areas of cooperation and competition in this development are detailed through the theory of interdependence. In examining the actions underlying the foreign policies these two countries develop in the context of the theory of interdependence in the current mutual relations of Russia and China, the relations with the rest of the region and with the Western world are also emphasized.

The selected study contributes to the social sciences as it assesses what kind of political and economic effects will be reflected on the Asian region and the rest of the world in a detailed way based on the framework of the interdependence relationship formed by the two countries located at the very heart of Asia. What distinguishes this study from others is that the evaluations made are blended in all economic, political and military-nuclear fields. At the same time, this study is notable for presenting important theoretical implications regarding the strategic relations between Russia and China. A gradual examination of mutual relations has been made and these periods are associated with the features of the theory of interdependence. In this way, it offers a solid theoretical background and practical results together with future policy predictions.

Methodology

This research is based on the theory of interdependence. In this study, a qualitative approach was used to analyze connection between China-Russia relations and interdependence theory. The data collected were secondary data obtained from sources that are related directly to the theme of the research. In addition, studies in the field of scientific research were synthesized. Hence the literature was analyzed very carefully.

Theoretical research involves the identification, analysis and presentation of convenient theoretical information to clarify the subject under discussion. Within the scope of this study, both a theoretical framework has been drawn on the research subject and an evaluation has been made based on secondary data. Empirical studies require the collection of primary data sources as they present a concrete and verifiable type of research. However, secondary data provides more opportunities for periodic research. Through secondary data the relationship between Russia has been discussed over a 50-year period and analyzed in a context based on theoretical research. The earlier studies have contributed a lot to knowledge by providing the related information and determining the ways to findings. By and large, the existing literature and the material collected from different resources help to develop a rationale for the study to develop the findings and conclusion of the study in an advanced way.

Theoretical Perspective

According to the realist theory, which dominated the international system as a dominant approach after the end of the second world war, the national interests and sovereignty of the states became the actors of the international system, and their importance has always been emphasized. However, starting from the 1980s, especially with the end of the Cold War, the 'needs of the actors felt each other' rather than the sovereignty, transformed into a process and was expressed in the term interdependence, which was formulated by Robert O. Keohane and Joseph S. Nye in the 1970s. The theory of interdependence has begun to take its place on the world stage since then (Keyman 2006: 1-20). While this process has directed the actors existing in the international system to cooperation and integration, it has also led the states to determine their foreign policy tendencies based on these dynamics. These and similar movements, starting on the basis of economy, began to appear in the international system with the terms such as free market economy and free trade by blending political systems and security areas, and developed in the international system (Öztekin 2018: 284).

The theory of interdependence was introduced and brought to the literature following the book "Power and Interdependence", published

by Keohane and Nye in 1977. In the international relations literature, interdependence stands for the criteria determined by the mutual interaction between the actors in the international system. Interdependence refers to the situation where the parties act depending on each other as a result of the interactions taking place between the actors. In other words, interdependence is the name given to the complex conditions resulting from the connections and relations created by the many ways of interaction between states and societies in the non-hierarchical international system (Keohane - Nye 2001: 7). The subject of these interactions can consist of the economic, social, political or security-themed issues. However, according to Keohane and Nye, in order for these interactions to be dealt with based on an interdependence perspective, there should arise a *cost* factor for both parties, they should not only bring profit-driven benefits to both parties, but they should limit the movement area of the parties, as well (Keohane - Nye 2001: 8). In other words, the factor making the interdependence permanent is the cost issue that may arise as a result of the disconnected links between the actors. In the most simplified definition, the disruption or termination of the aforementioned costs in interdependence represents a costly relationship for the parties. Interdependence can be evaluated within a framework that incorporates social, economic and political problems resulting from the loss of value produced by economic relations and interruptions in the supply of strategic goods such as oil and natural gas. Interdependence possesses a political importance because it creates costs. It is costly because it limits the autonomy of the actions of a state. National political goals such as security and welfare rely on the policies of all actors implicated in a relationship of interdependence. In the interdependence relations that develop over time, the distinction between domestic and foreign policy disappears, and every change taking place in domestic policy also constitutes those the foreign policy becomes interested in. Therefore, states enter into a sensitive relationship that becomes costly as soon as they form a relationship of interdependence with each other, and they enter into a sensitive relationship of interdependence that cannot ignore the interests of other states and that cannot act only based on their own needs. The sensitivity mentioned here can be defined as the obligation of an actor to deal with external costs even if the policies an actor implements have changed.

In addition, another issue that should be taken into consideration in the theory of interdependence is the possibility that the degree of interdependence between the parties may not always be equal. According to Keohane and Nye, the relationship maintained in this case is an *asymmetrical* relationship and this asymmetric relationship is inequal and mentioned as one of the factors that create power in international politics

(Keohane - Nye 2001: 11). In situations where the degree of interdependence is relatively equal and *symmetrical*, the interdependence between the parties is at a balanced level. Yet, a relationship that can be formed with a perfectly symmetrical dependency is quite rare (Nye – Welch 2015: 359). In the asymmetrical situation, where the dependency is more unstable, the two parties are inter-dependent on each other, but one is less dependent than the other. This asymmetrical relationship described is the most common type of interdependence, and when this is performed, the less dependent party receives a source of power. In cases where the parties are less or more dependent on each other, the phenomenon of power comes into play and the concept of asymmetrical interdependence appears, and Keohane and Nye explains how this asymmetrical interdependence phenomenon creates power using the concepts of sensitivity and vulnerability (Keohane - Nye 2001: 7). The concept of power and interdependence has determined the name of Keohane and Nye's work. According to them, the bargaining power of one of the parties over the other depends on the sensitivity and vulnerability of the other party (Kroll 1993: 321-347). For this reason, in the interdependence conditions that appear, even though both parties have different levels of power, they need to show a common desire and effort to maintain their relations (Wagner 1988: 461-483).

Another main argument of the principle of interdependence is that there is a direct connection between the concepts of integration and interdependence. It is important to underlie which international policy conditions shape interdependence and what kind of change is wished in the structure of the international system. International organizations can set the international agenda and accelerate the process in forming a coalition, but while issues like the inadequacy of international organizations or the problems of sanctions in the application of international law distance states from each other, there is actually a search for a structure in which states need integration (Chan 1985: 235). At this point, Keohane and Nye's claim is that interdependence and integration are mutually promoting processes and it is argued that integration increases the level of interdependence just as interdependence reveals the integration that is a need in world politics (Keohane 2002: 28). International organizations provide states with a space to act on regional or global problems they have to deal with and the opportunity to cooperate at the costs that may arise. The existence of international organizations and the status of being a party by states reduces the uncertainty and fear in existing countries and provides a platform of mutual benefit to countries. Thus, cooperation in one area encourages other areas and ensures the healthy progress of interdependence within the integration framework.

On the other hand, in addition to its basic arguments, interdependence

has two important effects on international relations. The first is the assumption that military power has become meaningless under the criteria set by interdependence, and the second is that interdependence fosters the need for international cooperation. Under conditions determined by interdependence, states as rational actors have strong aspirations towards international cooperation and peaceful international politics. Actually, rational actors do not aim to increase their power, but ultimately to achieve absolute gains. International cooperation is a win-win solution to the joint action problems in international politics. It will be better for all parties to cooperate in a relationship of interdependence that causes the problems of joint action. In his book titled "The Evolution of Cooperation" (1981), Robert Axelrod carried out some important studies on inter-egoistic cooperation under conditions of interdependence. He has tried to show that expectations about the future significantly influence the results of cooperation and will lead to stable models of cooperation. As a result, stable cooperation will encourage and re-increase interdependence (Axelrod 1981:1390-1396).

Steven Wong describes interdependence as something which is not necessarily a difficult and lofty goal to be achieved, but rather as a set of coherent outcomes that may arise as a result of states' moves, reflecting states' national interests and security perceptions and desires (Wong 2015: 65-69). International cooperation and international institutions offer the best way to achieve political goals under conditions of international interdependence.

In the following literature review section of the study, the strategic relations of Russia and China are to be discussed based on the perspective of interdependence by making use of the theoretical framework examined above. These strategic relations are to be analyzed primarily in the domain of interdependence in the political, security and economic context on the basis of cooperation between the two countries. In the discussion part of the study, mutual relations are to be reinterpreted on the basis of the competition area that has emerged over time, and the hypothesis put forward are to be concluded by establishing the current state of interdependence over the changing characteristics.

Review of Literature

The hegemonic leadership order, which symbolizes unipolarity and in which the effect of globalization is not seen, is an order that is incompatible with the nature of the conditions of interdependence (Gürkaynak – Yalçıner 2009: 86). Russia and China's desire for a multipolar world order (Gürkaynak - Yalçıner 2009: 86), expressing that they do not desire to be a hegemonic power in reference to this order, has gained a

meaningful character in the way of becoming regional powers having an interdependence. Until the end of the Cold War and the emergence of the possibility of a unipolar world, the relations between Russia and China, whose definitions of interests and the foreign policies pursued towards this did not intersect at any significant level, underwent changes with the emergence of the United States as a hegemonic power.

In the globalizing world, being able to hold on to the international system as nation states and having to face the severe consequences of the competitions with other states in international settings directed most states to create free economic areas and even establish political systems by encouraging them to cooperate in the regional sense and formed the foundations of the order of interdependence in mutual relations.

This relationship between the concepts of globality and interdependence was first discussed by Keohane and Nye in the specific context of American-Japanese relations (Keohane – Nye 2001: 238), paving the way for it to be evaluated in many mutual relations in world politics. Considering the countries of the world that were largely disconnected during the 19th century, it was impossible to find a level of interdependence between any two countries, but with the 1990s, it was observed that economic interdependence on the world stage gradually began to gain symmetrical characteristics among countries (Gürkaynak – Yalçıner 2009: 83). In this context, the environment of interdependence created by the conditions of globality has determined the framework of Russia's and China's relations with each other.

The concept of interdependence, touching upon the mutual interaction in the relations of different countries, is the complex interaction conditions that appear in the international arena regardless of a certain hierarchical order (Akçadağ Alagöz 2016: 36). In the case of Russia and China, the interaction between the two sides has created a relationship of interdependence on multiple issues and with multiple connections. These interactions have manifested themselves significantly on three main issues and have determined the order of interdependence between Russia and China.

It is possible to classify these interactions between Russia and China with the headings of *political interdependence* that arises due to their common opposition attitude towards US hegemony in foreign policy, *security-based interdependence* that arises within the scope of regional integrations established for security issues, and *economic interdependence* that emerges as a set of military/economic interests in the trade relationship. In such an atmosphere, Russia and China, which came together against the understanding of sovereignty that the US wants to perform from a

single source on the world stage, has become allies in line with their own interests in terms of ensuring their security and the continuity of their economic interests with international organizations. As a result, they created a relationship of interdependence (Abdullah, 2019: 52).

Political interdependence: First of all, the most important factor that has given rise to the fact that the two countries became closer has been their common foreign policy understandings, emerging against the unipolar world threat of the United States. Although China, which lost its room to maneuver between the poles as the bipolar system ended at the beginning, had to maintain good relations with the United States, it has always been in search of finding different alliances that can provide support concerning the problems it experiences in its relations with the United States. Russia, on the other hand, in an effort to regain its power and in order to exist as a superpower in the international system, has favored a foreign policy complying with the interests of the West and specifically the United States. However, Russia has never thought of adapting to the unipolar order and has favored forming different alliances. As a matter of fact, Keohane and Nye states that in an international order where states are becoming increasingly dependent on each other on the basis of the principle of interdependence, it is highly unlikely that states will take decisions completely independently of each other in contrast to what realists think, (Akçadağ Alagöz 2016: 36).

In the period after the collapse of the Soviet Union, there were a couple of US actions that annoyed Russia and China, which were also disturbed by the unipolar world led by the United States. The 1999 intervention in Yugoslavia, which was carried out by NATO under the leadership of the United States by bypassing the United Nations Security Council, the 2003 US invasion of Iraq carried out jointly by the United Kingdom by bypassing the UN, and the unilateral withdrawal of the United States from the Anti-Ballistic Missile Treaty fueled the common security concerns of Russia and China (Çolakoğlu 2004: 186). On the other hand, the tariffs and quotas imposed within the scope of the trade wars initiated by the US have limited imports made by Russia and China (Çolakoğlu 2004: 188) and therefore mutual trade relations completely deteriorated. The goal of balancing these unilateral actions imposed by the United States has formed the basis of the process leading to the strategic partnership between Russia and China.

From China's point of view, another problem experienced in mutual relations with the US has dealt with the issue concerning Taiwan. In spite of China's claim that Taiwan belongs to China's territory, the U.S. policy on Taiwan has always been presented to support Taiwan's independence, recognize the Taiwanese government and encourage its international acceptance, and even arms sales to Taiwan are performed by the U.S.

(Çolakoğlu 2004: 187). China has perceived the arms sales to Taiwan as an interference in its internal affairs and even in its territorial integrity. As a result of these attitudes of the United States, China felt a threat imposed on itself in terms of mutual relations and turned to seeking alliances in the regional sense.

From Russia's point of view, the most important problem it has faced in mutual relations with the US results from the policy of encircling Russia through the eastward expansion conducted by the EU and NATO (Çolakoğlu 2004: 187). The possibility that the borders perceived as its backyard by Russia might be dominated by the West results in frequently strained mutual relations and this situation leads Russia, like China, to forming cooperation with regional institutions or forming alliances.

There are some similar characteristics these two countries show concerning the patterns in their partnership relations and in their attitudes towards the United States. First, Russia and China regard decisions concerning political freedom on human rights as the issues dependent on states, see Western states' concerns about the status of freedoms as a cause for intervention and sanctions as an ideological intervention. Russia and China hold the assumption that the West-led campaigns for human rights will result in similar opposition movements within their own territories or in nearby countries and eventually lead to domestic instability and have announced that they condemn the Western-supported colored revolutions taking place in Georgia, Ukraine and Kyrgyzstan (Giray Bozkurt 2006: 118-138). Russia and China are highly sensitive about national unity and believe that the internal threat is more destructive than the external threat. They have supported each other in the acts of force directed against Chechnya and the Tibetans, which are examples of colored revolution.

Second, both states are against NATO enlargement. In terms of security, NATO enlargement is an issue that makes Russia worried more than it does China, but with this threat that Russia is facing today on the Western front, China is also worried that it may face this threat in one of its own circles in the near future. As a matter of fact, the US forces deployed in Central Asia after September 11 became a justifying incident reminding of this concern. In this sense, what both countries want to achieve by using the discourse of the multipolar world is to balance the dominant power of the United States in the power distribution order to be created with other states. The best examples of why Russia and China try to promote a balancing policy are the 1995 intervention in Bosnia, the 1999 intervention in Serbia and the 2003 invasion of Iraq by NATO, led by the United States. Because of all these US-centred actions, Russia has seen NATO's expansion into Eastern Europe as a threat. In addition, China has described the pressure U.S. imposed on it due to the violations of human

rights in China and the trade and political relations of US with Taiwan as a disturbing threat and has placed these points on its political agenda.

From the U.S. point of view, Russia's second Chechnya military operation in 1999 and China's rights violations in minority regions such as Tibet and Xinjiang are some of the main examples exhibiting that Russia and China violate human rights, disturbing the United States. On the other hand, the US also has a distrust of the existing regimes in Russia and China. Although Russia has adopted a democratic regime and a model with a free market economy, it is thought that Russia has not been able to meet the desired standards in terms of effective international cooperation due to its old and strong authoritarian past (Çolakoğlu 2004: 188). China, on the other hand, cannot erase its negative image in the eyes of the United States. Several reasons for this arise due to the political issues. For example, it is ruled in a completely authoritarian way by the Chinese Communist Party, and even political opposition is completely forbidden in the country. Concerning the economic level, although China has made all efforts to integrate with the international economy, the US has the assumption that it has not yet completed its transition from a central planning economy to a real free market economy (Çolakoğlu 2004: 188).

Despite all these historical discomforts that the three powerful countries have felt from each other, it would not be wrong to say that the relations are based on cooperation from time to time. The United States, which began to need the support of regional powers such as Russia and China in terms of cooperation against terrorism especially after September 11, has been the witness of the most concrete cooperation during the Afghanistan operation. Therefore, it would be correct to say that all three countries pursue a relatively balanced foreign policy by staying away from conflict and using cooperation opportunities, taking into account each other's potentials. The goal of balancing the United States, which emerged independently of a certain hierarchical order between Russia and China against the United States and their actions in this direction are the state of political interdependence that the two countries exhibit.

The best example of the common foreign policy stance and political interdependence of Russia and China, which intersect against the United States, is as Norman Angell mentions in the relationship of necessity based on working in need and harmony: One of the two people in a boat that is sinking in an open sea, far away from the shore, has to paddle and the other has to drain the leaking water. The parties have entered into a relationship of interdependence in which one does not dare to throw the other out of the boat because they need each other (Özpek 2014: 140). Therefore, neither China nor Russia has little chance of balancing the United States alone and gaining political influence in Central Asia independently of each other.

According to the theory of interdependence (Yantur – Dedeli 2021: 687-692), which presents the condition that there should be an absolute negative reflection on the parties within the scope of the cost condition, both Russia and China have undertaken this cost in their relations at the point of not being able to act alone in Central Asia.

Security-based interdependence: Secondly, the issue of border security between Russia and China and the process resolved by regional organizations in this context have strengthened mutual relations and formed another important element of becoming closer. Although certain progress was made in the border disputes from the 1950s to the 1990s, periods of increasing tension continued to pit the two countries against each other. As a result of the negotiations held in the 1990s, the border problems were managed to be solved with a rate of 98%, but the newly independent states that emerged on the border following the collapse of the Soviet Union soon after, dragged the border issue between Russia and China into uncertainty again. The Shanghai Cooperation Organization, which was designed for the solution of the border issues between the Soviet Union and the People's Republic of China, first addressed the security problems of the two countries in terms of its idea of establishment. Then-Chinese president Li Peng and Russian president Boris Yeltsin then demanded that the security measures in the regions of the two countries close to the border be discussed and started the necessary negotiations with the idea of creating a platform for the solution of border problems. In 1996, the presidents of the period met with Kazakhstan, Kyrgyzstan, and Tajikistan and signed an agreement on the aforementioned measures. As a result, the organization, which was first established under the name of Shanghai Five, has turned into a very important security agreement for the future of Central Asia and especially for the field of action of Russia and China due to the end of the Cold War and the emergence of the unipolar system in which the United States is a superpower. The continued development of the Shanghai Cooperation Organization (SCO), which is an agreement that eliminates the problem of post-Soviet Russia and China becoming geopolitical rivals, is still shaped according to the relations and interests between the two countries.

With the Shanghai Five, which was signed in 1996 as a kind of security agreement, a model was established between the five countries to ensure peace, stability and security on the borders and to improve security on the Asia Pacific. The focus was on ensuring mutual trust by agreeing between the parties not to conduct military exercises and to report on military incidents within 100 km of the borders.

In the case of Russia and China, expectations from the Shanghai Five can be interpreted differently. For China, this platform has been articulated

as a compromise that can be transformed into not only confidence-building for the country within the scope of border management, but also an economically and politically effective cooperation. Underlining that it does not follow an expansionist policy within the framework of this agreement, which proves that it is going to solve border problems with the countries of the region, China sees the Shanghai Five as a tool to increase its effectiveness in the region in this sense.

Russia considered the Shanghai Five as a means of keeping China's current relations with the Central Asian states under its own control, within the scope of the close environment doctrine that it put into practice in 1993. The other member countries of the Shanghai Five, Kazakhstan, Kyrgyzstan and Tajikistan, perceived the organization as a power they would have to ensure their security from the countries in the region, and also regarded it as a platform where they could have close contact with China. Therefore, the parties that take advantage of the interdependence between the larger states are not only the larger states, but also the weaker states that have the power to shape the foreign policy behaviors of the larger states (Akçadağ Alagöz 2016: 38).

In line with the different expectations of the parties, the Russian and Chinese leaders, who came together in 1994 just before the establishment of the SCO, agreed on the "Constructive Partnership" and then on the "Strategic Partnership" in 1996, with the idea of creating a cooperation organization in the region. They met with the presidents of Kyrgyzstan, Kazakhstan, Tajikistan, Uzbekistan and Turkmenistan and signed agreements mediating good neighborly relations. The Central Asian Republics, which have been left alone with various problems since the day they gained their independence, looked at the SCO as a regional security circle, with the thought that it would not be possible for them to protect their country's security alone. In the same period, in addition to the security concerns experienced by Central Asian countries due to radical Islamist organizations, Russia had to deal with with Chechnya threats and China with East Turkistan threats. For this reason, the security-based integration needed has created interdependence and interdependence has deepened the scope of integration. In this regard, the relationship between integration and interdependence is once again exemplified. Of primary importance, the negotiations for increased security in border areas have gained importance in the context of security concerns. In addition, secondary and multidimensional aspects have emerged through various political, economic and diplomatic issues of the same countries.

In addition to the threat of a unipolar world, issues such as the accelerated enlargement process initiated by the European Union, NATO's strategy of reaching out to Eastern Europe as a result of the determination

of a new concept for itself, and the desire of some countries in the Commonwealth of Independent Nations (CIS) to form a separate union have also taken shape as a result of the SCO member countries' coming together on this platform and seeking answers to the problems mentioned. In the light of all these developments, common security concerns experienced has forced the countries to form a regional integration. In addition to the border disputes that initiated the interactions of Russia and China, the dissatisfaction felt with the presence of the US in the region led these two countries to show cooperation in which they would gradually develop and deepen their interdependence although they previously saw each other as a threat for themselves. Notwithstanding all possible differences of these both parties, this cooperative integration brings Russia and China to a closer common political harmony, and it is an example of multidimensional interdependence, not just political or economic one. In this sense, the Shanghai Cooperation Organization represents a rational cooperation structure established under the criteria set by interdependence, in which the interests of Russia and China are taken into consideration on the cost-benefit level.

The most important reason for the rapid growth of the organization after its establishment was the desire to quickly liquidate the United States for security conditions from the region, which was seen as sensitive by both Russia and China. Taiwan is a sensitive issue for China as Taiwan is supported and used as a natural base by the US. This poses a serious security threat to China, which claims that it will eliminate this problem by including Taiwan in its territory if deemed necessary. For Russia, it is understood that it will be in similar tendencies with China in terms of feeling threatened by the power and regional security it has established through the region it defines as its immediate environment. For this reason, Russia and China, which are disturbed by the policies carried out by the United States and exhibit a common attitude towards these activities, have united under the roof of the SCO within the scope of security and multifaceted cooperation in terms of their interdependence. Thus, the adventure of security-based interdependence between Russia and China and the future of the SCO have always been closely related to the U.S. presence in the region.

Economic Interdependence: Despite the harsh power policy and its strategic practices that have maintained their dominance in international relations for many years, with the increasing effects of globalization, there has been a change in the center of power and the military policies in practice have started to shift towards the field of economic policy. The meaning of real power is not limited to countries with military potential and their regional control, but has tended to have a character integrated

into the global economy. It is noteworthy that within the scope of the post-Cold War security concept, economic diplomacy has become a source of economic security. On the way to economic security, processes such as the establishment of the WTO, the liberalization of trade, and the increase in the trade shares of developing countries have become some indicators of the development of economic diplomacy. Indicators of economic diplomacy, such as national trade, peaceful development and the establishment of prosperity, have also been the determinants of a real process of interdependence in which countries are intertwined. If it is accepted that trade is the alternative in the scenario where costly modern wars and military gains are excluded, the most natural solution for Russia and China in terms of strategic partnership has been to enter into a relationship of economic interdependence.

In addition to the previous titles, another important pillar of the strategic partnership of Russia and China constitutes the last point, namely the trade relationship and economic interests between the two countries. The leading indicator of the interdependence between Russia and China is the dimension of economic and commercial relations in terms of representing the most active, continuous and effective item in their overall relations. As the commercial relations of states increase in the international system, states becoming mutually dependent on each other for different products emerge as a result of this situation, and this two-way dependency between states is called economic interdependence (Kaya 2019: 43).

In terms of considering the relations between the two countries and the level of economic interdependence of these relations there arise two important features that cannot be ignored in the commercial dimension. Firstly, as an export-oriented country, Russia maintains stability in its economy based on its sources of energy and defense industry, and secondly, China represents a large market for these issues that Russia needs (Knutsishvili 2019: 50). In other words, the two countries constitute dynamic and stable market, trade partner and investment center for each other. Russia can find a a safe export gateway as China is an import-oriented country in the energy and defense industry. The parties become economically interdependent in cases where the powers of the two states are almost equal to each other and on condition that the two countries become highly sensitive due to the mutual interactions formed (Kaya 2019: 62). Based on the initial example given in commercial relations, Russia-China relations in the phenomenon of interdependence appear both in a sensitive structure and in a symmetrical direction.

What initiated the basis of mutual relations of Russia to China was Russia's military equipment sales to China followed by Russia's military budget decline after the collapse of the Soviet Union. Modernizing its

military infrastructure, China, began to increase its military expenditures. The weapons bought from Russia developed the military industry of China, and thanks to this, China managed to get the weapons it needed (Knutsishvili 2019: 64). Especially considering the embargo imposed by the US and the EU on arms sales to China in 1989, China had to turn to Russia to renew its military technologies and Russia became China's main weapon supplier (Knutsishvili 2019: 49). As a response to this, Russia could find a chance to be relieved economically thanks to China, which developed its technology although the Russian economy had been in a difficult situation after the new Cold War. However, it would be wrong to state that there is a comprehensive military cooperation structure between the two countries, but rather, it can be stipulated that there is a close commercial relationship in terms of technical-military weapons and equipment supply (Özbay, www.tasam.org). The border dispute contributed to the relations between the two countries which was first resolved within the SCO, and then by the commercial military/economic ties established.

Economic interdependence constitutes the most common type of interdependence concept and links trade and peace. It is argued by David Ricardo, one of the liberal economic theorists, the goods produced by the states in a competitive environment are actually produced in a most cheap way. However, the states should buy the goods that they have to produce expensively from countries that produce them cheaper (Oğuzlu 2014: 105). As a result of this, a relationship of interdependence will have been established by the states and the peaceful relations could be maintained as the countries gain profits (Oğuzlu 2014: 105). As a result, the probability of conflict or war will decrease and the states will strengthen their relations as trade states in their interactions, and in this way, the interdependence relationship that develops within the scope of trade will result in peace between these states.

China's industry has turned into a production facility. In this situation, oil supply constitutes the remarkable component of the trade relations between Russia and China. Therefore, it might be stated that this relation can account for China's closeness with Russia with the need for oil to keep its industry strong. Actually, Keohane and Nye indicate that there must be a negative impact and cost regarding the issue that is the subject of dependency between the two countries, which gives the possibility of mentioning a relationship of interdependence (Akçadağ Alagöz 2016: 51). There can be a recession in the Chinese economy in the slightest problem that may occur in the energy supply. Therefore, by bearing the cost of being deprived of oil, China always tends to have a strategic partnership with Russia, enjoying the majority of the world's reserves. In line with this, Russia seems to bear this cost with the possibility of not being able to benefit

from the extensive market opportunity in China. The energy cooperation of Russia with China is important and costly as this cooperation illustrates that there are alternative markets to the European market, where Russia is highly dependent. Therefore, in the absence of demand originating from Europe, Russia will reduce the cost element of its interdependence, thanks to its access to the Chinese market and cooperation.

What brings up the issue "Russian natural resources for access to Chinese financial resources" results from China's rapid economic growth enabling Russia to meet the increasing energy and raw material needs. Establishing economic cooperation mechanisms is what China's main policy focuses on in order to provide access to energy and natural resources, as well as to establish long-term economic links so that the interests of the country are protected. Russia's close relations with China and its policies of cooperating are based on the desire to regain its weight in the economic and political fields that it previously had in the international system and to compensate for this loss with new international mechanisms.

The economic cooperation maintained by the two major countries also determines the global political economy. While the development of the Siberian region, in particular for Russia, is maintained by the economic cooperation between Russia and China, this cooperations provides a space for China to supply economic items such as military equipment, oil and raw materials. While Russia is the largest oil producer, China is also the largest energy consumer, which underlies the leading reason why the key supply item in the economic relations between the two countries is energy. Representing the most fundamental feature of interdependence relations, energy exchange has originated from China's rapidly growing economic characteristic.

Even though the military industry has found a room to develop itself in the field of production, China has rapidly continued its trade in military materials, weapons and energy with Russia. However, the entire order of trade relations is influenced by the need for energy in addition to the military industry. The need for energy is also known to strengthen the developing countries. In this regard, China is in need of safe energy sources and is afraid to take risks. Therefore, it has maintained its dependence on Russia. What brings up the interdependence between Russia and China is the fact that China is a rising power that needs energy and Russia possesses and exports energy resources. Energy demand has become the second main trade area that has brought its close neighbor Russia and China closer after defense industry trade as China continues to grow and develop. The inevitable partnership between China and Russia results from Russia's status of being the largest supplier country in the world energy market (Knutsishvili 2019: 71). On the other hand, although Russia

cannot maintain stable trade relations with the West, China is a reliable market for Russia. These issues denote the strategic partnership between the two countries and they are the indicators of economic interdependence.

China's low-cost access to high-tech Russian weapons is achieved by Russia's arms sales to the country. This is an especially critical trade item as it balances Taiwan, receiving weapons from the US and the West. Russia also continues its trade with China mutually in favor of China's surplus goods. In addition to the increasing arms trade between the two countries, the first joint military exercise in 2005 brought up a new dimension of concern in their stance against the United States, pointing out that military relations would also be improved. The official Russian-Chinese partnership is not limited to the military exercise relationship. It has also involved the field of energy in the commercial sense within the framework of the agreement signed in 2006. An agreement, valid since 2011, has also been signed concerning the annual transfer of 60-80 billion cubic meters of Russian natural gas into China through two pipelines which pass through Eastern and Western Siberia (politikaakademisi.org, 2012).

The biggest joint platform of action of Russia and China, which is working in harmony in Central Asia in all these matters, is the Shanghai Cooperation Organization, whose security they also guarantee. While Russia and China are getting closer in order to protect their mutual economic interests, the Central Asian countries have also believed in the power of economic relations to be established with Russia and China in order to protect, develop and safely transport the underground resources of their regions to world markets. For all these reasons, the SCO, established in 1996, has been equipped with purposes such as protecting the borders between member countries, developing economies and solving basic problems with other countries. The function of the organization has been mutually expanded to many purposes (Abdullah 2019: 55).

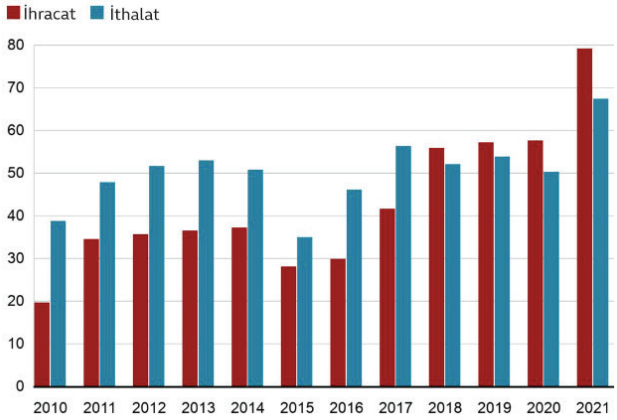
China is the country that is constantly and fastest developing within the SCO. Since 1978, this spectacular growth in economic terms, except for some intermediate periods, has been a threat for other countries in the regional and global sense. Despite this, China's growth does not turn into a competition among the countries that are dependent on China within the scope of the principle of interdependence, which is one of the basic arguments of the liberal understanding (Yantur – İşeri 2021: 41-49). China has cheap labor and market. However, despite the economic power potential it has achieved, it has not reached its target point in terms of military power capacity and energy supply. In this sense, in order to maintain its rapid development in the economic and military fields, it avoids international conflicts and applies the win-win understanding in

accordance with the principle of interdependence in its relations with other countries and stands behind the competition (Yantur – İşeri 2021: 49).

Russia remained economically dependent on revenues from oil and gas exports to a large extent following the period of the Soviet economy. On the other hand, it saw its energy resources as a foreign policy tool that would have an influence not only in terms of economic power but also in terms of regaining its global power (Elma 2007: 138). Russia, which implements energy policy depending on its foreign policy, has energy resources that both guarantee economic development and become the determinant of Russia's international position. In this sense, Russia affects not only the energy dependence of the Soviet bloc countries, but also regional powers such as China. Considering the prices reached by oil, Russia, which has largely paid its debts, has been able to consolidate its budget and has a state control over the energy sector (Elma 2007: 139). This energy strategy that Russia implement has been an indicator of China's increasing dependence on Russia as a response to rising energy needs of China.

The data in the first two months of 2022 show that the mutual trade volumes of Russia and China increased by 38.5% compared to the same period of 2021, representing the highest peak in the last 12 years (Euronews 2022). Within this volume, which corresponds to an increase of approximately 26.4 billion dollars, it is seen that China's imports from the EU and Australia decreased by 0.2% and 2.3%, while its imports from Russia increased by 35.8% and China's exports to Russia increased by 41.5%, reaching $ 12.6 billion (Euronews 2022). In the same period, China grew by 15.5% in the general import table and 16.3% in the export table (Euronews 2022).

Figure 1. Russia's Trade Volume with China (Import-Export)



Source: "Rusya Batı'nın Yaptırımlarını Çin'le Aşabilir mi?", BCC News Türkçe, (Retrieved On: 30.07.2022)

Figure 13 illustrates Russia's trade volume data with China for 2021 and previous years. According to the figure, the trade volume of Russia with China developed and increased in a balanced way. On the other hand, being the country that imports the most from Russia, China constitutes almost equal to the sum of the imports of the European Union countries. It should be noted that Europe still represents Russia's largest energy market (see Figure 14).

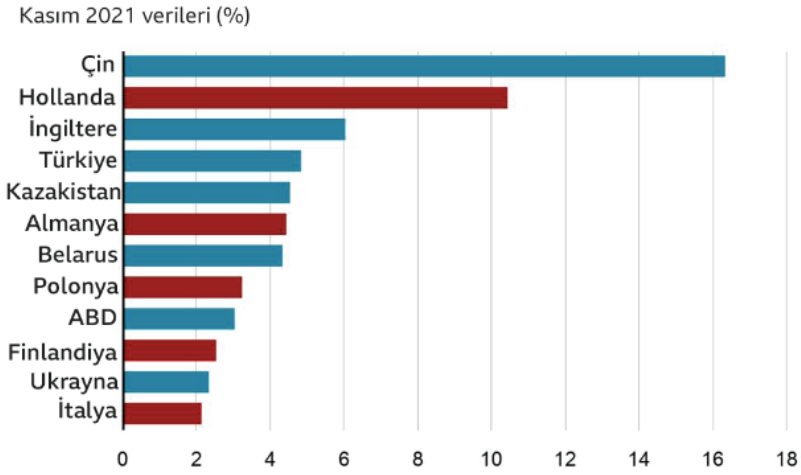


Figure 2. Top Countries Importing Goods from Russia

Source: "Rusya Batı'nın Yaptırımlarını Çin'le Aşabilir mi?", BCC News Türkçe, (Retrieved On: 30.07.2022)

It can be understood from both tables that the dependency items of China and Russia on each other causes a long-term commercial and economic cooperation with each other between Russia and China, and this is called the order of interdependence. China is a new market and high technology supply for Russia except for Europe as China depends on Russia's energy supply. They are solving the power shortages and interdependence they need against the USA by turning them into cooperation.

On the other hand, put forward in 2004 and developed as an approach against the current "Wahington Consensus", the "Beijing Consensus" can be regarded as a plus market economy in addition to China's authoritarian rule. Today, the economic aspect of this agreement, which includes political, economic and soft power in the new world order adopted by Russia, is formed by long-term trade and energy agreements, while the method of developing economic relations using national currencies is applied within the scope of these agreements (Yogayeva, www.aa.com.tr). China and Russia use their position as a new center of attraction rather than polarize the existing order, continue to show development and progress against the USA with the features specific to this agreement.

Discussion

Based on an inclusive overview of the three interactions of China and Russia, it is seen that we have divided them into political interdependence, security-based interdependence and economic interdependence in the literature section. The mutual relations between Russia and China are so unique for the United States that they cannot be compared with the relations of other states in any sense because these two countries are strong enough to pose a threat to the United States. In addition, these two countries have a constitutive relationship with all the countries in Asia and they can have a formative effect on these Asian countries because they are geographically connected. The two countries have consistently based their policies on the United States because the partnership between Russia and China has matured and developed to challenge the interests of the United States at the end of the Cold War. In this regard, Russia and China are working both separately and together to deal with the power and influence of the United States in all political, economic and security-oriented areas in the international arena. These two allies against the United States are making joint decisions to challenge the US' regional order, global norms and coercive expansions by supporting each other.

Russian-Chinese cooperation weakens the United States. While this cooperation implies a deepening dependence on China for Russia and accelerates tensions between Russia and the West, China's constructive communication with the United States puts China in an advantageous position in this triangular relationship. While China's constructive relations with the United States pose no threat, there is a perceived threat that can result in regime change in domestic politics due to the attitude of the Russian elite in Russia. However, the country's security, economy and prosperity may become stronger if Russia gets closer to the West. However, since there is no need for Russia getting closer to China to make its political system more open, to switch to a transparent and orderly investment regime, and to open its economy to more competition, there is not any threat for Russia in establishing close relations with China.

Although there is mostly an agreement on many international issues between the two countries, it is possible that there arise some differences in their opposition to the United States. While Russia does not avoid taking risky measures against the international order imposed by the United States, China obeys existing orders that may provide benefits to its country and refrains from risky-costly attempts to confront the United States.

In the period after the collapse of the Soviet Union, the periods of development and change in the economies of the countries gathered under the roof of the Commonwealth of Independent States are very important

in terms of directly affecting the Russian economy. While the failed transformation to the market economy as a result of the reforms carried out in Russia between 1992 and 1997 resulted in some years of decline in the economy, the period between 1996 and 1997 showed some efforts to overcome the economic crisis experienced by the countries that declared their independence. The period between 1998 and 1999, in particular, was experienced as a period of slowdown as a result of Russia's monetary and other crisis in its domestic economy (Bulut 2014: 17). The years 2000-2008 witnessed an economic recovery process in Russia as a result of the price increase in raw material resources. However, this period was followed by a slowdown process again as a result of the global economic crisis in 2008 in the same year, which undermined all economies (Bulut 2014: 17). The Russian economy has been in a renewal and development process since 2010 and eventually managed to recover after the global economic crisis.

While the construction, household and automotive sectors facilitated the extraordinary economic growth in China, this rapid growth could not meet the increasing demands in areas such as raw materials, energy and transportation, and caused an excessive demand in the raw material markets around the world, which increased the prices. The rapid growth of China alone increased the world's steel demand with a rate of 75%. Therefore, the energy need to be created was unlimited. What's more, China's energy resources are not evenly distributed within the country, and it still ranks second in the world energy consumption ranking (Akçil 2008: 24).

The economic growth in the 1990s has transformed China into a global center of attraction, making the country the first and most influential region in Asia. However, within the scope of the reforms that started in the 1970s before this global growth, it started to shape its relations with other countries, including Africa and Latin America, not ideologically as it had before, but rather the scope of these relations focused on economy (Üngör 2009: 27-38). In this way, it has expanded its sphere of influence day by day. Especially after the 1997 Asian economic crisis, it started to have an impact not only on East Asia but also on Central and Southeast Asia with its economy that continued to develop (Üngör 2009: 28). In spite of the SCO it established and acted cooperatively with Russia and other Central Asian countries, China's membership in the World Trade Organization in 2001 presented another turning point in the country. As a result of this, China began to draw the profile of a competitor rather than a partnership to other developing countries. It can be observed that both technological and industrial developments gave a chance to China to have a tendency towards an export-oriented policy. The active role of trade occupying a lot of space in China's foreign policy, has reached a dominant position and has attracted the attention of all countries.

Although Russia and China can maintain a cooperative relationship and have a common aim of distancing the United States from the region, it should not be forgotten that the two countries are natural rivals of each other in Central Asia. China's economically expansionist influence throughout the region undermines Russia's dreams of reviving the Eurasian Economic Community. For this reason, within the scope of the SCO, which they use as common mechanisms of action, Russia focuses more on cooperation in the military field, while China focuses on economic issues. For example, in the Middle East, where Russia is making heavy expenditures and trying to exist despite the risk of war with the United States, China is consolidating its influence through its economic power quietly and in a risk-free fashion (Kemaloğlu, www.aa.com.tr). Thus, the reason for the insecure attitude between the two countries today is because of the new feature of the interdependence relations, which changes and transforms asymmetrically when compared in terms of economic size.

The energy sector is critical to the economy of both Russia and China. China is the world's largest energy importer and it is true that all energy resources across Central Asia are important to the economic progress of this country. China needs a great deal of energy, and therefore, by making investments in the region, it has increased its cooperation with the countries of the region affiliated to the SCO in the first place. It has met its energy needs from the region. On this occasion, China's superpower position has also strengthened in the region as its economic development continues rapidly.

With economical progress that it had shown, China further developed the arms trade between the two countries in its favor. Russia made 40% of its military equipment exports such as warplanes, air defense systems, warships and submarines to China, preparing the ground for the change of balances against itself and contributing to the development of China (Kemaloğlu, www.aa.com.tr). Although Russia seemed to be in a superior position in many respects in the first place, it started to fall behind compared to the fast-developing modern Chinese economy. Furthermore, China managed to get in touch with more contacts due to its trade in military materials and eventually produce its own weapons (Knutsishvili 2019: 65). Since 2007, China has reduced the import of weapon systems and other technological products from Russia, turning the interdependence balance against Russia. This incident affects the trade balance maintained since the post-Cold War period and has removed away an important export item from Russia in terms of the defense industry. In addition, Russia exports oil, having a special importance for Russia, to China. However, as a result of China's diversification of the energy market with its active investments in Africa in recent years, China's interdependence against Russia has decreased its bargaining power has increased.

In order to exemplify the changing balances between Russia and China in interdependence, it is necessary to remember the states of insensitivity and vulnerability, which represent two important features of the concept. As explained extensively in the theoretical section, the dependency situation in which one of the parties is dependent on the other party for a product they want to obtain, but where alternative supply routes are still possible is called *sensitivity*. In addition, the state of dependency where there are fewer suppliers or no alternative is called *vulnerability* (Kaya 2019: 37). When this issue is considered regarding China's energy needs, the dependency relationship in this process, where China is highly dependent on Russia for oil supply and has no alternative in terms of market, can be described as vulnerability. As a result of China's investments in Africa, a new alternative market opportunity in oil supply can be explained as the changing sensitivity of China's dependence on Russia.

The comprehensive partnership of Russia and China provides great economic benefits to Russia, especially in terms of energy and arms sales, and it functions as a leverage in the level of the relations with the USA. Despite this, China's economic or political power in Central Asia is not a desirable situation for Russia. Its economic dependence on China, which has not bothered Russia until now, has resulted in a concern for Russia regarding the Asia-Pacific as Russia realized that the issue has turned into a political dependence throughout the Central Asia. Russia foresees that that it will go through a trouble especially if China increases its influence in East Asia, and therefore does not want to completely destroy its relations with the USA and does not want to make its country fully dependent on China. Russia wants the relations between the main power centers to be in a balanced order. On the one hand, Russia does not want the USA to leave the North Pacific in order to prevent China from being the dominant power in the region, and on the other hand, it expects the USA to look after Russia's national security interests.

A study on Russia's changing role in the international arena experienced after 2010 includes some concerns about Russia's place in world affairs, its relationship with the great powers and its position in the face of China's rapid rise. It has been evaluated that it has lost an important advantage in the defense industry (Akçadağ Alagöz 2016: 37). In this direction, although the parties do not have to be equal in terms of power to mention interdependence, the interdependence relations are not always the same in terms of the ratio observed and even vary depending on the conditions (Akçadağ Alagöz 2016: 37). Despite Russia's superiority in possessing nuclear weapons, it has been determined that China has the second largest defense budget in the world after the USA and has traditionally had an advantageous position compared to Russia, ranking

third in the line. In addition, it is stated that China has a clear advantage in terms of conventional defense forces and other important security forces. Therefore, although the relations between Russia and China are observed to be stable, they are not static in the long run. The faster-than-expected growth of China affects the relations between the two countries on a daily basis owing to the changing balances in their power potential.

In this sense, interdependence is not considered as a relationship in which every absolute interest is kept in balance mutually (Akçadağ Alagöz 2016: 37). The symmetrical and asymmetrical characteristic of interdependence especially in Russia-China relations has manifested itself over time. If mutual relations are damaged in the period when the dependency relationship is symmetrical, both sides are negatively affected, while the country that is more dependent on the other party in the asymmetrical relationship dimension is more negatively affected (Akçadağ Alagöz 2016: 37). In every example of dependency where the needs of the parties to each other are not maintained equally, an asymmetrical picture emerges (Kazimov 2020: 42), and in the case of Russia-China interdependence, their relation has shifted from symmetrical to asymmetrical as a result of the developments carried out by China.

It can be clearly evaluated that Russia and China are still both in cooperation and competition concerning the occupation of Ukraine, which is the most up-to-date action of Russia. Although most countries boycotted at the very beginning of the Beijing Winter Olympics held in China on February 4, 2022, Putin participated in the opening of the Olympics, which revealed that Russia and China had very good diplomatic relations as of that date (McDonell, www.bbc. com). Following Putin's visit to China accompanied by a delegation of 54 people from various sectors and the contracts worth 117 billion dollars for oil and natural gas supply signed during this visit, Putin announced this situation as a natural integration between the two countries (Huseyni, Independent Türkçe). However, there are some scenarios such as China could be informed about the invasion of Ukraine on February 24, 2022, taking place right after the Olympics and even Putin might take this decision during his Beijing visit as a result of the economic agreements with China and China could demand that Russia wait until the end of the Olympics (Bulut, Independent Türkçe). It is also among the scenarios mentioned that the purpose of China's support of this plan is that Russia's ongoing historic Ukraine problem is resolved in favor of Russia as soon as possible (Huseyni, Independent Türkçe). However, contrary to China's expectations, Russia's inability to reach a quick result despite long weeks due to encountering a strong Ukrainian resistance has put China to a great test concerning ignoring and not condemning Russia (Huseyni, Independent Türkçe).

China has been pressured to mediate to end the Occupation and to impose a compromise on Russia. However, China is Russia's most important ally. In parallel, China abstained from voting in both the UN Security Council and the UN General Assembly, which created confusion about China's stance on the war (Huseyni, Independent Türkçe). It is observed that China, which did not vote in favor of Russia and did not help its ally much following the sanctions to be applied to Russia, did not maintain its supportive attitude before the war. At this stage, it was supposed that China applied an equation to give full support before the invasion and systematically withdraw its support after the invasion and put the rivalry between them to the fore. According to this scenario, China's interest is that Russia does not win the war. It will be more preferable for China if Russia is drawn into a protracted war in which it has exhausted its resources, is weakened, and is thus defeated and forced to isolate itself from the West. (Huseyni, Independent Turkish). Again, according to this scenario, Russia, which has finally been isolated and weakened from the West, will have no choice but to become the only ally with China.

Russia's aim is not to advance as a minor partner within the framework of the Russian-Chinese alliance, but to become a great power on its own (Huseyni, Independent Türkçe). Russia always has this aim and it had it while he was entering into a war with Ukraine. Russia's minor partnership only covers the period when it weakened after the collapse of the Soviet Union and sought refuge in forced friendship with China in order to find common ground against the US. Russia's invasion of Ukraine, on the other hand, means that the current Eurasian Union population reaches 226 million, eliminates the buffer state between it and the West, and becomes strategically stronger than NATO and the EU (Huseyni, Independent Türkçe). With this power it will reach, Russia will transform itself into a third power equal to both powers instead of an ally of China in the distinction between the USA and China, which needs less cooperation with China, can conflict with the interests of China for the continuity of its own power (Huseyni, Independent Türkçe). The result of the scenario that China bets on Russia concerning the Ukraine war – we do not know whether Russia will win the war - is the reality of Russia and China, which have never been reliable partners of each other and always have a feeling of rivalry.

Another accepted scenario from the perspective of the USA is that Russia was provoked into the war by the USA. Henry Kissinger once said: "Instead of dealing with both Russia and China simultaneously, it is important first to push the two powers apart, to bring one power to its knees, and then to impose pressure on the second power". According to this scenario, this tactic above was adopted by Biden. Thus, the process

leading to the Russia-Ukraine war was fueled (Bulut, Independent Türkçe). The gains to be made during the Ukraine war seem to have been aimed at weakening Russia, reuniting European countries that distanced themselves from the US under the umbrella of NATO, and the EU's cooperation with the US instead of competition (Bulut, Independent Türkçe). A militarily weakened Russia means a strengthening of US influence in the Pacific-Far East. From the perspective of the world economy, China, which is the world's second largest economy and trying to be the first state in rank, is much more important than Russia. For this reason, the main goal for the USA is for China to leave its cooperation with Russia and remain neutral on both military and economic issues (Bulut, Independent Türkçe). Two main issues that directly concern China and the West are the Taiwan issue and the One Belt One Road Initiative. In these matters, China is hesitant to leave Russia, which is its great supporter, strategic partner and ally, and to end its alliance. Although China's support for Russia's achievement of its goals in Ukraine may be beneficial in the short run as it is an example that China can also benefit in a possible Taiwan issue, a strengthened Russia will not be in China's interest in the long run (Bulut, Independent Türkçe). Therefore, for now, China, which defines Russia's invasion of Ukraine with the words issue and crisis instead of war or occupation, may abandon this alliance the day it faces a strong Russian threat (Bulut, Independent Türkçe). Until that day, China, while resisting to keep its distance and neutrality in order to protect its country from Western sanctions as much as possible, continues to try to convince the West of the legitimacy of Russia's security concerns due to the alliance's past and future possibilities, and continues to make statements that the friendly relationship with Russia continues. (Bulut, Independent Türkçe). As a matter of fact, China, which could not stand alone against the Western world in case Russia should be weakened, or which could not bear the possibility of being faced with the destiny of a weakened Russia, is aware that it is still interdependent with Russia (Bulut, Independent Türkçe).

China is very sensitive about Taiwan. The 20th National Congress of the Communist Party of China was held on October 16-22, 2022. In the speech made by the Chinese President and CCP General Secretary Xi Jinping at this Congress, the political and economic direction of the country for the next five years was outlined, the Taiwan issue was kept on the agenda, and it was stated that the use of force would be used to reunite Taiwan with China if necessary (Euronews 2022). Jinping stated that they were making sincere efforts to achieve unification by peaceful means. He clearly underlined that they would not hesitate to take all other necessary measures (Euronews 2022). China, which adds to the constitution of its party that it does not accept Taiwan's independence,

completely opposed to a possible independence that Taiwan would achieve by supporting separatist activities (www.bloomberght.com). Expressing that they were closer than ever to the unification of China and Taiwan, which he defined as the motherland, Jinping also stated that they had the competence to achieve this (www.bloomberght.com). With the statements made in the last congress, China, which has fully revealed its plan and intention about Taiwan, has once again stated that they will never give up on Taiwan in parallel with the attitude it has maintained until today. In this sense, in a possible crisis with the West, China thinks that it can undergo a similar situation as Russia does, and therefore follows a foreign policy in an effort not to sever all ties with Russia, which is its sole supporter on the Taiwan issue. This issue re-exemplifies China's status of sensitivity in its interdependence on Russia.

Actually, after Russia's invasion of Ukraine, the scope of strategic partnership between Russia and China has been reshaped in the form of alliance, distance and criticism. On the one hand, China abstained in the UNSC vote and determined the distance between China and Russia, on the other hand, did not leave its alliance by rejecting the sanctions to be applied to Russia. The biggest factor in this is the interdependence of the two countries, which still continues in the current order. To sum up, the process of interdependence between Russia and China has evolved to a different level as a result of the political, economic and social events experienced over time in the international conjuncture. While the subject of the interactions in non-systematic issues between the two countries consisted of political, security and economic-based agendas, there was an asymmetrical transformation in the cost concept within the framework of the principle of interdependence and in the symmetrical feature between the parties. The extent of the political and economic relations between Russia and China has yielded and will continue to result in certain sensitivities and vulnerabilities for the two countries.

Conclusion

After the collapse of the Soviet Union, five new independent states were established in Central Asia, and Russia and China were positioned as regional powers in the international system and especially in Central Asia. To fill the gap left by the collapse of the Soviet Union, it is not clear which regional power will dominate in Central Asia, considered to be the center of Eurasia, and whether competition or cooperation will be used to fill this gap. The shaped Russia-China relations are deemed worthy of examination within the scope of this study. As a result of the balancing policy carried out against the USA, which both countries perceive as an external threat in the region due to certain reasons, the search for a multi-polar order determined the level of the relationship between the two countries and

paved the way for the process yielding a relationship of interdependence. The forms of the interactions on which these two countries maintain their interdependence have been dealt with through political, security-based and economic interdependence accounts and as a result of the evaluations made, it has been concluded that Russia and China are interdependent on all these issues, that they will continue their cooperation in the near or medium term, that they will avoid serious competition, that they will develop their relations on the axis of interdependence for the sake of their interests, even if there are changes in their level of interdependence. In order to support the hypothesis in this regard, a theoretical framework has been drawn and the historical progress of both Russia and China from the Cold War to the present time has been discussed. The current dependency relationship of the two great powers has been analyzed and it has been determined that the nature of their interdependence seems to be equal at first, but turns into a disproportionate and asymmetrical form over time. The extent of the political and economic relations between Russia and China has created and will continue to create certain sensitivities and vulnerabilities for the parties. Therefore, the interdependence between the parties has been examined in terms of quality, the cost to the parties and the power relationship it has created, and it has been concluded that there is a disproportionate and asymmetrical feature at the level of dependency.

The interdependence relationship observed between the two countries has led to a foreign policy reflection that reduces the possibility of military intervention to be carried out by the states concerned against each other, increases the division of labor and paves the way for the peaceful resolution of the problems. However, friendship or enmity issues in the current world and international conjuncture seem to have a constantly changing alliance structure. The slightest attitude or situation that can change in matters has a sensitivity that can turn all existing balances in the opposite direction. The dimension of relations, which is quite different from the sharp-sided world of the Cold War in this state, does not contain any clarity and constantly changes in terms of those who participate in cooperation and competition. The comprehensive partnership and strategic cooperation between Russia and China, which started and developed in a sensitive and symmetrical line in this direction, has turned into areas where the two countries compete in terms of regional efficiency.

The interdependence relationship between Russia and China, which this study claims, is a different relationship dimension that does not require absolute cooperation, equal gain and endless trust as it is known. Today, Russia and China are regional powers that still aim to be a global power, have both cooperation and competition dynamics, and therefore cannot abandon their status of interdependence at once. The USA, which

makes attempts to distance the two countries from each other, also causes the two countries to get closer on an endless dimension, similar to the search for multipolarity at the very beginning of the process. As a result, new dynamics will continue to emerge while developments occur in the international conjuncture, especially in the relations between Russia and China, where cooperation and competition are mixed.

In the current situation, it has been inferred that Russia and China are still interdependent on many issues, they will continue their cooperation relationship unless there is an important and fundamental development, they will avoid turning into ambitious rivals, they see themselves as inadequate and need mutual cooperation for their interests even though there are differences in the status of their interdependence; and they will develop their relations at the level of interdependence for their interests when they need mutual cooperation. As evidenced by the current conclusions, it is seen that bidimensional and multidimensional cooperation agreements are continuing to be made between the countries in question, Russia and China, which will increase cooperation in political sense, in their security concerns and in many other fields, especially in economic issues. These developments gain importance in terms of supporting the conclusion presented in the study. Considering a scenario in contrast to the additional cooperation to be established on the dimension of interdependence between Russia and China, it is also evaluated that China and Russia can follow separate and independent policies if the reasons giving rise to the interdependence of the two countries are to be eliminated. In the case of this possibility, it is expected that Russia and China follow different political and economic interests and that new alliances led by each country are formed.

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CHAPTER 12

TALENT MANAGEMENT

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INTRODUCTION

Most firms must learn to successfully compete in this complicated and dynamic environment created by the global economy in order to experience sustained growth (Anand, 2011: 25). Businesses must manage talent as a source of competitive advantage in today's complicated global economy (Wright & Kehoe, 2008). The primary factor influencing corporate performance is generally acknowledged to be organizational talent management (Meyers, 2020: 1). In recent years, there has been significant progress in the relevant literature focusing on talent management (Valverde, Scullion, & Ryan, 2013: 1832). Talent management is a limited research area that contributes to the current literature on the management of human resources. Talent management is becoming more and more crucial for corporate performance and individual talent development in order to maintain a competitive advantage (Kaliannan, Darmalinggam, Dorasamy, & Abraham, 2023:1). In recent years, theoretical and methodological studies have been conducted in order to conceptualize the scope of talent management (Makarem, Metcalfe, & Afiouni, 2019: 181).

The concept of talent expresses the whole of the skills, experience, knowledge, talents, intelligence, and competencies needed by the employees to resolve various situations and problems faced by the organization (Michaels, Handfield-Jones, & Axelrod, 2001; Ugboego, Edeh, Amarachi, Ikechukwu, & Adama, 2022: 29). The methodical explanation of base positions that contribute in different ways to the company's sustainable competitive advantage is part of the talent management process, as is the creation of a talent pool of high-potential and high-performing officers to fill positions. It has to do with enhancing a differentiated human resources architecture to make it easier to hire qualified candidates and ensure their dedication to the company (Collings & Melahi, 2009: 305). Talent management, decided at the top management level, is regarded as a priority for any firm since it promotes competitiveness, performance, effectiveness, and productivity (Bloom, Lemos, Sadun, Scur & Van Renen, 2014 as cited in Basco, Bassetti, Dal Maso, & Lattanzi 2021: 2).

Today's talent supply, composition, and movement in companies are shaped by a variety of complex and fluid dynamics and processes. Most businesses compete on a worldwide scale and grow operations across borders. It is referred to as a macro talent management system and is present in numerous external scenarios. Macro talent management can either directly or indirectly strengthen or weaken a company's ability to attract, hire, and retain talent which is essential to achieving competitive business goals. Economic, political, governmental, technological, and cultural factors all have an impact on macro talent management (King & Vaiman, 2019: 194). Macro talent management refers to activities

systematically developed by political authorities and non-governmental groups to improve skill levels both inside and between nations (Khilji, Tarique & Schuler, 2015: 37 as cited in King & Vaiman, 2019: 199).

As the world's leading multinationals grow globally, global talent management remains a significant obstacle and challenge that needs to be overcome. How to manage an increasingly varied, educated, and digitally-savvy workforce globally is one of the biggest issues faced by multinational corporations. (Froese, Shen, Sekiguchi, & Davies, 2020: 1). Due to market competitiveness and talent scarcity, businesses have recently had trouble keeping good personnel, forcing executives to adapt their human resources strategies. Businesses generally use specialized talent development resources rather than inclusive talent improvement. In the literature, inclusive talent development is expressed as the management of performance for career development and retention of employees through training for all employees regardless of individual differences (Kaliannan et al., 2023:1).

A company may accomplish its goals and establish the ideal culture with the help of talented and dedicated employees. Finding and retaining talent in startups is a huge global challenge. Talent management facilitates employee engagement and develops talented and productive employees. It constitutes a complex task that decides the sustainability of any organization in a competitive environment (Durai &Viji, 2022: 138).

Businesses continue to embrace talent management, which first gained popularity in the 1990s as they realized how much their success depends on the talents and skills of their employees. The term was invented after a study by Mckinsey & Company in 1997 (Agrawal, 2010: 483). Today, talent management is perceived by business theorists and practitioners as one of the priorities in organizational management (Dries, 2013). The main reason for this situation is the intense competition between businesses for a limited number of talented employees, which is called the 'talent war' in the literature (Michaels et al., 2001). Despite the ongoing discussions on talent management for over forty years, the subject has not yet reached theoretical maturity and needs to be developed (Collings & Melahi, 2009). There is a need for empirical research that demonstrates the positive impact that talent management initiatives by businesses have on staff attitudes and behaviors in particular. Due to research gaps, the lack of scientifically proven rationale for managers to make decisions about talented employees is cited. (Gajda, 2022: 92).

Businesses are increasingly seeking strategies to portray themselves as desirable employers as the "war for talent" intensifies. Companies more frequently disclose their global talent management plans on their websites

and in job advertising (Ewerlin, 2013: 279). For a long time, international corporations have faced significant difficulties in the competition for talent. There are various reasons for this situation. The need for qualified human resources has increased as a result of globalization and the resulting escalation of competitiveness. Demographic changes that increase the migration of skilled workers to different countries increase the labor supply in developed countries. With the increase in the relocations of enterprises, the country's markets are faced with the rapidly increasing demand for talent that cannot be met due to the inadequacy of the existing qualified workforce. With the increasing importance of knowledge as a resource, talented employees are becoming the foundation of the struggle for competitive advantage worldwide. As a concept encompassing organizational actions to recruit, choose, develop, and integrate the best individuals in strategic roles at the global level, global talent management is crucial for human resources (Scullion & Collings, 2011: 6 as cited in Ewerlin, 2013: 280).

Contemporary economic realities characterized by intense competition, high dynamics of change in the business environment, and declining demand caused by the Covid-19 pandemic lead to a significant increase in risk and uncertainty in corporate governance. Trends weaken the ties between employers and employees facing challenging market conditions and are unable to provide stable, long-term employment to their employees. Employees' satisfaction, and commitment to work decrease, and their desire to change workplaces increases. In response to the economic challenges of the 21st century, managers decide to implement talent management programs to reduce the loss of talented employees and meet the current and future human capital needs of the business (Gajda, 2022: 92).

Talent management and development have gained popularity over the past 20 years, as first and foremost, human resources are seen as strategic partners for effective business strategies. The discipline of human resource management has seen a significant increase during the past 20 years. Personnel management is the first step of HRM, which leads to strategic human resources management. Strategic human resource management aims to improve company performance, whereas traditional HRM concentrates on individual performance (Kaliannan et al., 2023: 2).

Though talent management has garnered attention recently, the majority of current research is being put into creating concepts, processes, and definitions. Regarding various organizational styles, talent management has not been thoroughly researched. In this context, the need for highly qualified employees considered as talent in organizations is emphasized (Ingram & Glod, 2016: 339). Anand (2011: 25) states that there is a need

for new research on the enterprise-wide talent management application in research he conducted in a telecommunications company in India. In this context, within the scope of this study, talent management is examined in a theoretical framework. The study aims to contribute to the related literature. In the following parts of the study, first of all, the concept of talent is explained, talent management is expressed, and the study makes conclusions and evaluations.

TALENT CONCEPT

One of the biggest problems firms are currently facing is finding, developing, and keeping talent, according to Gallardo-Gallardo, Thunnissen, and Scullion (2020: 457). In this context, talent needs to be well managed. Talent is an individual's ability to understand, identify relationships, analyze, and reach conclusions. Talents are innate and developed through training and experience. It is necessary to organize the talents of any organization to direct its employees and ensure organizational efficiency. Strategies should be framed by keeping employees in critical roles and related skills (Durai & Viji, 2022: 139).

There are numerous definitions of the concept of talent. In theory and practice, talent is often defined as a collection of individual characteristics. It is also used to define the concepts of talent, high performance, or high potential. Despite the variations in definitions, two items of ability can often be defined. First, talent relates to an individual's abilities or potency and that extends to its original meaning. In general terms, it is stated that the particular talent of the gifted individual enables him to achieve better results than the person who does not have this ability. These abilities are; leadership skills, creativity/innovation, and the potential to increase performance. Second, talent focuses on performance. In this context, it is related to the fulfillment of responsibilities on the basis of expertise and competencies. When the two definitions of talent are compared, talent can be characterized as workers with the potential for above-average performance, as well as excellent job performance. Talented employees also need to be willing and able to progress (Ewerlin, 2013: 281).

As it turns out, the definition of talent in the literature is not consistent. While talent can be described as an individual, talent also refers to personality traits (Davies & Davies, 2010; Latukha, Kriklivetc & Podgainyi, 2022: 296-298). The term "talent" refers to the full range of abilities, knowledge, skills, and competencies that individuals must possess in order to meet the organization's difficulties (Michaels et al., 2001). The fight for talent among multinational firms dominated international discussions in 1998 when The McKinsey Consulting Group first brought talent to the literature on human resource management (Aina & Atan,

2020; Michaels et al., 2001; Ugboego et al., 2022: 29).

Talent can be explained in an objective and subjective context. Objectively, the term "capability" refers to the distinctive and developable skills that a person possesses and may develop via sufficient learning and training. These skills include analytical thinking, problem-solving, effective time management, communication, productivity, creativity, etc. Subjectively, talent refers to workers who are highly driven, open to learning, knowledgeable in their fields, and capable of completing tasks in a unique, creative, and effective manner by standing out in any setting (Yıldız & Esmer, 2021:17-18).

The foundational element for improving and sustaining organizational performance is talent. Many companies struggle to put into place efficient talent management systems in this environment. In this regard, one of the major issues facing businesses globally is finding, developing, and retaining talent (cited in Pagan-Castano, Ballester-Miquel, Sanchez-Garcia, & Guijarro-Garcia 2022: 528). Talent can also be viewed as a strategic resource for developing a competitive advantage (Warraich & Ahmed, 2020). The organization needs the appropriate talent to succeed in the future. It is thought that one aspect of organizational life on a daily basis is managing and developing talent. The progress of each individual's talent is essential and should be appreciated in organizations. Allowing people to discover and develop their abilities should become a component of the work routine (Agrawal, 2010: 483).

Talent can be examined with the human capital approach. According to the human capital model, an organization's capacity has value based on its particular knowledge, skills, competencies, contributions, and abilities (Pagan-Castano et al., 2022: 529). Applications for the development of talented employees are; orientation, business simulation, rotation, project work, reading, electronic learning, participation in strategic meetings, mentoring, and coaching (Yazıcıoğlu, 2006; Altınöz, 2018: 89).

Talent increases performance. It is generally seen that teams made up of the best individuals perform better (Anand, 2011: 26). It is emphasized that the definition of talent should be the first step toward creating effective talent management practices within an organization (Tansley, 2011; Nijs, Gallardo-Gallardo, Dries, & Sels, 2014). The two main groups of methods for talent definition are object approaches and subject approaches. According to the object approach, talent is a character trait. Subcategories in the comprehension of talent are identified in this method. 1. Talent as a natural ability, 2. As a skill, 3. As Participation, and 4. As Adaptation. The subject approach characterizes talent as a person. There are also two sub-categories in this approach: Inclusive and particular talent. The inclusive

paradigm includes applying the concept of talent to all employees of the enterprise. In a particular paradigm, a definite group of employees is distinguished. For example, there may be employees who produce the highest results or those with great potential (Latukha et al., 2022: 296-298).

TALENT MANAGEMENT

In the book "The war for Talent," published in 1998, experts from the McKinsey firm presented the idea of talent management. The book emphasizes the value of talent management and generates a great deal of interest in it. According to recent reports, organizations are investing more and more money in the talent management process. While there is considerable interest in talent management, there is uncertainty in the conceptuality of talent management in the literature. There is a need to strike a better balance between the needs of organizations and the aims and expectations of individuals, according to the talent management approach to retaining talent (Pagan-Castano et al., 2022: 529).

It is generally agreed that the idea of talent management was developed in 1997 when the American consulting company McKinsey published research results showing that the most successful companies focus intensely on their talented employees (Michaels et al., 2001). In the last decade, significant progress has been made in constructing the conceptual underpinnings of talent management due to the increasing number of scientific studies on the conception of talent. Research focuses primarily on defining the concept of talent in the organizational context, identifying the factors that shape human talent, conceptualizing talent management, and identifying and analyzing applications in the field (Gallardo-Gallardo & Thunnisen, 2015; Gajda, 2022: 92). According to Tamaş (2022: 478-479), the concept of talent management was developed by a group of McKinsey & Company, a global management consultancy company, that wanted a paradigm shift in human resources and coined the term "talent war" with the world at the end of the 1990s. This concept intends to emphasize that human resources should put emphasis on ensuring the success of businesses.

Another explanation is that in the late 1990s, when "The War for Talent" was at its height, talent management became relevant to HR professionals. Both strategic and tactical components are included in talent management. There is a global and local effort to ensure that operational human resource operations and strategic decisions are focused on creating a competitive edge through talent management. Today, talent management is viewed as a portfolio of interconnected HR activities that help place the appropriate people, with the right competencies, in the right jobs, at the right locations, and for the right salaries. Using human resources for

the organization's competitive advantage, talent management is a long-term organizational strategy. Strategic human resources practice makes talent management, which focuses on talent acquisition and performance, its primary principle (Claus, 2019: 208).

There is no standardized definition of talent in the literature on business management (Harsch & Festing, 2020: 45; Yıldız & Esmer, 2021: 3). Talent management defining as the activities and processes that systematically involve attracting, identifying, developing, engaging, retaining, and positioning valuable talent within an organization to create sustainable strategic success (Collings & Melahi, 2009; Warraich & Ahmed, 2020; Pagan-Castano. et al., 2022: 529). Human resources academics perceive talent management as a new HR strategy to select the best minds and place their skills where they fit to achieve the organization's goals. In a different review, Edeh and Dialoke (2016) stress that people with abstract thoughts and physical prowess won't be taken seriously until they can contribute to the business's efforts to address problems. This situation is identified with talent management processes. It is a methodical technique for managing personnel who possess the pertinent and essential knowledge and expertise to address organizational issues. Accordingly, an employee with exclusive skills who is not sought in the workplace cannot be considered a talent. Talent management promotes business success across a variety of economic sectors. Moreover, the process of talent management is considered as medicine for a distraught organization and affirms its power in building resilience toward a healthy existence as an organization (Ugboego et al., 2022: 29-30).

In the early years, academics perceived talent management as an alternative trend to human resource recruitment. As talent management began using more frequently, talent management began to be an area of interest in academic research. However, there are not enough empirical studies on the concept. Talent management is rapidly transitioning to a new paradigm shift with the emergence of the 4th Industrial Revolution (Claus, 2019: 209).

Due to its significance in the modern dynamic global workplace, talent management has predominated the literature on human resource management (Ugboego et al., 2022: 29). Since talent management is a relatively new and expanding field, more input from various industries and national viewpoints is needed. Talent management is estimated as a consequential requirement for businesses to achieve commercial goals and sustainable competitive advantage. It is also a substantial factor contributing to the effective execution of corporate strategy (Yıldız & Esmer, 2021:1). In order to develop a thorough talent management system, firms need first look into several fundamental questions, according to Zhang and Bright

(2012). What is talent, who qualifies as having talent, and what does talent management entail? When the traditional human resources management system is unable to satisfy the demands of the international corporate environment, talent management comes to the fore. The talent management structure and the extent of the talent management system of representative enterprises are both limited and shaped by organizational culture, which also plays a crucial role in this process (Tatoğlu, Glaister, Demirbağ, 2016; Yıldız & Esmer, 2021: 2-6).

Talent management is commonly understood to be a particular set of human resources (HR) techniques intended to recruit, choose, develop, and keep high-performing or high-potential workers in critical organizational positions (Collings, Melahi, & Cascio, 2018; Meyers, 2020: 1). According to Anand (2011: 25), talent management is a crucial step in ensuring that firms have enough qualified people resources to achieve their present and future business needs. The procedure encompasses all significant facets of an employee's lifecycle, including recruitment, training, and performance evaluation.

Talent management encompasses a variety of tasks and procedures, some of which include building a talent pool of high-potential and effective employees to fill the roles, designing a differentiated human architecture to make it simpler to hire qualified candidates, ensuring loyalty to the business, and systematizing the explanation of key roles that contribute in various ways to the organization's sustainable competitive advantage (Collings & Melahi, 2009: 304; Liu et al., 2021: 2). According to Makarius and Srinivasan (2017: 495), employers continue to be interested in talent management as they grapple with difficult issues related to the unpredictability of talent supply and demand in industries. In particular, employers often talk about the talent gap between the abilities of candidates and the skills needed in businesses. The importance of developing good relations with suppliers is emphasized in talent management. Individuals are promoted to take control of careers but do not know definitively what skills are required or how to cope with the challenges of a fluctuant workforce. The importance of the responsibility issue is increased by uncertainties surrounding the labor supply and demand for skills and certifications.

A common workforce strategy has always been talent management. In today's new normal post-pandemic, HR professionals focus more on talent management. The main objectives are to train a growing, agile, and self-motivation workforce in rough times. Businesses find it crucial to retain and manage their talent globally. For centuries, it has been seen the source of helping firms cope with crises is human resources. Firms should help their capabilities be efficient and effective during the crisis (Wadhwa, Gujrati & Uygun, 2022: 51). The management of talent is noted

as one of the most significant issues with human capital that enterprises in the twenty-first century must deal with (Dries, 2013: 272). In recent years, there has also been a question about those responsible for talent acquisition and development (Makarius & Srinivasan, 2017: 496).

Managers must make important decisions about the quantity and quality of talent they need to operate their organization on a daily basis, but they frequently lack the complete and accurate information they need to do so. Because of this, it is challenging for them to manage their talent portfolio so that they can implement their business strategy with the right people in the right place at the right time. Businesses can facilitate talent management by implementing strategic workforce planning. This approach is used by firms based on different innovations explained as human capital planning (Ruse & Jansen, 2008: 38).

Anand (2011: 29) uses the following broad parameters to examine how the organization views talent management:

- Integration of talent management as a process,
- Talent management develops talent retention in the organization,
- Talent that encourages growth and provides opportunities,
- Talent management as a link to pay and monetary reward.

Alziari (2017: 379-380) states the following issues regarding talent management practices in large international companies:

- 1.Human capital management is a challenging concept when applied carefully,
- 2.Talent is not general,
- 3.Talent management does not refer to the same subject as people management,
- 4.Talent decisions are not HR made by business leaders,
- 5.The decision moment of HR is related to who will take the job.

There is a competitive perspective that supports the belief that talent management is related to identifying talented people and finding and fulfilling their aspirations. Professional service firms often adopt a competitive approach, as job offers are based on employee skills. In addition, using the same personal development approach for everyone in the organization while shortening the time for high-potential employees, a developmental perspective suggests talent management for accelerated development paths for individuals with the highest potential. In this context, it focuses on developing high potentials or talents faster than

others (Agrawal, 2010: 483). Basco et al. (2021: 1) mention how limited industry competition tends to lead risk-averse family businesses to invest less in talent management strategies. The study revealed an intermediary relationship between the degree of risk aversion, the level of investment in family companies, and talent management as a decision from the senior management level.

The talent management process is widely adopted and adapted by large and multinational enterprises. Businesses are facilitating their operations to gain strategic advantages by using talent management. When firms are successful by making their talent management processes effective for the entire workforce, they contribute to rapid growth and development for businesses and employees, thus increasing the motivation of employees. Adopting talent management processes brings substantial challenges to businesses (Anand, 2011: 26).

- Identifying and evaluating new and existing talents,
- Organizing the talent pool,
- Maintaining a high level of commitment as an employee throughout his/her tenure,
- Retaining the talent pool,
- Maintaining sufficient reserve power.

Business strategy and the required specialized skills determine talent. The goal of talent management is to have individuals who are truly excellent at everything that the win-win business requires. Strategies describe capabilities and abilities. The skills required to acquire a business strategy are described. These capabilities guide the definition of talent and the decisions about how it will be positioned organizationally (Alziari, 2017: 380). The process of training and integrating new hires, advancing and keeping on board current employees, and luring highly qualified candidates to a company is referred to as talent management (Agrawal, 2010: 484).

Tarique and Schuler (2010: 124) defined talent management globally. Accordingly, he defines global talent management as practices that attract, develop, and retain individuals with high levels of human capital. Talent management is a concept that businesspeople define critically for organizational success. However, there is no consensus on talent management and ability definition (Crane & Hartwell, 2019: 82-83).

Employees are significantly impacted by the rapid changes in globalization, technology, and demographics. The talent management practices that have been used over the previous 20 years are altering due

to the new context. The demands of their employees today are not being met by talent management strategies, as leading companies across all industries are realizing. To find and nurture the talent they need, employers concentrate on creating meaningful employee experiences. To boost HR competencies, practitioners of the new generation of talent management are creating an HR component that incorporates management frameworks like design thinking, agile management, behavioral economics, and analytics (Claus, 2019: 207). Leading HR companies are reimagining talent management and improving the lives of both employees and employers. The new and improved talent management strategy places a strong emphasis on adaptability, personalized solutions, and identifying sustainability options (Claus, 2019: 213).

Worldwide talent management refers to all organizational efforts to find, hire, train, and keep top personnel in the most critical positions required to meet business strategic goals on a global scale (Scullion, Collings, & Caligiuri, 2010: 106; Froese et al., 2020: 1). According to Tamaş (2022: 472), the fact that information technologies are more on the agenda during the pandemic period also means a new obstacle in the race to hire people with great potential or talent. Talent identification, attractiveness, and retention are talent management research applications that can provide firms with a definite competitive advantage.

The definition of talent management in the managerial literature, from a resource-based approach, is the enhancement of high-performance and high-potential employees in key organizational roles. A strong conceptual framework is lacking in talent management research, which is still in its infancy. It emphasizes talented individuals without regard to their organizational or specialized position (Thunnissen, Boselie & Fruytier, 2013 as cited in Basco et al., 2021: 5).

While businesses adopt different approaches to talent management, academics and businesspeople agree:

1.Talent management is both a process and a collection of activities.

2.Talent management refers to talents in an organization, and outstanding refers to skilled workers.

3.Talent management includes different human resource management practices, including talent acquisition, development, and retention, covers.

4.The process is implemented as an element of talent management and activities must be integrated.

5.Talent management processes designed to meet the needs of firms lead to particular results as achieving business goals (Gajda, 2022: 93).

In the related literature, talent management is examined with two approaches. Talent management focuses on establishing a solid theoretical foundation in the first approach. The notion of talent in this context is connected to the nature and essence of talent management. When it comes to the intrinsic abilities, learned skills, knowledge, attitudes, and capacities of employees, talent is regarded as naturalness, mastery, commitment, and harmony that emerge and produce outstanding results. The second strategy emphasizes talent management as a whole. The literature on talent management has four basic points of view. It first concentrates on the procedures and duties closely associated with human resource management. By connecting people management approaches to strategic objectives, researchers attempt to distinguish between them. Second, it emphasizes how talent management is viewed as the practical application of the valuable competencies of brilliant individuals. According to researchers, businesses are only as competent as their best employees. Third, it highlights the significance of internal staff flow in a company and focuses on the internal talent pool, which is strongly correlated with supply and demand. Fourth, it focuses on identifying key-important statuses rather than examining abilities alone. It emphasizes that the organizational perspective and interests are the key points (Ingram & Glod, 2016: 340).

Meyers (2020: 2) explains talent management within the scope of social exchange theory (Blau, 1964). Within the theoretical framework, talent management practices are considered a substantial investment of an enterprise in its most valuable employees. Employees who perceive the investment feel pressure to respond by exhibiting positive attitudes in the form of organizational commitment and positive behaviors in the form of increased effort towards work. Positive attitudes and behaviors are expected to translate into valuable talent management results at the organizational level, primarily in the form of increased innovation and business performance (Collings & Melahi, 2009).

The human capital theory is used by Ugboego et al. (2022: 32) to explain talent management. Gary Becker and Theodore Schultz first proposed the human capital hypothesis in the 1960s (Becker, 1964). According to human capital theory, a company's value is determined by its workforce's fundamental talents and skills (Ayashree, Tchantchane, & Lee, 2013). Talent management is the base operating system of the business. It is about human resource planning that improves the efficient performance of the job. Employee satisfaction and better business outcomes are both impacted by talent management. Talent management is much more than just better organizational results. Additionally, it plays a significant role in determining how employees feel (Setia et al., 2022: 751).

The cause of the increasing interest in talent management research in recent years is related to the sustainability of competitive advantage (Ashton & Morton, 2005; Coulson-Thomas, 2012). Developing a talent pool from both internal and external resources, providing sufficient resources to key jobs, and focusing on work motivation, organizational commitment, and extra-role behaviors that improve organizational performance are all aspects of talent management (Collings & Melahi, 2009). The talent management strategy emphasizes differentiation and a break from traditional human resource management practices. Businesses that wish to actively incorporate talent into organizational life must figure out how to capitalize on their competencies and create structures, tactics, and climates that will motivate their staff to contribute to the success of the company (Ingram & Glod, 2016: 340).

Alayoğlu (2010: 94), one of the talent management researchers in the national literature, states that more comprehensive empirical research should be done in his study, which examines talent management in a theoretical framework. The theory-based studies of Doğan and Demiral (2008: 164) emphasized that talented employees make a difference in businesses, and competitive advantage and success will be achieved through good management of talents as values. Çelik and Zaim (2011: 37) explain in their theoretical studies that the best talent management approach in businesses cannot be imitated and is unique. According to research, firms will determine a talent management approach that will distinguish them from their competitors in the future. Altuntuğ (2009: 445) states in his study that the best management approach for every business is formed based on the company's capabilities. Altınöz (2018: 82) states in his research that companies with corporate talents are at the forefront of their sectors, depending on employees with individual capabilities. The importance of determining the talent pool correctly is emphasized in talent management. Stating that businesses implement compulsory training for their employees in the talent pool. Aytaç (2014: 1) qualitative research in Ankara on teachers reveals that teachers perceive the talent management approach commonly as a model applied in private schools and as a human resource management skill and competence. Within the scope of the research, teachers state that school administrators do not have the qualifications at the desired level. Yumurtacı (2014: 187) examines talent management theoretically and states that the successful talent management process is provided by active policies that all talent managers in the organization will not implement. So, the importance of determining the most appropriate talent management strategy is emphasized for the organization with firm strategies. Altunoğlu, Atay, and Terlemez's (2015: 47) research conducted with the case (case study) method in a bank reveals

that the bank's human resources and talent management practices have a positive effect on the bank.

CONCLUSION AND EVALUATION

This research has aimed to examine talent management at the theoretical level. Despite the rapid developments in the scope of talent management, current debates on the understanding and conceptual boundaries of talent management continue (Collings & Melahi, 2009). Talent management is under development at the theoretical level, and new studies on conceptualization are constantly required (Makarem et al., 2019: 190). Talent management is usually understood to be a particular set of human resources (HR) procedures designed to recruit, select, develop, and keep high-performing or high-potential workers in key organizational positions (Collings et al., 2018; Meyers, 2020: 1)

The fourth industrial revolution is revolutionizing businesses with amazing results for their personnel, driven by demography, technology, and globalization. It offers HR the chance and the task to reimagine and restructure talent management. By discovering, forecasting, and examining trends that affect personnel acquisition and performance, academic research can assist professional talent management practice (Claus, 2019: 213).

The dynamic capability of the company to find, nurture, retain, and empower personnel to realize objectives and carry out business plans is known as talent management. Talent management is a skill that is influenced by working conditions, workplace culture, and talent development. Besides, firms that increase investments in information technology can develop expertise in managing talent (Benitez-Amado, Llorens-Montes, & Fernandez-Perez, 2015: 214-215). Talent management represents a decisive element that supports the field of human resources. Success, on the other hand, depends on keeping the existing human resource of the business, motivating it, and developing it according to its potential. Talent management programs help the information technology sector to find qualified and competent professionals and invest in performance by advancing them in digital training (Tamas, 2022: 481-482).

In general, adopting a strategic approach to talent management contributes to being perceived as attractive by potential candidates by developing mechanisms due to the nature of the human resources process (Orel et al., 2022: 1526). Pagan-Castano et al. (2022: 528) emphasized the importance of talent management as a source of competitive advantage toward the transition to human capital decisions with the bibliometric analysis they conducted within the scope of literature review study.

In order to accomplish their company strategy, businesses continue to struggle with finding the right personnel at the right time and place. With the aid of human capital planning, businesses are better able to identify the types and quantities of talent required to carry out their strategies, predict talent shortages in the future, and prioritize the investments and actions needed to fill those gaps before they have a negative impact on business performance. In this way, continuous competitive advantage and innovation can be achieved (Ruse & Jansen, 2008: 43).

By investigating how talent changes are a result of the interaction between human and social capital, Crane and Hartwell (2019: 90) make a significant contribution to the literature on global talent management. It turns out that businesses need to deal with internal elements to evaluate, develop and place human resources in different teams and pay attention to resources that can be effective in generating and integrating new knowledge. It is necessary to promote the proper human and social capital structuring at the right time in global talent management. By having a thorough grasp of the relationships, businesses may implement spheric talent management strategies that enhance individual and team performance, promote organizational learning at the international level, and help businesses achieve sustainable competitive advantage.

According to the results of the research conducted by Valverde et al. (2013: 1832), even when talent management principles and practices are applied, awareness of talent management is notably low. Typical human resources policies associated with talent management do not necessarily apply to multinational enterprises. Accordingly, it is reported that talent management must go beyond certain practices to represent a literal strategic approach to using human abilities effectively. Within the scope of the research, the explanations of the management on the determination of talents especially emphasize performance and attitude in multinational enterprises. Talents have been seen as people who are loyal and committed to the business, and who are also reliable and consistent. In this context, while identifying high potential is an attractive talent management policy for businesses, it becomes necessary to prioritize the strategic approach to define the characteristics that employees must have and which are also accepted as base resources in a particular firm. Senior managers and business partners occurred at the headquarters of the business's talent base. For multinational enterprises, attracting talent is not perceived as a challenge. Abilities are identified subsequently working for the firms, and managers can observe their performance in a particular organizational context. There is little concern about talent retention policy (Valverde et al., 2013: 1847).

Gajda (2022: 91) found that talent management practices, directly

and indirectly, affect the job engagement of talented employees and that perceived procedural justice regulates the relationship between perceived distributive justice and job engagement. Managers can implement talent management programs to increase the job engagement of talented employees. It is substantial that the employees nominating and selecting program process is objective and obvious, and all candidates have equal opportunities. In addition to developing talents, managers must consider all employees. When businesses invest in human resources, they can create a sense of organizational support in all employees. In another research, Omotunde and Alegbeleye (2021: 1) concluded in their research with librarians working in Nigeria that talent management practices affect job performance.

Employees participating in talent management programs gain a unique status and more development opportunities, additional incentives, and the possibility of rapid promotion related to preferential treatment (Gajda, 2022: 100). A transition to a people-oriented and participatory management pattern can be achieved instead of a rigid and hierarchical management approach with the understanding of the importance of talents in management. Through the transformation, employees perceived as a passive and ordinary business source are beginning to be an indispensable element of competitive advantage with their behavioral and mental abilities. Talented employees contribute to creativity and can make the business different and inimitable. The support of the senior management level is substantial in the process. The main task of management in a competitive environment is to identify authentic talents. After determining the actual capability with objective evaluation criteria, a profile is developed for talent then the relevant ability for the optimal job is assigned in suitable amounts. Discovered and developed abilities should be institutionalized and identified with the business (Altuntuğ, 2009: 457-458). Discovered and developed skills must be institutionalized and linked to the company.

An encouraging culture in work environments values employees by recognizing their talents, providing the opportunity to use talent, and encouraging talent to increase their skills to develop organizational commitment. A strategic approach in human resources policies in the form of flexible working hours will strengthen the employee's work-life balance and emotional commitment to the organization. Leveraging innovative practices followed by leading businesses in the form of competency-based assessment, creating chances for lifelong learning, and outsourcing recruiting and development will increase corporate commitment and talent retention.(Durai & Viji, 2022: 148).

According to Ewerlin (2013: 300), personality plays a substantial role in shaping the individual's needs, and in this context, more research on

talent management is needed. The individual nature of people is strongly determinant in the influence of global talent management programs. Focusing on career-oriented tools leads to an intense increase in the employment of talented individuals. It is emphasized that different uses of global talent management programs have various positive effects on recruiting and retaining talent. Multinational businesses in particular will be able to boost the number of talented staff members by creating specialized global talent management programs. Thanks to spheric talent management programs, person-organization harmony can be achieved, recruitment processes can be made efficient, and the costs incurred by selecting candidates who are not suitable for the job can be reduced.

Froese et al. (2020: 9) suggest that future research should be well integrated into global talent management, considering the diverse literature. Businesses that offer talent management solutions are willing to develop the competencies of their employees. The aim is to make employees more productive and help them achieve corporate goals (Ingram & Gold, 2016: 345). The research conducted by Durai and Viji (2022: 138) in India revealed that the structures such as identifying talents, attracting talents, talent training, and development positively affect employee engagement. It is stated that the culture of talent is dominant in determining organizational commitment. Pagan-Castano et al. (2022: 534) state that talent management is accepted as a substantial element for developing the competitive advantage of firms and the subject is increasingly being researched in different disciplines. It is also recommended to examine the relationships between talent management and competitive advantage with more in-depth studies. The results of Anand's (2011: 25) research show that talent management is an excellent component of the employee development process and a technique used throughout the entire organization. Increased employee engagement, decreased fatigue, and proportionally longer average tenure result from the successful management of the talent pool. In addition, talent management strategies and processes contribute to the development of employees to varying degrees. After all, a properly planned talent management strategy helps support effective business performance (Omotunde & Alegbeleye, 2021: 11).

According to the research results of Latukha et al. (2022: 317-318), positive relationships emerged between the application of talent management practices that differ between generations and business performance. Businesses can operate to create a sustainable competitive advantage source by creating an effective generational diversity talent management system. According to the results of the research conducted by Ugboego et al. (2022: 28), it has been found that the dimensions of talent management have a significant positive effect on organizational resilience.

It is concluded that talent management measured by talent attractiveness, talent development, and retention increases the organizational durability of hospitality businesses.

According to the research results of Saurombe and Barkhuizen (2022: 1), talent management practices such as talent acquisition and development, talent retention, management commitment, performance management, workforce planning, and human resource recruitment are used to predict employee happiness and meaningfulness of the job perceptions arise. Employee intention to leave diminishes when perceptions of talent management activities such as acquisition, development, performance management, recruitment, retention strategies, and workforce planning rise. Employees' perceptions of talent retention practices affect the meaningfulness of their jobs and overall happiness (Saurombe & Barkhuizen, 2022: 5).

As a result of the research conducted by Setia et al. (2022: 749) with employees in logistics services with structural equation modeling, it is revealed that talent management and knowledge management contribute positively to job satisfaction partially or together, and this situation affects employee performance. Employees must share their opinions, ideas, and skills in order to succeed since logistics services are constantly developing with strong knowledge management and talent management.

As a result of the research of Ugboego et al. (2022: 34), it is found that talent management towards attracting talent, developing talent, and retaining talent increases the organizational resilience of accommodation firms. In future research, different methodologies can be used to determine the impact of talent management on other criterion variables. Identifying talent is one of the basic policies of human resources professionals. At the core of attracting talented individuals with different job characteristics is creating a harmonious work environment where each capable individual will appreciate the other's competencies. The next dimension of talent management is talent development in motivation and compensation management. The post process of attracting organizational talent is often to help them update their skills due to the constant technological changes occurring in service and manufacturing businesses. Human resources professionals need to ensure the effective implementation of talent management to increase the resilience of the hospitality industry.

Johnson, Stone, and Lukaszewski (2021) state that digital human resources and artificial intelligence can help reduce turnover in the industry and attract, motivate, and retain talented employees in the hospitality and tourism industry. Wadhwa et al. (2022: 56) state that artificial intelligence should be essential in assisting human resources in managing talent in the

healthcare industry. The motto of "Right person for the right job" has been embraced, and the central context within the talent management system that reflects the talent management construct is commonly acknowledged as the identification of critical positions and the methodical placement of talents in these positions based on competency and potential. It is suggested that empirical research on the theoretical development of talent management and the definition of the elements of the concept in the field of application should be increased (Yıldız & Esmer, 2021: 21-22).

De Vos and Nicky Dries (2013: 1816) argue that the talent management literature can be built on self-awareness reached from the career literature about the mechanisms of individual career retention and inclusion in a study in Belgium with human resources managers of 306 firms. By acknowledging careers as an organizational concern linked to more comprehensive strategic human resource management methods, the career management literature can learn from the talent management literature (cited in De Vos & Nicky Dries, 2013: 1828).

Research conducted in Spain by Benitez-Amado et al. (2015: 207) has revealed that the firm's ability to benefit from information technology infrastructure improves talent management and ensures the implementation of an environmentally sustainable operation strategy to improve the firm's performance. Through information technology, managers and firms provide beneficial insights from the market on recruiting and onboarding outstanding talent to design and integrate the talent base. The research demonstrates to managers how to more effectively utilize information technology foundation for improving profitability and competitive position through personnel management and operational environmental sustainability (Benitez-Amado et al., 2015: 215-216).

Internalizing talent management as a process and not being limited to a small group of employees are the two most crucial success factors for the organization's growth and development. Global consistency is essential in the talent evaluation processes of a business. Managers must have confidence in all employees that the same standards are being met. Positive participation of the employees and providing timely feedback to the employees ensure an advantage to the company. Developing existing talents for base positions within the organization and aligning individual goals with organizational goals and plans ensures that talent management is welcomed both as policy and practice. The practice of talent management still has challenges with regard to talent assessment. Every business adopts appropriate strategies to retain the best talent (Anand, 2011: 29). According to Altınöz's (2018: 93-94) research results, it is necessary to pay attention to the employee's perceptions of the management of talented employees. In the study, it was revealed that the perception of talent management is low in

3-star businesses. The importance of career success and intention to leave is stated in terms of long-term employment and productivity of talented employees in the enterprise. It has been found that talent management practices are more effective in 4-star hotels, and it is easier to reach skilled employees in 5-star hotels.

According to Sparrow and Makram (2015: 261), it is indicated that examining talent management only from the perspective of human capital is narrow-scoped. It is also emerging that talent managers and talent management designers must acquire considerable skills. Talent management is described as a research area with high potential.

Creating a talent pool for the career development of determined employees will be beneficial. In future studies, it is recommended to conduct research with larger sample groups in different sectors and countries. In future research, the subject of talent management can be investigated by utilizing qualitative methods in the form of interviews, and longitudinal studies can be carried out (Meyers, 2020: 9-10; Sparrow & Makram, 2015: 260). Aytaç (2014: 21) recommends conducting quantitative and qualitative research to raise awareness about the talent management approach. The limitation of this study is that it only has a theoretical analysis of talent management. In this context, it is recommended to conduct empirical studies.

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CHAPTER 13

SMART GASTRONOMY TOURISM APPLICATIONS

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1. Introduction

As a result of the development of technology in all areas of human life, its increasing importance is increasing in all sectors, especially in the service sector. Individuals, who started to have more free time and labor rights after the industrial revolution, are also interested in technological opportunities that make their lives easier. Technological developments, which were used in mass production and defense industry in the beginning, have managed to enter public spaces and private houses over time. With the widespread use of small household appliances and electronic devices, the relationship between behavior and informatics continues to strengthen (Bhattacherjee, 2001).

Meeting the need for communication, which is one of the most important innovations brought by technology, has brought great benefits to information and communication. In addition, by equipping the infrastructures with technological devices in the field of transportation, it has made it possible to go beyond national borders and facilitate global travel. This situation has led to very positive developments for sectors that require high competition and physical facilities such as tourism in the services sector (Li et al., 2017).

With the continuous growth of the relationship between tourism and technology, the concept of smart tourism applications has emerged. In this process, sub-tourism applications such as accommodation services, travel services, recreation services, food and beverage services, which are managed with a traditional approach, have started to move to innovative and smart tourism applications by establishing a close relationship with technology. All the possibilities of technology are used, especially in the modernization of the vehicles used in travel and the renewal of the facilities involved in hospitality services. In addition, the use of smart tourism applications is becoming widespread in recreational activities carried out to provide entertainment, meeting and leisure experience. Similarly, technological developments are observed in gastronomic tourism activities, which include food and beverage services (Hall & Mitchell, 2003).

Technology-based smart applications used within the scope of gastronomic tourism faced a significant prejudice in the early periods and the changes in the preference of traditional methods were viewed negatively. The reason for this can be shown as the attachment to the culinary culture and the habits experienced in eating and drinking habits. However, as in every service sector, it is not possible to avoid technological developments and to stand against innovations in the field of gastronomy tourism (Camisón & Monfort-Mir, 2012). Because, in order to provide up-to-date services for human demands and to provide customer satisfaction,

expectations must be met and competitors must not be lagged behind. For example, it can be quite natural for a food and beverage business that does not receive payment by credit card to have a negative perception on its customers. Again, it is thought that the dining experience will not be welcomed by the customers if the gastronomy centers do not have internet network facilities in their places or do not care about the physical elements that will meet their electricity needs.

Although the technological changes used in gastronomic tourism started on comfortable transportation by means of transportation, they started to appear in all areas of restaurants and cafes over time. With the smart menu, product and price information, which can be updated continuously, can be accurately transferred to customers. With the Wi-fi service provided during the dining experience, customers can benefit from an uninterrupted internet environment. With smart robots serving in the kitchen or in the service area, tasks can be performed without the need for manpower. By learning the reservation and evaluation scores through the websites, it can be determined whether the companies providing gastronomy services will be preferred. These smart applications, which are one of the most effective decision-making reasons in the selection process of destinations with gastronomic tourism potential, can offer very important ideas to the consumer about the general structure of the business. In addition, attractiveness and awareness are increased through social media posts made in gastronomic tourism destinations with a high level of global competition (Manimont et al, 2022). In this respect, attention is drawn to the importance of shares produced in digital environments in terms of gastronomy tourism, and this research also emphasizes how valuable smart applications are for sustainable gastronomy tourism. As a matter of fact, in today's life, smart applications, in which every individual comes into contact with different technological tools, are becoming more and more widespread in terms of gastronomy tourism in recent years and are defined as one of the determining roles of the dining experience. In this context, it is aimed to contribute to the field of smart gastronomy tourism applications, which have not yet been scientifically revealed in the relevant literature.

1.1. Gastonomy tourism with smart applications

Gastronomy tourism accepts the tourism activities in which the complaints with the travel food experience show their participation. During this experience, the foodies, who make evaluations throughout the process they serve, want to enjoy all stages, especially the presentation, taste and quality of the food. Gastronomy tourism activity started with travels to destinations with vineyards produced for wine production. The next examples are the interest in the products of branded restaurants and

the consumption of food with a cultural identity with a traditional cuisine understanding, with the motivation of visiting the consumer. From the 21st century, in addition to all these, there is a demand for gastronomic products that can be produced with the limitation of technological tools such as kitchens. These cuisine types are based on minimal dishes and a wide variety. In the field of molecular cuisine, the entire preparation process of the food is possible with technological assets and almost laboratory features are required (De Jong et al, 2018).

The need for smart applications in gastronomic tourism develops as a result of a natural need, as in other sectors. In other words, gastronomy tourism businesses that want to maintain their current capacity and continue their existence in the future cannot act independently from these practices. Smart practices in gastronomic tourism are not limited to food and beverage businesses, but continue before, during and after travel. For example, an individual with the motivation to participate in gastronomic tourism checks the destination he/she decides to go to before the trip with digital devices with smart applications and decides according to the results. While experiencing the spatial design, service vehicles, product quality and price-benefit balance of the business it receives service during travel, it also tests the comfort of gastronomic experience with smart applications during the service. Because, smart applications arouse positive emotions in user perception by providing ease of use and the opportunity to benefit more from services during the gastronomic experience. In this context, digital reservation applications, routing kiosks, tablet menus, service robots and other technological devices and smart applications, especially web-based sites, are used more frequently in gastronomy tourism day by day (Bayram, 2020).

The expansion of the areas where smart applications are used within the scope of gastronomy tourism can be explained by the technology habits of consumers and the increasing involvement of information devices in human life. In addition, the development of the out-of-business service network for the consumption of ready meals and the willingness to pay without contact due to epidemics also increase the capacity of smart applications used in the field of gastronomy. Considering the roles and impact rates of digital tools in recent years in terms of gastronomic tourism marketing, it is unthinkable for high competition to be successful without smart applications. As a matter of fact, regardless of small or large-capacity gastronomy businesses, every business has social media accounts and advertising and promotional activities are carried out. Gastronomic tourism businesses that want to reach their target audiences with these applications aim to attract demand and want to announce their awareness to large masses (Görgényi et al., 2017). However, there are

some negative consequences brought by smart applications and the use of high technology. These; exclusion of businesses operating with traditional cooking and serving; forcing businesses that offer local products to populist and trendy menus; It can be seen that due to the proliferation of places with a similar restaurant design instead of architecturally original cultural architecture and technological dependency, there are negativities such as family members or groups of friends not communicating without chatting even during meals (Radesky et al., 2014).

Smart applications used within the scope of gastronomic tourism are examined under 3 headings: before, during and after the experience;

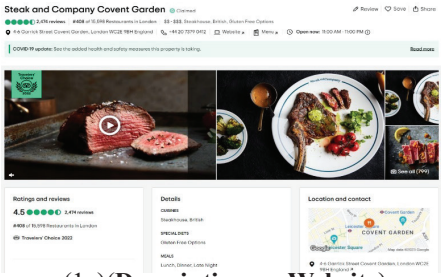
Before Gastronomy Tourism Experience

Individuals or groups who want to participate in gastronomic tourism conduct research on target destinations in order to realize their travel motivation. They want to understand whether the gastronomic products they want to experience are in the destination or whether the dining experience meets the expectations. On the other hand, it is considered as one of the decision-making stages by making evaluations about the distance and accessibility of the target destination from the tourist residence area. The comparison of the experience planned to be purchased for cost and service, which is one of the most important factors in the destination selection process, takes place at this stage. During this whole process, if the different criteria handled by the tourists are positive, participation in gastronomy tourism takes place (Kivela & Crotts, 2006).

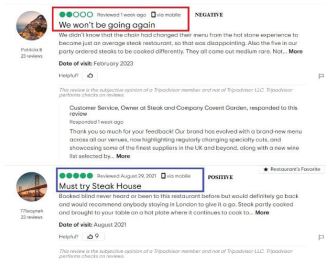
Before the experience, tourists take a look at the digital posts that include the current capacity of the destination and service evaluations. In the light of the data obtained from here, they show a positive or negative trend towards destinations with gastronomic tourism potential. Digital experience evaluations used within the scope of gastronomic tourism are made by many organizations, especially TripAdvisor. These organizations, which evaluate global food and beverage businesses, provide extensive information about gastronomy tourism businesses in the destination (Buhalis et al, 2022). Restaurant customer satisfaction research through reviews in online media such as TripAdvisor is one of the digital tools frequently used by tourists. Generally speaking, restaurant customer satisfaction interprets many variables such as product data, nutritional values and pricing (Laksono et al., 2019). According to the research conducted at the end of 2016, Tripadvisor, which is accepted as the world's largest travel site, is stated to be established to help visitors make their decisions about finding a place to eat. In this digital platform, which generally includes opinions based on the experiences of the visitors, the ratings of the businesses that provide services for gastronomy tourism

are presented (Eren & Çelik, 2017). An example of the application of TripAdvisor, which plays an important role in travel planning before the gastronomic tourism experience, is as follows (Figure 1);

Figure 1: *Food and Beverage Ratings in TripAdvisor*



(1a)(**Description on Website**)



(1b)(**Comments on Website**)

Source: *TripAdvisor, 2023.*

As can be seen in Figure 1a, there are map applications indicating the location as well as product pictures, average evaluation scores, concept and menu information of food and beverage businesses that provide gastronomic tourism services. In Figure 1b, the special comments of the people who have experienced gastronomy are shown in detail. However, considering the fact that there are both positive and negative comments for the same business, it is thought that these evaluations should be addressed.

Another smart application used before the experience in gastronomic tourism is the mobile or web-based transportation applications created during the travel planning process. SmartTravelling application, which is one of the applications used by individuals who want to participate in tourism mobility, helps tourists to reach satisfactory information in the planning of smart travel. Within the scope of this application, there is a lot of information such as the physical infrastructures, technology equipment and user experience comments of the institutions serving according to the preferred transportation type (Irmanti et al., 2017).

During Gastronomy Tourism Experience

In this section, which is considered to be the most intense part of the experience, tourists can experience the service they have purchased. In this process, tourists participating in gastronomic tourism are satisfied or dissatisfied by comparing their predetermined expectations with the perception of service quality received. In this context, they are aware of the fact that the experience process is very important for the organizations providing services for gastronomy tourism, and in this respect, they aim to make a quality presentation in a complete manner. As a matter of fact, they invest at a high level in technological facilities and smart applications that

provide comfort and ease of use to tourists (Tavitiyaman et al., 2022). When we look at the smart applications used during the gastronomic tourism experience, first of all, internet connection (Wi-fi) and smart menus (tablet, mobile and desktop menus, etc.) that serve in food and beverage businesses come. These technological tools are shown in Figure 2.

Figure 2: *Smart Menu & Digital Process*

(Smart Menu)

(Digital Process in Gastronomy Experience)

Source: *Quickorders, 2023.*

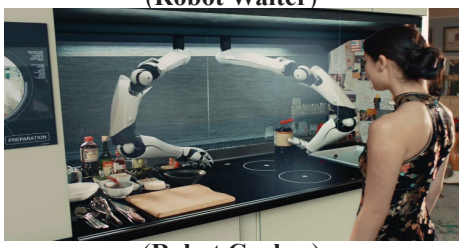
As can be seen in Figure 2, orders can be placed free of charge with a wi-fi connection and technological uses can be made use of thanks to smart menus. On the other hand, in the light of current developments, the information on the menus can be changed rapidly, providing the most accurate information to customers. With visual details, more understandable ideas about the gastronomic product are obtained. In addition, the nutritional information of the ordered products is transferred to the tourists thanks to these smart applications.

Other smart applications used during the gastronomy tourism experience are provided by robotic tools with the highest level of technology. In this context, many smart devices such as robotic waiter, bartender, cleaning staff, cook and welcoming staff provide service in food and beverage businesses. These smart applications come into prominence more and more especially for tourists who prefer to receive service from robotic vehicles rather than humans during service. In this context, smart robotic tools used by businesses involved in gastronomy tourism activities are shown as follows (Figure 3).

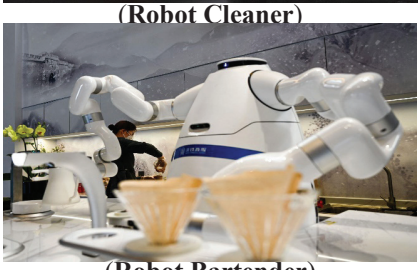
Figure 3: *Robotic Smart Devices*

(Robot Waiter)

(Robot Cleaner)



(Robot Cooker)



(Robot Bartender)

Source: *Lovemoney, 2023.*

As can be seen in Figure 3, it is seen that food and beverage businesses provide services over smart phones with robotic devices in every area, especially in the kitchen and service area. For gastrotourists who want to have a dining experience in the future as well, Yediler offers services from these businesses that have technology limits. In parallel with the current developments in the past, updating and developing the service units of food and beverage businesses with smart applications will provide great benefits in terms of competitive advantage.

Gastronomy Tourism After Experience

After the gastronomy experience, the most needed smart applications are the technological tools used in payment systems. In recent years, tourists who do not want to carry cash with them often prefer options such as credit card, debit card, NFC method or crypto payment (Figure 4a). The main reasons for this can be counted as the fact that tourists see digital payments in different countries where they will feel more secure, take precautions against the threat of counterfeit money, and have a more secure security system against theft (Hasan & Gupta, 2020). In addition, the fact that the savings based on points obtained from different shopping can be easily spent in food and beverage businesses is another reason that improves the relationship between gastronomy and technology (Asrihapsari & Setiawan, 2020).

The role of smart applications is also important in terms of giving ideas to other people by transferring the evaluation to be made after the gastronomy experience in digital environments. The fact that tourists

transfer their experiences and share their satisfaction levels to those who will visit the destination after them can also give them psychological pleasure. On the other hand, they raise awareness by pointing out their complaints and service failures through smart applications and by drawing attention to their ability to solve the problems of the business. Tourists can also show an indirect advertising and promotional activity by sharing the experience they have gained during the whole process of participating in gastronomic tourism on their social media accounts. They can share various ideas about the dining experience through social media tools such as Instagram, Facebook, Youtube and Whatsapp (Figure 4b).

Figure 4*: Online Payment & Sharing Media*

(4a) (Online Payment)

(4b) (Share on Social Media)

Source: *Blinkco, 2023.*

Conscious consumers are needed in order for smart applications planned to be used in gastronomic tourism to be realized and applied in practice. In this context, it is expected that tourists who want to participate in gastronomy-oriented tourism activities will have a perception of technological acceptability for smart applications. In other words, there should be smart tourists who want to experience technology-based applications in the gastronomic tourism process. Smart tourists are people who spread or benefit from the smart technological applications they use by interacting with digital sharing channels (Bahar et al., 2019). The smart tourist, who has a high level of technology literacy and ability to use digital devices, exhibits an active behavior by frequently using smart applications during the travel period. From this point of view, it is possible to define smart tourists who participate in gastronomic tourism as individuals who interact with technology continuously throughout the dining experience. In every process from the decision-making stage of the gastronomic experience to the time of return, smart tourists do not want to go to destinations with insufficient technological infrastructure as well as wanting to benefit from these applications. In addition to the smart tourist, with the increase in technology awareness in recent years, smart cities and destinations have started to be discussed scientifically (Balasaraswathi et al., 2020; Tang et al., 2022).

Smart cities or smart destinations are also considered as a management approach that emerges with the active use of processes, various technological devices or systems. In this process. The most basic mission of the region, which is called a smart city or destination, is to produce solutions quickly with smart applications against any problem that may arise (Nabban et al., 2016). As a matter of fact, as a result of the widespread use of smart destinations, the tendency of tourists towards technology-based innovative applications is increasing (Soares, et al, 2022). The fact that smart technologies gradually transform into human behaviors and affect their lifestyles has also had a significant impact on the travel habits of tourists visiting the destination. The use of tourism and technological relationship in cities has led to the emergence of smart tourism destinations (Erdem, 2022).

Smart tourists within the scope of gastronomic tourism want to use smart applications in many types of services, from reservation systems to service applications. In addition, it is seen that they do not act independently of technology by frequently using digital banking activities in payment systems and order preferences. From this point of view, it is understood that the technological acceptance level of the tourists participating in gastronomic tourism is high. In cases where the smart applications service is not included in the food and beverage businesses, it is thought that the service will affect the repurchase demand by creating a negative perception on the tourists (Yeo et al., 2021). In the light of all these approaches, smart tourists participating in gastronomic tourism;

• Checks the food and beverage business from evaluation sites (TripAdvisor, Booking, opentable, etc.),

• Uses mobile devices for food reservations and orders,

• Cares whether the food and beverage business has wi-fi service,

• Controls the smart menu options used in the food and beverage business,

• Closely follows the technological tools used in the process from the preparation of the meal to the serving,

• Prefers the use of robotic tools beyond human labor,

• Enjoys the presence of audio and video systems in the food and beverage business,

• Receives information from the digital platforms used by the food and beverage business for promotion, marketing and communication purposes,

• Usually uses digital payment systems,

• After the dining experience, it conveys its opinions and complaints to the business through smart applications.

The convenience and usage opportunities of technology in human life arouse similar positive feelings among tourists who want to experience gastronomy. It feels a better quality experience perception by taking advantage of the possibilities of technology in every process of the dining experience, especially in communication and information. In addition, it can reach the food products in the current menus of the food and beverage businesses it prefers in the digital environment information and make a choice according to their expectations and wishes.

There are many useful services offered by smart applications brought by technology in gastronomy tourism. First of all, the tourist can do the price research for the touristic product he/she intends to buy from web-based devices. In this way, by comparing other gastronomy tourism businesses that offer similar services, they can purchase the most reasonable option in terms of price and benefit. Then, it can test the suitability by examining the demographic variables, cultural characteristics and local culinary heritage of the destination area that it intends to arrive at through digital platforms. In addition, it can also find the transportation distance and types of transportation vehicles from the area of residence to the destination by means of technological tools. After deciding to purchase the gastronomic touristic service, it can make the payment and reservation via mobile devices or communication tools. It uses advanced travel tools during the transportation period and can benefit from technological opportunities such as wireless headphones, portable devices and display systems during the journey. Thanks to the smart applications in the businesses providing service within the scope of gastronomic tourism, barcode scanning, digital menu and robotic tools can be used to achieve the comfort and convenience of experience. After the experience, he can make his payments with mobile banking or contactless credit cards, as well as with crypto payment options, the use of which has been increasing rapidly in recent times. Finally, they can provide feedback information by sharing their post-experience evaluations with social media or related websites.

There are negative approaches brought by technological developments on gastronomic tourism. The tourist, who is a part of social communities called family, group or society, has difficulty in communicating with other people if he/she uses technological tools intensively and excessively (Kuzucanlı, 2018). When this situation cannot be prevented, it can cause problems such as loneliness and exclusion from society. As a matter of fact, in the process of gastronomic tourism experience, group members may experience communication problems during eating and drinking due to

technological addiction. However, gastronomic tourism experience, which is accepted as a recreational activity as a social activity, cannot show the desired benefit as a result of digital use turning into addiction. On the other hand, the taste, taste and presentation quality of the products offered within the scope of gastronomy cannot be fully understood. In this context, it is seen that the smart applications offered by technological tools can create negative effects on the tourists participating in gastronomy tourism when they are not used correctly and in a planned way. There is also the possibility that unnecessary purchasing activities may take place due to the excessive impact of the shares spread from social media or other mass media on tourists. The positive and negative effects of technologically-based smart applications in gastronomy tourism are summarized in Table 1 (Egger et al., 2020).

Table 1: *Smart Applications Effects*

Positive Effects	Negative Effects
During the trip, they can spend their free time fun with smart applications.	He cannot grasp what is going on around him during the trip. Their senses can often be off.
Can obtain useful information from social media tools.	It can also be exposed to the effects of disinformation from social media posts.
Smart apps can help them rest and relax during their holidays.	May cause eye strain and stress.
Can plan the meal experience program with smart applications.	The quality of the dining experience can be significantly reduced.
It can follow food options and product contents on digital platforms.	It may cause the destination to miss its cultural and environmental beauties.
He can easily follow up the current job.	It can deprive you of real-time awareness.
It can reach people or businesses that have had food experience.	May miss opportunities to meet and communicate with different people.
It can compare food delivery and other services with previous data.	It may overlook the presentation of the food.
It can create a memory by recording the dining experience.	He may not be able to focus on the taste of the food.
Thanks to smart applications, the menu, price and product content can be accessed in a short time.	It can reduce the quality of the gastronomic experience by giving mental and emotional fatigue.
With digital payment systems, it can perform its transactions without carrying cash.	In particular, the theory of attention restoration (ART) can undermine the gastronomic experience activity.

Smart applications used in gastronomy tourism destinations emerge with three different technology approaches: three different cloud computing, internet-connected things and end-user internet service systems. Within the scope of cloud computing, services are provided to access data storage, storage and processing areas in the easiest way through digital networks.

Intelligent applications used in this system can reduce technological expenses and operate at a certain fixed cost. Internet-connected things are a network definition that connects anything at any time to identify, locate, manage and monitor smart objects. The end-user internet system, which is the final consumption, is defined as the support services that emerge with the combination of cloud computing and internet-connected things (Çelik & Topsakal, 2017). Thanks to these systems used during gastronomic tourism activities, the purchased touristic service provides very useful information on storing, analyzing, developing, controlling and producing solutions.

Conclusion

With the increasing prevalence of technology-based products and devices in human life, tourist behavior has also started to show a trend in this direction. Tourists often benefit from technology through mobile devices and web-based services, especially smart applications, during their travels to their destination. In the light of these developments, when we look at the tourism activities in general, it is seen that it is not possible to manage them independently from technology. Similarly, in the gastronomic tourism activity, where the eating and drinking experience takes place, smart applications are often preferred by tourists today. While technological intermediation takes place in the production process of the food product or the flow of the service offered, smart menu and free information support are also offered to the tourists. This situation can explain the intensity and mutual interaction of the relationship between gastronomy and technology.

If the tourists are satisfied with the food and beverage business they have experienced, they can share their opinions in a positive way, and after the experience they are not satisfied with, they can convey the situation to their followers with severe criticism (Endri et al., 2020). In this respect, gastronomy experience can reach large masses through smart applications as a reality of today's conditions, either positively or negatively. Smart applications continue to exist as an important tool at the point of communication and information as well as technological convenience (Faheem et al., 2018).

While it is observed that the smart applications used within the scope of gastronomy tourism take place in every stage of the travel from the beginning to the end, it is understood that the current technological usage habits continue during the gastronomy experience process. In line with current technological developments, it is predicted that human-based labor service will be provided with robotic tools over time, and it is expected that more options for gastronomy will emerge in the digital platforms

of the future. Considering that smart applications will provide data to businesses, especially at the point of information acquisition, it is estimated that significant advantages will be gained in menu and service planning. On the other hand, it will be able to benefit from technology to prevent the waste of food products that are left on the plates and seen as waste during the production phase. However, strategic planning should be done by considering the possibility of negative factors such as loss of employment and lack of emotion. Again, in the relevant literature, attention is drawn to the results of the positive and negative effects of smart applications on gastronomy tourism.

As the concepts of smart tourist, city or destination are increasingly being the subject of scientific studies, the tourism dimension of technology has started to attract attention. However, the lack of a scientific study on the relationship between gastronomy tourism, which is one of the most important types of tourism, and the use of technology has revealed the necessity of this research. On the other hand, in terms of the development of rapidly growing gastronomy tourism, being able to comprehend what technologically-based smart applications are is also seen as an opportunity for sustainable growth. As a matter of fact, in this research, the relationship between gastronomy, tourism and smart applications is revealed in a multi-faceted way by making an in-depth examination of the subject. It is aimed that this research, which has been prepared in order to be a source among the studies planned to be done in the future, will benefit the scientific field.

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CHAPTER 14

RENEWABLE ENERGY COMPANİES' RECENT OUTLOOK ON BORSA ISTANBUL WİTH MOORA AND MABAC METHODS

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1. Introduction

The process of examining, measuring and evaluating the relationships between the items in the financial statements is called financial analysis. With financial performance, the position of companies in a given sector can be determined. In this way, financial stakeholders can observe in which areas a company has advantages and disadvantages compared to its competitors. Different approaches can be preferred for performance analyses using financial ratios that provide important information about the financial health of the company. In recent years, especially with the development of the internet and increased interaction between countries, it has become possible to access more information more readily. In performance analyses, where statistical methods were mostly preferred before, techniques such as big data analysis and machine learning have started to be used at an increasing rate. In performance analyses, which essentially involve multiple criteria, multi-criteria decision-making analyses (MCDA) are also increasingly preferred in the finance literature.

Capital markets are financial institutions shaped by the behavior and decisions of millions of investors. The dot-com crisis in 2000, the global financial crisis in 2008 and the pandemic that spread around the world in 2020 have significantly affected capital markets. In times of such increased volatility, investor behavior also changes and as a result, financial stakeholders may make less rational decisions. For this purpose, financial performance analyses, which can help to make the right investment decisions, are more needed in such processes.

The renewable energy sector has accelerated its development especially after the concept of sustainability term entered the agenda of the countries following the global warming problem was faced after the new millennium. In 2015, 17 sustainable growth targets were approved at the United Nations (UN) General Assembly with the participation of 193 countries. The seventh of these goals is affordable and cheap energy. Electric power generation is the fastest attracting investment among renewable energy alternatives. Changing trends have also changed the automobile preferences of consumers, and the number of electric vehicles sold worldwide exceeded 1 million in 2017 (Justus, 2018). In 2022, the number of electric vehicle sales exceeded 6.6 million (Bibra et al., 2022). In the new millennium, the Turkish energy market has attracted more than $60 billion in investments. In 2018, a $10.9 billion energy investment plan was announced to be realized over a 5-year period (Bayraktar, 2018).

In this study, the financial performance of 12 renewable energy companies traded in Borsa Istanbul will be analyzed with MOORA and MABAC methods. The 7 periods covering from the beginning of 2021 to the last quarter of 2022 will be analyzed with 6 criteria. Return on assets

(ROA), earnings per share (EPS), market-to-book (MB) ratio, debt ratio, net sales growth (NSG) and market value added (MVA) are used as criteria.

The outline of the study is as follows. In the second section, previous studies on financial performance literature will be analyzed. In the third section, MOORA and MABAC methods and CRITIC weighting technique used in this study will be explained thoroughly. In the fourth section, the findings of the study will be explained, and the conclusion will be discussed in the fifth and final section.

2. Literature Review

Making the right investment decisions in capital markets depends on the ability to evaluate many criteria in a timely and appropriate manner with the right methods. In this sense, MCDA methods have been increasingly used in financial performance studies especially since the early 2000s (Zavadskas et al., 2004).

Although the renewable energy sector has shown a significant development in the last quarter century, it is clear that renewable energy sources should be used more widely, considering the problems such as global warming caused by the uncontrolled increase in mass production in the same period. Experts in this field state that the energy transition will not be efficient unless global barriers are overcome and visionary strategies are put forward (Cozzi, 2014).

In a study analyzing the 10-year performance of 9 foreign banks operating in Turkey between 2005 and 2014, MOORA method was used and performance rankings were made for each period accordingly (Özbek, 2015).

In another study, the performance of 10 deposit banks traded in Borsa Istanbul and 2 other banks operating in Turkey were analyzed for 9 periods between 2007 and 2016 with the MOORA method (Altunöz, 2017). Banks were evaluated according to their calculated annual performance rankings, based on the financial ratios taken from their financial tables.

In a study analyzing the factors that should be implemented in order to increase performance and efficiency of production in manufacturing companies, MOORA method was preferred (Jain, 2018). In the study where 6 performance factors were measured and ranked, productivity was calculated as the most important factor.

In a study examining supplier selection in creating a green supply chain which is aiming to increase sustainability in India, MOORA method was preferred when ranking the potential suppliers (Chand et al., 2018). In

another supplier selection analysis conducted in Iran, MOORA method was also implemented (Arabsheybani, 2018).

An electric vehicle preference analysis in India was conducted with the MABAC method (Sonar & Kulkarni, 2021). Based on 6 criteria, the study investigated the best electric vehicle and AHP was used as the weighting technique. Based on 18 expert opinions, Hyundai Kona was calculated as the best electric vehicle as a result of the analysis, among the alternatives analyzed.

In a study on the evaluation and selection of renewable energy power generation projects, the MABAC method was preferred (Zhang et al., 2020). The MABAC method was used again in the analysis of another study on the selection of the best university among 7 universities in China, according to the teaching criteria determined (Gong et al., 2020).

In a study where the performance of 40 railway stations was evaluated on 9 criteria, the MABAC method was preferred and all stations were ranked according to their performance scores (Sharma et al., 2018).

In a study evaluating the web pages of 15 different faculties of a university in Bosnia and Herzegovina, MABAC was used as an analysis method (Pamucar et al., 2018). At the end of the study, the rankings produced by the MABAC method were compared with methods such as VIKOR, TOPSIS, COPRAS and the results produced by this method were found consistent.

In a study where the importance of 8 risk factors that may overshadow the success of energy saving-oriented projects in China was investigated based on 4 criteria, the MABAC method was again preferred (Wang et al., 2018). At the end of the study, market risk was identified as the most important risk. Policy risk ranked second, while financial risk ranked third.

In a study where the risk of making a renewable energy project was measured in a sample of 20 countries, the performance of renewable energy types was analyzed with MABAC, GRA and COPRAS (Hashemizadeh et al., 2021). For 20 countries, including Turkey, wind is the most suitable energy type to invest in according to the 5 risk factors determined. It is followed by water and biomass energy, respectively.

In a study where 7 potential renewable energy types were evaluated based on 14 criteria in Malaysia, MABAC was used as an analysis method (Rahim, 2020). Geothermal energy stood out as the most suitable renewable energy type to invest in the analyzed geographical setting, among the other 6 alternatives.

A study analyzed the potential financial performance of an investment bank in China for 4 internet companies that it can invest in (Peng et al., 2016). In this study, the performance ranking of the companies was carried out with the MABAC method

3. Methodology

The performance criteria to be selected in the calculation of the financial performance of the companies undertake a pivotal role since they affect the final results and thus the firm rankings. For this reason, ratios that can reflect the sector to be analyzed in general should be selected. ROA is one of the most popular ratios preferred in financial performance analyses and shows how much each unit of invested money is converted into return (Palepu et al., 2020). MVA is defined as the difference between the market value of the company and its invested capital (Akalu & Turner, 2002). It is integrated into the analysis as a valuation-based ratio in order to show how much value the company created. The ratio that measures a company's indebtedness compared to its capital is the debt ratio (Shim & Siegel, 2022). It is used in financial performance studies on energy (Makki & Alqahtani, 2023). EPS is obtained by dividing all the returns that a company has achieved in the relevant period by all its shares in circulation (Siew et al., 2018). In a study calculating the financial performance of construction companies, EPS was among the criteria implemented (Lam et al., 2021). The MB ratio is a parameter that shows the extent to which the company has improved its market value compared to the capital invested (Ghosh, 2021). In a study measuring 118 companies' corporate social responsibility, MB as a performance metric was included in the criteria of the analysis (Bilbao-Terol et al., 2019). Since among one of the most important activity of companies in generating positive income is sales, sales growth is also the focus of attention in performance calculations. In a study analyzing the financial performance of cement companies operating in Iran, NSG was included among the calculated criteria (Moghimi & Anvari, 2014).

The MCDA methods and weighting technique used in this study will be explained in detail below together with the application steps.

3.1. Multi-Objective Optimization on the basis of Ratio Analysis (MOORA)

It is a method based on the logic of evaluating complex alternatives through a ratio system (Brauers & Zavadskas, 2006). This method is preferred because it is user-friendly, can be used in changing decision problems and has a simple mathematical background (Chakraborty, 2011). The application stages of this method are briefly described below.

At this method first and foremost, vector normalization is used with the equation (1) in order to create a normalized objective matrix.

$$F_{ij} = \frac{f_{ij}}{\sqrt{\sum_{k=1}^{m} f_{kj}^{2}}} \tag{1}$$

Right after that, with the help of equation (2) a weighted normalized objective matrix is obtained.

$$v_{ij} = F_{ij} \times w_j \tag{2}$$

Last but not least, the performance (P_i) scores of alternatives are computed with the equation (3):

$$P_i = \sum_{j=1}^{g} v_{ij} - \sum_{j=g+1}^{n} v_{ij} \qquad i \in \{1,2,\dots,m\} \tag{3}$$

3.2. Multi-Attributive Border Approximation Area Comparison (MABAC)

MABAC is a relatively new method based on the boundary approach (Pamucar & Cirovic, 2015). This method is preferred due to its simplicity, practicality, ability to produce comprehensive results and usability in combination with other methods and techniques (Büyüközkan et al., 2021). The stages of this method are briefly shown below.

Like in every other method, at first a decision matrix should be created, which is suitable to the problem at hand. Afterwards, for benefit-based metrics, normalization procedure is applied with the equation (4). On the other hand, this procedure is integrated with the formula (5) for cost-based metrics. And as a result, normalized decision matrix is created.

$$n_{ik} = \frac{x_{ik} - x_i^-}{x_i^+ - x_i^-} \tag{4}$$

$$n_{ik} = \frac{x_{ik} - x_i^+}{x_i^- - x_i^+} \tag{5}$$

The calculated weights are applied to the normalized decision matrix with the equation (6), in order to create weighted and normalized decision matrix.

$$v_{ik} = w_k(n_{ik} + 1) \tag{6}$$

Right after that, the boundary approximation area should be determined. And this can be calculated with the equations (7) and (8).

$$g_k = \left(\prod_{i=1}^{m} v_{ik}\right)^{1/m} \tag{7}$$

$$G = [g_1, g_2, \dots, g_n] \tag{8}$$

Afterwards the distance to the boundary approximation area should be computed with the equation (9), with the constraints of (10), where G^+ has the most ideal alternatives.

$$Q = V - G = \begin{bmatrix} v_{11} & \cdots & v_{1n} \\ \vdots & \ddots & \vdots \\ v_{m1} & \cdots & v_{mn} \end{bmatrix} - \begin{bmatrix} g_1 & \cdots & g_n \\ \vdots & \ddots & \vdots \\ g_1 & \cdots & g_n \end{bmatrix} = \begin{bmatrix} q_{11} & \cdots & q_{1n} \\ \vdots & \ddots & \vdots \\ q_{m1} & \cdots & q_{mn} \end{bmatrix} \tag{9}$$

$$A_i \in \begin{cases} G^+ \; if \; q_{ik} > 0 \\ G \; if \; q_{ik} = 0 \\ G^- \; if \; q_{ik} < 0 \end{cases} \tag{10}$$

Ultimately the distance scores calculated above are summed up, in order to reach final S_i results, with the equation (11). Rankings are done with these scores, from highest to the lowest.

$$S_i = \sum_{k=1}^{n} q_{ik} \quad i = 1,2,3, \dots, m \tag{11}$$

3.3. Criteria Importance Through Intercriteria Correlation (CRITIC)

CRITIC, which has an important place among objective weighting techniques, calculates the weights to be used in the analyses according to the correlation and standard deviation calculations between the criteria (Diakoulaki et al., 1995). It is preferred in MCDA analyses since it does not involve any subjective opinion and is based purely only on mathematical calculations. The steps of this technique are briefly summarized below.

Initially, the normalization process is applied with the equation (12). And after this process, normalized decision matrix is obtained.

$$r_{ij} = \frac{x_{ij} - x_j min}{x_j max - x_j min} \tag{12}$$

Afterwards, correlation density is calculated with the formula (13).

$$C_j = \sigma_j \sum_{i=1}^{m} (1 - r_{ij}) \tag{13}$$

Ultimately correlation density is normalized, and weights for every criterion is calculated with the formula (14).

$$w_j = \frac{c_j}{\sum_{i=1}^{m} c_i} \tag{14}$$

4. Findings and Results

For the financial performance analysis of 12 companies operating in the renewable energy sector and traded in Borsa Istanbul, companies' financial statement data were obtained from FINNET package software. Afterwards, dynamic calculations were made for all 6 criteria and decision matrices were formed to be used in MOORA and MABAC methods. In Table 1 below, the dynamic criteria values calculated for each period and all decision matrices are given.

Table 1. Decision matrices consisting of 6 criteria obtained by dynamic calculations for all periods

	ROA	Debt	EPS	MB	NSG	MVA	
AKSEN	-0.58042	-0.12119	-0.56649	0.419989	-0.45629	6.222565	
AKSUE	-0.53773	-0.43504	-0.71741	-0.53776	-0.5725	-0.20265	
AYDEM	-1.04069	0.202313	-1.04109	-0.05875	-3.26105	0.584823	
AYEN	-1.11353	-0.03663	-1.12186	0.311487	11.74799	0.825871	
CANTE	-5.26671	0.370348	-5.29977	0.091705	-176.048	0.144458	
ENJSA	-0.52413	0.132594	-0.5109	-0.08234	-0.83961	-0.21057	2021/I
NATEN	2.029369	-0.08696	4.773133	-0.40797	-0.67455	-0.49878	
NTGAZ	-0.99268	-0.36068	-0.99048	-0.01711	8.98144	-0.02106	
ODAS	-0.22777	0.440706	-0.21528	0.169828	9.745042	-0.04369	
PAMEL	-0.71688	-0.17128	-0.46655	-0.28828	-9.51592	0.374177	
ZEDUR	-7.51692	-0.67138	-5.80879	-0.40615	-2.85833	0.015781	
ZOREN	-1.87617	0.307995	-1.90127	0.033371	0.588619	-0.14479	
AKSEN	0.87622	0.275122	1.294957	-0.07485	1.324343	-0.15258	
AKSUE	-0.04118	-0.04567	-0.06255	0.160784	0.137515	0.197626	
AYDEM	1.519529	-0.02982	1.443585	-0.06621	-0.11368	0.399966	
AYEN	2.398464	-0.06961	2.531109	-0.49237	-0.01341	-0.80462	
CANTE	0.087427	-0.34136	0.102005	-0.15571	-0.35381	-0.36057	
ENJSA	0.861569	-0.10188	0.822705	-0.09318	3.077022	-0.15036	2021/II
NATEN	0.009868	-0.02288	0.032074	-0.15659	1.399359	-0.64451	
NTGAZ	6.73207	-0.13861	5.827251	-0.01967	-0.41977	-0.023	
ODAS	0.091614	-0.42214	0.131392	-0.75387	-0.40273	-1.09989	
PAMEL	1.405252	-0.05174	0.338673	1.066872	-0.45859	1.327482	
ZEDUR	0.769037	-0.84828	0.042801	-0.64374	-0.64972	-0.5836	
ZOREN	0.168471	0.187123	0.272688	-0.22263	2.449522	-0.43115	
AKSEN	0.56482	0.009451	0.683578	-0.44557	0.549674	-1.54011	
AKSUE	-0.83541	-0.16262	-0.83527	0.489397	0.224521	0.749697	
AYDEM	-0.86181	0.180104	-0.85188	0.183606	-0.21145	-0.73535	
AYEN	0.919951	-0.04935	0.939133	0.025733	0.053095	0.177112	
CANTE	-0.32897	-0.04285	-0.30883	0.354281	0.638617	0.585998	

ENJSA	0.443729	0.001357	0.551133	-0.06204	1.654792	-0.08587	2021/III
NATEN	-0.13406	-0.26239	0.146914	-0.2606	-0.61075	-3.10753	
NTGAZ	2.088963	0.336768	2.5354	-0.07828	-0.09994	-0.0866	
ODAS	-0.3474	-0.49691	-0.68629	0.33877	0.731726	-2.53049	
PAMEL	0.069227	0.036365	0.088438	0.347973	0.88528	0.381086	
ZEDUR	-0.59623	1.943648	-0.00207	-0.36771	-2.43666	-0.15867	
ZOREN	1.041579	-0.25273	0.571687	-0.08883	0.402376	0.0086	
AKSEN	0.228536	-0.2025	-0.0183	0.611757	0.587548	-3.2938	
AKSUE	26.51725	2.006259	25.51645	4.017763	0.264477	1.262577	
AYDEM	-9.43032	-0.15502	-15.5083	-0.5473	-0.60734	18.82971	
AYEN	0.043195	-0.13846	0.554691	-0.05628	0.248322	0.247187	
CANTE	-0.22771	-0.47534	0.479297	-0.67393	0.019892	-0.58076	
ENJSA	0.292079	-0.0578	0.517475	0.009054	0.964932	0.254202	2021/IV
NATEN	-0.14684	-0.07494	0.485653	-0.2557	7.656091	2.802092	
NTGAZ	-0.21098	-0.10918	0.263744	-0.45008	1.230963	-0.60602	
ODAS	-0.99201	-0.3456	-0.98616	-0.54818	0.11038	-8.91749	
PAMEL	-0.66756	-0.31685	-0.4027	-0.15854	2.664266	0.684938	
ZEDUR	-0.05547	-0.38058	0.178015	-0.62758	0.516026	-1.07234	
ZOREN	0.206161	-0.48884	0.851752	-0.60345	0.777785	-2.42271	
AKSEN	-0.36844	-0.06573	-0.3078	0.263107	0.898565	1.538606	
AKSUE	-0.84021	0.261488	-0.84713	0.472423	2.677662	0.160275	
AYDEM	-3.50853	0.123117	-3.56159	0.357216	-31.9328	-0.30033	
AYEN	0.84826	-0.17534	0.975361	0.512115	0.260046	3.575078	
CANTE	-3.07789	-0.01142	-3.28637	0.625276	3.592557	2.035604	
ENJSA	-0.92741	0.499831	-0.91543	0.35715	3.892987	0.662211	2022/I
NATEN	-0.91119	0.115649	-0.91006	0.144142	-0.47578	-0.25458	
NTGAZ	0.087705	0.282963	0.249437	-0.0096	4.007412	0.013541	
ODAS	-197.206	0.029298	-215.389	0.184634	4.936575	-0.14168	
PAMEL	0.055587	-0.03503	0.067162	0.104281	8.582014	0.133992	
ZEDUR	-0.99877	0.11416	-0.99871	-0.09045	-5.55476	1.201978	
ZOREN	-1.40552	0.23574	-1.45897	0.175688	3.145733	-0.37198	
AKSEN	0.807945	-0.06368	1.088353	0.388693	0.657562	1.415123	
AKSUE	-1.09725	0.334392	-1.16484	-0.25433	0.247038	-0.02477	
AYDEM	1.289841	0.166423	1.379027	0.259163	-0.02999	-0.39386	
AYEN	1.15527	-0.13097	1.461551	-0.18557	0.30394	-0.25532	
CANTE	1.161114	-0.18026	1.213349	0.695942	0.055289	1.431847	
ENJSA	4.167952	0.068915	5.088879	-0.19337	0.021092	-0.27707	2022/II
NATEN	1.575289	0.080873	1.707782	0.279177	0.396493	-0.63327	
NTGAZ	3.180252	0.346962	4.567833	-0.0031	0.609413	0.163387	
ODAS	1.150612	-0.10157	1.418322	0.472067	0.194339	-0.68406	
PAMEL	3.975184	-0.14392	4.70486	0.207009	0.227165	0.453168	
ZEDUR	17.14634	0.04386	16.96246	0.027345	0.933188	-0.17385	
ZOREN	-0.97155	-0.31694	-0.96439	-0.3944	0.08878	3.017652	
AKSEN	0.456155	0.055784	0.608271	0.970929	0.053596	1.973755	
AKSUE	10.40779	-0.2976	10.27743	0.161752	0.120432	0.571829	
AYDEM	0.22198	0.107754	0.235728	1.838947	0.03687	-4.79144	
AYEN	0.717912	-0.1543	1.033696	1.497444	0.335702	6.131078	

CANTE	0.638758	-0.16843	0.822802	1.761296	-0.02623	2.984947	
ENJSA	0.830754	-0.00072	1.021621	0.786181	-0.02471	2.08592	2022/III
NATEN	0.707047	0.027237	0.740327	1.85571	-0.04186	-16.3065	
NTGAZ	1.196049	-0.35115	1.76388	2.38919	0.14583	15.10479	
ODAS	0.861903	-0.12455	1.287061	2.149512	0.098293	-22.7047	
PAMEL	0.384268	0.499549	0.643546	0.309827	0.073685	0.407248	
ZEDUR	0.975799	0.039386	0.971689	2.629857	-0.67339	-17.0666	
ZOREN	7.924643	0.172783	8.622026	3.731456	0.039593	-3.16635	

As mentioned above, criteria weights need to be calculated to be used in method calculations. Some studies may determine subjective criteria weights based on expert opinion. In this study, CRITIC, an objective criterion weighting technique that is based on pure mathematics is preferred. The criteria weights calculated for each period according to this technique are given in Table 2. Although different criteria received higher scores for each period, when all 7 periods are analyzed, it is seen that the MB ratio and the MVA ratio received the highest scores. In this case, it can be said that the ratios related to market capitalization make a great difference in financial performance calculations for the period and sector analyzed. It is also noteworthy that MVA, the only valuation-based ratio in the study, is among the highest scoring ratios according to CRITIC.

Table 2. Criteria weights calculated according to CRITIC technique for each period

	2021/I	2021/II	2021/III	2021/IV	2022/I	2022/II	2022/III
ROA	0.130885	0.13486	0.162274	0.126611	0.158215	0.12752	0.161734
Debt	0.229754	0.202796	0.13963	0.262788	0.174317	0.187637	0.151674
EPS	0.128711	0.147708	0.172656	0.120562	0.158311	0.129876	0.160914
MB	0.216995	0.132692	0.209309	0.150042	0.176379	0.195427	0.212954
NSG	0.138976	0.247614	0.116155	0.169608	0.189307	0.15959	0.140701
MVA	0.154679	0.13433	0.199974	0.170389	0.143471	0.199951	0.172023

The final results for the MOORA method, whose application stages are shown in the equations (1) to (3) above, are given in Table 3. The highest performing companies are shown in italics in the table below. According to this method, Aksa Energy (AKSEN) was the highest performing company in the first period analyzed. Afterwards, Natürelgaz (NTGAZ) in the second and third periods, Naturel Renewable Energy (NATEN) in the fourth period, Ayen Energy (AYEN) in the fifth period, Zedur Energy (ZEDUR) in the sixth period, and Aksu Energy (AKSUE) in the seventh and last period became the highest performers, respectively.

Table 3. Final MOORA performance results calculated for each period

	2021/I	2021/II	2021/III	2021/IV	2022/I	2022/II	2022/III
AKSEN	*0.250359*	0.049681	-0.07385	0.031946	0.108248	0.242885	0.050962
AKSUE	-0.04993	0.039449	0.061622	0.14033	0.028695	-0.125	*0.3353*
AYDEM	-0.06929	0.076788	-0.10729	0.031209	-0.1627	-0.00817	0.026725
AYEN	0.073627	0.020798	0.118657	0.023807	*0.234273*	0.042926	0.187173
CANTE	-0.33016	0.01363	0.08879	0.029372	0.176843	0.264684	0.116052
ENJSA	-0.06387	0.204741	0.094155	0.032124	-0.02401	-0.00112	0.052367
NATEN	0.008138	0.029979	-0.19466	*0.178774*	-0.01723	0.057669	-0.01201
NTGAZ	0.048884	*0.24793*	*0.203611*	0.017523	-0.04659	0.031738	0.276807
ODAS	-0.05149	-0.06799	-0.04092	-0.05511	-0.27244	0.110966	0.031314
PAMEL	-0.04146	0.186639	0.124508	0.086731	0.075388	0.182578	-0.06283
ZEDUR	-0.13162	0.049021	-0.329	0.025532	-0.03582	*0.318069*	-0.09972
ZOREN	-0.10816	0.063717	0.100458	0.037651	-0.02577	0.175879	0.273417

The final results for the MABAC method, whose application stages are shown above with the formulas (4) to (11), are given in Table 4. According to the MABAC method, AKSEN was the highest performing company in the first period. Afterwards, NTGAZ, NTGAZ, NATEN, AYEN, ZEDUR companies showed the highest performance, just like they did in the MOORA method. However, for the MABAC method, the company with the highest performance in the last period differed from the MOORA method and became Zorlu Enerji (ZOREN).

Table 4. Final MABAC performance results calculated for each period

	2021/I	2021/II	2021/III	2021/IV	2022/I	2022/II	2022/III
AKSEN	*0.313121*	0.010435	-0.07094	0.009043	0.13909	0.185124	-0.05374
AKSUE	0.011768	-0.02627	0.103273	0.074319	0.063632	-0.21789	0.276897
AYDEM	-0.00608	0.01768	-0.07646	-0.00124	-0.11161	-0.10931	-0.05402
AYEN	0.141841	-0.02142	0.145421	-0.00325	*0.301704*	-0.04251	0.084353
CANTE	-0.25445	-0.0528	0.124127	0.001527	0.240629	0.177619	0.033195
ENJSA	-2.1E-06	0.181596	0.108741	0.00586	-0.00251	-0.10139	-0.05252
NATEN	0.064351	-0.01289	-0.19397	*0.150542*	-0.00953	-0.01946	-0.08625
NTGAZ	0.116057	*0.210688*	*0.227682*	-0.00575	-0.05828	-0.03524	0.206292
ODAS	0.012807	-0.12516	-0.03255	-0.06445	-0.26161	0.025395	-0.04
PAMEL	0.021051	0.10264	0.15671	0.059223	0.077482	0.100014	-0.1772

ZEDUR	-0.06387	-0.01678	-0.27613	-8.6E-05	-0.03788	*0.277739*	-0.12577
ZOREN	-0.0429	0.035165	0.120549	0.01207	-0.02091	0.08152	*0.311749*

The ranking results obtained according to both methods are presented comparatively in Table 5. Although the company rankings are very close to each other for both methods, they change only 2 or 3 times on average, in a total of 7 periods.

Table 5. Company rankings according to the final MOORA (MO) and MABAC (MA) performance results for each period

	2021/I		2021/II		2021/III		2021/IV		2022/I		2022/II		2022/III	
	MO	MA	MO	MA	MO	MA	MO	MA	MO	MA	MO	MA	MO	MA
AKSEN	1	1	6	6	9	9	6	5	3	3	3	2	7	8
AKSUE	6	7	8	10	7	7	2	2	5	5	12	12	1	2
AYDEM	9	9	4	5	10	10	7	9	11	11	11	11	9	9
AYEN	2	2	10	9	3	3	10	10	1	1	8	9	4	4
CANTE	12	12	11	11	6	4	8	7	2	2	2	3	5	5
ENJSA	8	8	2	2	5	6	5	6	7	6	10	10	6	7
NATEN	4	4	9	7	11	11	1	1	6	7	7	7	10	10
NTGAZ	3	3	1	1	1	1	11	11	10	10	9	8	2	3
ODAS	7	6	12	12	8	8	12	12	12	12	6	6	8	6
PAMEL	5	5	3	3	2	2	3	3	4	4	4	4	11	12
ZEDUR	11	11	7	8	12	12	9	8	9	9	1	1	12	11
ZOREN	10	10	5	4	4	5	4	4	8	8	5	5	3	1

Enerjisa (ENJSA) showed the highest standard deviation with a ranking difference of 4 periods. Pamel Renewable Electricity (PAMEL), on the other hand, has been the most stable company in the performance ranking when both methods are considered, with a ranking difference of only 1 period.

5. Discussion and Conclusion

Making the right decisions is of vital importance for financial stakeholders who follow the conditions in capital markets where competition among companies is constantly increasing. Since capital markets are volatile, especially in developing countries, it is even more difficult to make sound investment decisions. Performance analyses, which also indicate the financial health of companies, come into play in this

respect and help financial decision makers to determine an optimum investment route.

The renewable energy sector has also accelerated its development as sustainability-oriented production has become widespread. In particular, it has been determined that the energy sector affects the greenhouse gas emissions of the European Union by more than 75%. For this purpose, a 40% reduction is planned for 2030 compared to the greenhouse gas level in 1990. The realization of this depends on the more intensive use of renewable energy sources (Prada et al., 2020).

The renewable energy sector in Turkey continues to develop in line with the global developments. The target to become among the top 10 countries in the world in renewable energy production by 2027 shows the potential of this sector (IEA, 2022). In Turkey, companies operating in the relevant sector realize their investments mostly through energy-oriented power plants. Especially in the last 2 years, the number of these power plants has increased rapidly and the share of renewable energy in total power has increased significantly.

In this study, the financial performance analysis of 12 firms traded in Borsa Istanbul, an emerging market, and operating in the renewable energy sector, which is also an emerging sector, was carried out with MOORA and MABAC methods. The analyses conducted for 7 quarterly periods covering the pandemic process, which has a high level of uncertainty and volatility, have produced consistent results. In 6 out of the 7 periods analyzed, both methods have produced the same companies as the top performers. For this purpose, both methods are recommended as a decision support system for financial decisions to be taken by financial stakeholders.

The first limitation of the study is that it only analyses companies in the Turkish renewable energy sector. Secondly, two important MCDA methods are used in this study. Thirdly, the analysis only focuses on the financial performance during the pandemic period. In future studies, comprehensive and comparative analyses can be carried out by examining more countries, with more methods and over a longer time period, which includes pre-pandemic period.

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CHAPTER 15

APPROACHES TO COMPETİTİVENESS AND PORTER DİAMOND MODEL[1]

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1 This study is derived from the doctoral thesis titled "*Porter Model Analysis Of Competitiveness: Kayseri City Industrial Measurement and Structural Equaion Modeling Approach"* prepared by Ayhan KULOĞLU in April 2016 at Erciyes University Institute of Social Sciences (Supervisor: Prof. Dr. Faik BILGILI).

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Introduction

In a globalized world, countries are striving to increase their levels of prosperity through economic, technological, and sociological interactions. With the advent of technology, globalization, changes in trade patterns, and modes of production have all had an impact on countries' trade structures. As a result, changes have occurred in the competitive advantages that countries have over each other. Nowadays, a country's competitive advantage is closely related to the activities of the industries and firms in which it excels.

The concept of *"Absolute Advantage Theory"* was introduced by Adam Smith in his 1776 work *"The Wealth of Nations"* to explain countries' competitive advantages. This labor-value approach suggests that a country should specialize in producing goods in which it is more efficient than others and purchase goods it cannot produce from other countries. The theory posits that differences in labor productivity lead to competitive advantages among countries. In today's globalized world, with the involvement of various factors such as trade patterns, this theory has become a complex structure.

The rapid changes in technology have led to significant shifts in workforce, capital, and production methods, posing a challenge for countries to establish and maintain sustainable international competitive advantages. In today's rapidly evolving economic landscape, a country's competitive advantage cannot be explained by factors such as resource superiority or differences in labor productivity alone. Instead, a multitude of factors such as institutions, infrastructure, innovation, market size, work culture, technological adaptation, financial market development, macroeconomic environment, health and basic education, efficiency of goods and labor markets, and higher education all play a critical role in determining a country's competitive position in the world, as highlighted in *"Global Competitiveness Report 2014-2015"* by World Economic Forum (2015).

Michael Porter conducted a three-year study on over 100 sectors in 10 countries to investigate how nations achieve competitive advantage in his 1990 work, *"The Competitive Advantage of Nations".* In Porter's *"Diamond Model",* countries' competitive advantages are evaluated based on the competition of the industries they possess, and are connected to six factors, four of which are internal and two of which are external, that encompass the factors mentioned above. The internal factors include demand conditions, input conditions, related and supporting industries, and firm strategy and structure, while external factors such as the role of the state and chance are evaluated for their indirect impact on a country's

competitive advantage. Porter (1990a) suggests that countries can sustain competitive advantage by developing these factors and their interactions within their industries.

Porter (1990a) emphasized that in a globalized world, a country's unique characteristics can provide an advantage in gaining competitive advantage. In addition, he stated that continuing to specialize in industries in which a country has a competitive advantage can contribute significantly to its international competitiveness. Diamond Model investigates competition of countries at the industry level, and it emphasizes the importance of industrial clustering, where industries gather in a particular location, in creating a competitive advantage. Today, countries' economic superiority is primarily based on the industrial clusters they possess. For example, Silicon Valley and Hollywood in the United States, the digital media city in South Korea, and the banking sector in London in the UK are among the leading industrial clusters.

Porter (1990a) asserts that the competitive advantage of an industry is determined by the degree of interaction among the factors included in the Diamond Model. An industry identified as competitive by four variables in Diamond Model should be supported at the local or national level. The model suggests that policies aimed at creating a cluster of all actors in a specific geographical area to support the industry in question would significantly contribute to the country's competitive advantage.

Countries conduct studies on the competitive advantages of their own industries. These studies aim to reveal the capabilities, opportunities, strengths, and weaknesses of sectors, and to determine whether they can potentially contribute to a country's international competitive advantage. Based on the fundamental economic theory of efficient use of scarce resources, if industries possess sufficient competitive advantages, they can achieve international competitive advantage with the resources and support they receive. The main objective of our study is to examine the Porter diamond model both theoretically and empirically within the scope of theoretical approaches to competitiveness.

1. The Concept of Competition and Competition Power and Its Historical Development

In the broadest sense, competition can be defined as a game played by multiple players within a framework of specific rules and limitations that guarantee fundamental freedoms and human rights, and where no privilege exists, with the aim of sharing a scarce resource or obtaining a reward.[1] Since there is no agreed-upon definition of the concept of competition, interdisciplinary or research-specific definitions may vary.

1 www.rekabetdernegi.org, Date of Access: 22.11.2014

Other definitions of competition are presented below. In the Law on Protection of Competition, competition is defined as *"competition that allows businesses to make economic decisions freely in the markets for goods and services."* [2] Another definition states that competition is the totality of competitive activities carried out against competitors with the aim of achieving superiority.[3] In the Turkish Language Association's Great Turkish Dictionary, competition is defined as *"a contest, competition, or race between people who have the same goal*." [4] From a business perspective, the concept of competition is defined as "*the efforts of two or more businesses to gain superiority over their competitors by targeting a specific group of consumers and increasing efficiency and productivity in a specific production or service area*." [5]

In the field of economics, Adam Smith was among the first to delve into the concept of competition as a fundamental element of the market system on a scientific level. Smith defined the concept of competition, which he saw as the *"invisible hand"* of the best regulator, as *"inter-business warfare."* According to this definition, success in the classical approach means that some businesses win while others lose (Smith, 1776). Classical economists argue that competition can arise in an environment where market information is transparent and there are no market barriers. Therefore, they have noted that competition serves as a dynamic process that continually encourages businesses to innovate and outperform one another. Outperforming others is not only about price, but also includes developing new products, differentiation, and improving quality (Timuçin, 2010).

While the classical economists viewed competition as a tool in the market process to achieve equilibrium, the neoclassicists considered it as a market structure. According to neoclassical economists, competition is a static state that determines where the equilibrium should be and prevents deviation from it (Timuçin, 2010; Doğan, 2011). Although indexes have been developed at the firm, industry, or country level to measure competitiveness, it remains a controversial and challenging issue. The complexity of the subject arises from the difficulty of objectively measuring the factors that affect competition, such as product quality, innovation, and the ability to respond to demand, among others. Moreover, due to the involvement of various disciplines, a theoretical foundation for the concept of competitiveness has yet to be established (Adıgüzel, 2013). Many calculation methods are used at micro and macro level related to the calculation of competitive power. The macro competitiveness indices used by international organizations are given below.

2 It is the definition of competition in the Law No. 4054 on the Protection of Competition.
3 www.wikipedi.org, Date of Access: 22.11.2014
4 www.tdk.com, Date of Access: 22.11.2014
5 http://business.yourdictionary.com/competition, Date of Access: 22.11.2014

1.1. World Economic Forum Global Competitiveness Index

World Economic Forum (WEF) has been publishing annual rankings of countries' competitiveness since 1979. To determine the competitiveness level of countries, WEF uses the Global Competitiveness Index (GCI). The GCI index has a structure that analyzes both micro and macro aspects related to competitiveness (World Economic Forum, 2015). The GCI index is a combination of the Growth Competitiveness Index (GCI), which focuses on economic growth and Porter's Business Competitiveness Index (BCI), which analyzes the business environment (Adıgüzel, 2013).

Table 1: Global Competitiveness Sub-Indices

Basic Requirements (%36)	
Institutional Structure	Production Factors Oriented Indicators
Infrastructure	
Macroeconomic Stability	
Health and Basic Education	
Activity Enhancers (%50)	
Higher Education and In-Service Training	Productivity-Oriented Indicators
Effectiveness of Product Markets	
Efficiency of Labor Markets	
Development of Financial Markets	
Technological Infrastructure	
Market Size	
Innovation and Diversity Factors	
Level of Sophistication of the Business World	Innovation Oriented Indicators
Innovation	

Source: *World Economic Forum, "Global Competitiveness Report 2014-2015", Geneva.*

As shown in Table 1, the Global Competitiveness Index (GCI) is composed of sub-components of basic requirements (institutional framework, infrastructure, macroeconomic stability, health and primary education) with a share of 36%, efficiency enhancers (higher education and training, market efficiency, labor market efficiency, financial market development, technological readiness, and market size) with a share of 50%, and innovation and sophistication factors (business sophistication and innovation) with a share of 14% (World Economic Forum, 2015). Moreover, the shares of variables that determine a country's competitiveness vary according to the level of economic development of the country. This is because competitiveness is determined by a large number of indicators, and different indicators have varying levels of effectiveness for each country. For example, the ways in which South Africa and Norway can improve their competitiveness are not the same, as they are in different stages of development.

1.2. World Competitiveness Annual Index

The International Institute for Management Development (IMD) has been publishing the World Competitiveness Yearbook Index annually, since 1989.[6] According to IMD, since companies cannot determine their competitiveness on their own, variables that affect competitiveness are identified and measured. These analyses rank countries according to their ability to create value and the competitiveness of their firms. In this annual report, the abilities of countries to create and sustain an environment that enhances the international competitiveness of businesses are analyzed (Adıgüzel, 2013). The analyses examine primary and sub-factors to identify the weak and strong points of countries in their competitiveness (International Institute for Management, 2015).

The International Institute for Management (IMD) measures the competitiveness of countries by taking into account eight factors. These factors include economic performance (subcomponents: value added, investments, final consumption, sector performance, cost of living, savings, economic forecasts, compliance and overall competitiveness), globalization (subcomponents: trade performance, current account balance, exports of goods and services, imports of goods and services, exchange rate, portfolio investments, foreign direct investment, national protectionism openness, and overall competitiveness), science and technology (subcomponents: R&D resources, R&D components, scientific infrastructure, intellectual property, patents, technology management, scientific environment, and scientific research), government (subcomponents: national debt, government spending, government efficiency, government economic activity, fiscal policies, justice and security, and overall competitiveness), finance (subcomponents: cost of capital, financing opportunities, financing services, banking sector efficiency, availability of capital, and overall competitiveness), infrastructure (subcomponents: self-sufficiency in energy, business infrastructure, transportation infrastructure, environment, technological infrastructure, basic infrastructure, health infrastructure, and overall competitiveness), firm management (subcomponents: productivity, labor costs, firm performance, management efficiency, corporate culture, and overall competitiveness), and human capital (subcomponents: population characteristics, labor force characteristics, employment, unemployment, education infrastructure, quality of life, traditions and values, and overall competitiveness) (Türkiye Kalkınma Bankası, 2001).

In the report published by IMD in 2015, Turkey was ranked 38th among the 60 evaluated countries in 2012. However, in 2015, Turkey

6 http://www.imd.org/wcc/news-wcy-ranking/, Date of Access:10.10.2015

dropped two places to 40th with a score of 60.501 out of 100 in the scoring system. IMD determines this evaluation based on 331 variables, which are related to the subcomponents mentioned above (International Institute for Management, 2015).

1.3. Competitive Industrial Performance Index

The Competitive Industrial Performance (CIP) Index is published annually by the United Nations Industrial Development Organization (UNIDO) since 2005. In the 2009 report, the CIP index was created based on four indicators, which are industrial capacity measured by the value added in manufacturing, export capacity measured by manufacturing exports, industrialization intensity measured by the share of medium and high technology activities in manufacturing value added, and export structure measured by the share of medium-high technology products in manufacturing exports (Çelik, 2011; United Nations Industrial Development Organization, 2014).

UNIDO stated that our country experienced an increase in regional concentration and cooperation among middle-income countries across 116 countries, in published report at 2014. The report also indicates that Turkey has a dynamic economy and ranks among the top 16 countries. However, the added value created by the industry is lower than that of the service sector. Furthermore, Turkey's share of medium-high technology sectors in the manufacturing industry is lower compared to developed countries, although it has been increasing. The CIP Index values for 2013 show that Turkey ranks 30th among 133 countries and ranks second in the Middle East region after Israel. It is also ranked 5th in the middle-upper income group and among developing industries for industrial competitiveness.

The competitiveness can be measured with a single indicator or a composite indicator, such as the Global Competitiveness Index, which combines multiple indicators for firms, industries, and countries. For instance, in the *"Global Competitiveness Index 2014-2015"* report published by the World Bank, our country (Turkey) ranked 45th with a value of 4.46, down one spot from the previous year's ranking of 44th with a value of 4.45, among 144 countries. In addition to the general index, sub-indices (institutional framework, infrastructure, macroeconomic stability, health and primary education) have been created. The most widely used method for measuring multi-dimensional micro-level competitiveness is Diamond Model proposed by Porter (1990b). Similarly, OECD and IMF also develop competitiveness indicators. OECD examines competitiveness indicators under three headings: production market indicators, sector indicators, and regulatory indicators.

The competitiveness indices mentioned above are methods widely used at the macro level and accepted by international organizations. In addition to these, there are indices that measure competitiveness at the micro level. These include the Revealed Comparative Advantage Index, Relative Export Advantage Index, Relative Import Penetration Index, Relative Trade Advantage Index, Revealed Competitiveness Index, Export Specialization Index, Export Similarity Index, Export and Import Shares Index, Net Export Index, Export/Import Ratio Index, Export Market Share Index, Intra-industry Trade Grubel and Lloyd Index, Comparative Export Performance Index, and Real Exchange Rate Index.

2. Theoretical Approaches to Competitiveness

2.1. Competitiveness Approaches in Classical Theories

According to classical theorists, national competitive advantage would be achieved by shifting from low-yield industries to high-yield ones. Modern theories, on the other hand, argue that national competitive advantage is not an inherited concept but a produced one, and therefore, governments should actively pursue a competitive strategy. Thus, there are significant differences between the two views (Ahmadov, 2010). Before presenting comprehensive theories on competition, classical, new, and modern theories, along with their assumptions, are summarized in Table 2.

Table 2: Assumptions on Competitiveness in Classical and Modern Approaches

Classics	**Assumptions**	**Modernists**	**Assumptions**
Classical School of Economics	Division of labor, specialization, absolute superiority in foreign trade, cost advantage and cost efficiency, fixed income, optimal distribution of labor and labor productivity, abundant means of production, technological development.	Porter Approach	Cost, quality, product differentiation, new product, technological differences, economies of scale and market structures, new inventions, productivity and efficiency, structural differences of the national economy, differences in value judgments, cultural differences, institutional differences and historical differences
Neo Classical Approach	Perfect competition market structure, total utility, opportunity cost, homogeneous goods	Dunning and Rugman Approach	Multinational companies, foreign direct investments, international activities
Post Keynesian Approach	Capital accumulation, price and profit, rule-based policy	Krugman Approach	Comparison of productivity performance, foreign trade balance, standard of living
The Austrian School Approach	Free market, product differentiation, knowledge, entrepreneurship	Cho Approach	Physical factors, human factor, external factors

Chicago School Approach	Wealth maximization, social values, efficiency	TOWS Approach	Strengths and weaknesses, potential threats and opportunities, internal and external factors
Harvard School Approach	Marginality, viable competition, characteristic of industry environment	Orthodox Approach	Domestic characteristics of national economies, performance of national industries, international competitive equilibrium diversification and concentration based on export structure.
Karl Marx's Approach	Negative power, cheaper production of goods, falling profit rate	National Innovation System Approach	Technology innovation, learning new technologies, innovation ability
Functional Approach	differentiation, price, quality, increasing sales, cost reduction, poor market conditions	Robert Reich Approach	Qualification structure of people, knowledge, knowledge generation
Fordist Approach	Poor quality production of homogeneous goods, stockpiling, post-production quality control, source-directed production vertical integration, small traditional production	Institutional Approaches	Competitiveness indices created by WEF and IMD and updated annually
Schumpeterian Approach	New production methods, new forms of industrial organization, new market, new transportation methods, social policies, creative destruction technology development	New Foreign Trade Approaches	Free trade, price strategy, skilled labor, economies of scale, product cycles, technology gap

Source: *Derived from Ahmadov (2010) study "Azerbaijan's National Competitiveness: A Tows and Diamond Model Approach".*

Adam Smith stated a framework based on the theory of "*Absolute Advantage"* which centers on the superiority of countries in his work *"The Wealth of Nations"* published in 1776. According to the theory, countries should specialize in the production of goods in which they are more efficient in terms of labor value, that is, they can produce the product at a lower cost compared to other countries. In this way, by effectively utilizing resources, there is an opportunity to increase output levels, and therefore, the welfare level of countries can also be increased (Altay, 2008). Smith notes that "if a foreign country can provide us with goods cheaper than we ourselves can produce them, it is more advantageous to purchase from them by giving them a portion of our industrial product in exchange" highlighting the potential benefits of specialization and competition in areas where a country has a strong advantage (Smith, 1776). According to this theory, a country's competitiveness is expressed as the production it can generate by utilizing its resources. The theory highlights labor productivity and asserts that through international division of labor, every country can

produce goods and services at an appropriate cost and trade them with other countries. In this process, consumers will benefit from both more affordable and higher-quality products, leading to an increase in societal welfare level (Yücel, 2012). It is suggested that this increase in welfare is a result of the relationship between division of labor, productivity, and technological development (Arıç, 2013).

The theory of comparative advantage explains the trade that occurs when a country has an advantage in producing two products. According to this theory, in a situation of free trade, countries should specialize in producing the product in which they have a comparative advantage, i.e., the product that they can produce at a lower opportunity cost (Ricardo, 1819). The classic example of this theory involves England and Portugal. England needs 100 units of labor to produce cloth for its domestic consumption and 120 units of labor to produce wine. Portugal, on the other hand, needs 90 units of labor to produce cloth for its domestic consumption and 80 units of labor to produce wine. Portugal has an absolute advantage in producing both goods. According to Smith, in this case, trade would not take place. However, Ricardo argued that when comparing the relative advantage of Portugal in producing wine compared to cloth, Portugal should specialize in wine production (Arıç, 2013). In this way, the country should continue to produce the good in which it has a comparative advantage while purchasing the good in which it has a comparative disadvantage. Therefore, countries can increase the welfare of consumers and contribute to global prosperity by effectively utilizing their resources through free trade channels (İyibozkurt, 2001).

The theory, also known as the Heckscher-Ohlin theory, posits that the reason for international trade is due to differences in factor endowments between countries resulting in differences in factor prices (Yücel, 2012). According to the theory, two countries with different factor endowments, two goods with different factor intensities (one capital-intensive and one labor-intensive), and constant returns to scale assumptions are valid. Under these assumptions, countries have a comparative advantage in producing goods that contain relatively abundant production factors. Therefore, countries should specialize in these goods and export them. Scarce factor-dependent products can be imported at a lower cost (Ohlin, 1963). If a country is labor-intensive, it should produce labor-intensive goods, whereas if a country is capital-intensive, it should produce capital-intensive goods (Arıç, 2013).

In the theory of comparative advantage, while labor is the only production factor taken into account, capital is also included here. Although Ricardo stated that international differences in labor productivity cause cost differences, he could not explain where the differences in labor

productivity come from. Heckscher-Ohlin has pointed out that the theory assumes that countries have different factor endowments, some countries have labor-intensive and some countries have capital-intensive resource endowments. Another assumption of the theory is that the production of goods varies in terms of factor intensity. That is, the production of some products requires more capital than labor, or vice versa (Utkulu, 2005). In this theory, competitiveness will enable countries to gain a competitive advantage by producing products that are appropriate for their factor intensity and factor endowments, thereby providing cost and price superiority to countries.

While the concept of competition in classical economists is expressed as a dynamic process used to achieve equilibrium in the economy, neoclassical economists consider it as a "market structure" (Aktaş, 2003). Supporters of this theory show that there is no institutional competition because firms cannot influence market prices and accept the prices that occur in the market. Therefore, it is stated that there is no price competition due to the validity of assumptions belonging to a perfectly competitive market (Swan, 1956). Similarly, it is argued that there is no advertising and service competition because products are homogeneous and there is symmetric information about products (Solow, 1956). Neoclassical economics is essentially based on the assumptions of homo economicus, market mechanism, atomized society, and perfect competition in markets. In theory, the fundamental reason for markets to be in perfect competition is efficiency and productivity. Therefore, the theory has argued that perfect competition brings efficiency and productivity (Swan, 1956). However, due to excessive abstractions made in theory when markets are in perfect competition, firms have expressed that there is no competition since they are price-takers and products are homogeneous (Altay, 2006).

The Post Keynesian approach emerged as a response to the Neo Classical approach. While the Neo Classical approach views competition statically, this approach considers competition as a dynamic structure. The foundation of this approach is that firms exist in the market with the motive of making profits, and if they cannot make profits, they will have to withdraw from the market. Therefore, the firms that remain in the market continually seek ways to reduce their costs to remain competitive (Altay, 2006). The way to reduce costs is to introduce new inventions into the market through R&D. Firms argue that financing for R&D should come from profits that are not distributed or from the firm's capital, emphasizing that competition is a dynamic process (Eichner & Kregel, 1975). The Post Keynesian approach argues that competition is not only about price competition but also about production, investment, and institutional aspects. In this way, firms strive to achieve cost advantage through

R&D activities to gain a competitive advantage over their competitors through innovation and constant investment (Davidson, 2011). The Post Keynesian school considers competition as a dynamic and holistic process that takes into account both price and non-price aspects. According to the supporters of this view, perfect competition conditions may not always be valid (Ahmadov, 2010). According to this approach, the way to measure competition is not by the number of firms in the market but by the advantage that firms gain through innovation and technological advancements that they can reflect in their prices, indicating a dynamic competition process (Davidson, 2011). In this approach, the ratio of R&D expenditures to investments is used as a measure of dynamic competition. As this ratio increases, the measure of competition increases. Conversely, if the value of firms' R&D investments is low, it indicates a lack of competitive structures (Çolak, 2006).

The Austrian School of Economics has a perspective that opposes the neoclassical concept of competition as a static process and argues that it does not involve competition. This idea is advocated by theorists such as Menger, Mises, and Hayek (Aktaş, 2003). According to Hayek (1945), market competition refers to firms distinguishing their own products from others through various methods and processes. Hayek notes that in the real world, firms do not possess complete knowledge for production, but they can acquire it over time and experience. However, when firms focus on making their products better than those of their competitors, consumers will also become knowledgeable about the market (Akiş, 2008). The school considers competition primarily as a process of discovery, so they state that knowledge is a fact that can be learned through experience (Hayek, 1945). According to Hayek (1945), the competition process leads firms to open up the way for monopolistic structures and to move towards monopoly. After the competition process, firms that have gained a monopolistic position must be more effective than their competitors in order to maintain their position. Although efficiency is low because production is carried out by a monopoly, the monopoly firm will act with the motivation to protect its position. Therefore, as a result of competition, it is observed that a producer produces at a more favorable cost and higher quality than another producer (Aktaş, 2003).

Karl Marx's thoughts on competition were examined in the third volume of Capital, which was published after his death. Marx stated that as a result of competition between firms and the struggle between capital and labor, the mechanism will speed up and as a result, profit rates will tend to decline. Under conditions of perfect competition, individuals can increase their capitalist profit by lowering wages, extending working hours, making labor unskilled, and intensifying work. However, each of these

methods has both biological and legal limits (Altay, 2006). At the same time, competition among the bourgeoisie will result in commercial crises and fluctuations in workers' wages. Faster growing mechanization will make workers' lives more unstable, and conflict between the bourgeoisie and women will become more pronounced. Therefore, workers will try to establish unions and defend their rights to protect their wage rates (Marx, 1848).

2.2. Modern Approaches to Competitiveness Theories

Since the 1990s, the concept of competitiveness, pioneered by Michael Porter, has been analyzed at the firm and industry levels to evaluate national and international competition. Classical approaches based on cost superiority have been replaced by a competitiveness understanding that is based on skilled labor, technological advancement, and productivity improvements (Ayaş, 2002).

Dunning's work, which focuses on researching the sources of national competitive advantages, suggests that the Porter Diamond Model is insufficient and needs to be more comprehensive. The model ignores multinational corporations (MNCs) and considers the state as an internal variable. While Porter's model rejects state intervention, he adds it as an external variable to his Diamond Model. According to Dunning, the state affects the factors that create the business environment, and thus, should be considered an integral part of the diamond (Dunning, 1992). In his work, Dunning argues that Porter's model does not provide any new insights, and that there are other scholars who have conducted more comprehensive studies on the sources of national competitive advantage. Dunning points out that these studies not only focus on the four determinants of competitiveness, but also take into account the concepts of investment and entrepreneurship, which Porter's work overlooks (Dunning, 1992). Additionally, Dunning notes that there is no econometric study that proves the accuracy of Porter's model in his work (Rugman & D'Cruz, 1993).

"*Double Diamond Model"* developed by Rugman and D'Cruz was successful for countries such as Canada but failed for countries like Korea and Singapore. At this point, Moon, Rugman, and Verbeke (1998) showed in their study that the "*Diamond Model*" was inadequate for small economies such as Singapore and Korea because multinational corporations were not included, and they demonstrated the validity of their developed "*Generalized Double Diamond Model"* in their econometric analysis. This model is different from the "*Porter Diamond Model"* in that it involves both domestic and international firms in creating competitiveness and emphasizes the importance of the government in the model (Baltaci, Burgazoglu, & Kilic, 2012).

One of the theories that attempts to explain countries' competitive advantages is the nine-factor model proposed by Cho (1994). In his study, he argued that the factors he proposed would elevate countries from the underdeveloped or developing country class to a higher class. When examining the Korean example over the past 30 years, Cho demonstrated their importance in the country's economic development and contribution to its competitiveness. He argued that the skilled labor force not only provided a competitive advantage but also elevated the country to a higher level of development. If the Porter model is considered in the Korean example, Cho (1994) divides resources into two categories: physical and human resources. Natural resources, business environment, relevant and supportive organizations are expressed as physical factors, while workers, politicians and bureaucrats, entrepreneurs, professional managers, and engineers are expressed as human factors. Cho (1994) suggests that his model is more comprehensive and dynamic than Porter's model. (Cho & Moon, 2005). Cho's nine-factor model developed to explain countries competitive advantage shows similarities with Porter's model. The common factors in both models are natural resources, related and supporting industries, domestic demand, and chance factors. However, in Cho's model, the state factor that Porter counts as an external variable is included as the main determinant represented by politicians and bureaucrats. In addition that, Cho places special emphasis on the human factor and adds entrepreneurs, professional managers, and engineers as additional factors (Çivi et al., 2008). Altay (2006) notes that Cho's model is more comprehensive and dynamic than Porter's model due to its inclusion of the state and human factors.

Krugman (1991) expressed competitiveness as primarily growth in productivity among the country's internal factors. He stated that for a country that has opened up to international trade, competitiveness is actually the country's productivity. He also pointed out that there will be no competition between countries and that it will occur through firms. He emphasized that competitiveness is a concept related to firms and is a dangerous and obsessive situation that is meaningless for countries (Krugman, 1991). The fundamental concept that forms Krugman's approach to international competitiveness is productivity (Yücel, 2012). He does not think that countries compete like businesses. Regarding his approach to competitiveness, he emphasized that the most important thing is the increase in productivity, and there is no such thing as global competitiveness. Therefore, he suggests that countries should be compared in terms of productivity rather than competitiveness (Timuçin, 2010). According to Krugman, productivity is an important factor for firms to achieve competitive advantage, but it is an unnecessary concept for

countries to have a competitive advantage. Therefore, he argues that it is wrong for governments to focus on productivity growth (Timuçin, 2010). Krugman also states that although certain products or firms may have superior competitive abilities compared to their counterparts in other countries, firms can go bankrupt in commercial life while countries cannot. For example, Coca Cola and Pepsi are competitors and an improvement in one company's situation can put the other in a difficult position. However, this does not apply to countries competing against each other. Furthermore, Krugman argues that international trade is not a zero-sum game and that protectionist policies by countries are unnecessary (Krugman, 1991).

Robert Reich, building on the shortcomings of Porter's theory, developed the Knowledge-Based Approach theory. In this model, knowledge is considered a fundamental production factor that plays a crucial role in economic development. It is argued that knowledge, when embodied in firm employees and concrete organizational structures, can assist firms in gaining competitive advantage (Başkılıç, 2006). The critique that the model brings to Porter's theory is that it emphasizes the importance of country-specific characteristics based on organizational superiority in creating global competitive advantage and takes the national nature of firms into the global dimension (Reich, 2010).

According to the knowledge-based approach model, there will not be national firms or national products in the future. It is stated that the economies that will emerge in the future will be high-value economies rather than high-volume economies. Therefore, Reich states that countries producing high-value products through global networks and communication that will emerge in the future will gain competitive advantage, and this will be achieved through "*knowledge"* (Reich, 2010). According to Reich, knowledge materializes through individuals working in the company and contributes to the strengthening of companies. Although knowledge is referred to as patents and intellectual property rights, the knowledge in companies is informal (Timuçin, 2010). International organizations such as "*World Economic Forum (WEF)"* and *"International Institute for Management Development (IMD)"* are considered as references in the academic literature for measuring international competitiveness. These organizations publish countries' competitiveness indices on an industry basis every year with their classification, category, and competitiveness calculation models (Timuçin, 2010).

"Global Competitiveness Report" published by *"World Economic Forum"* publishes the competitiveness of countries and industries through *"Global Competitiveness Index (GCI)"* created by them. According to the report of this institution, competitiveness is defined as "the economic power necessary for increasing a country's economic prosperity and

quality of life" (World Economic Forum, 2015). When preparing the Global Competitiveness Index, countries are evaluated under 12 categories (institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation) (World Economic Forum, 2015).

3. Porter Diamond Model

Porter has tested the model that he created to analyze competitiveness at the firm and industry level on more than 100 sectors in the United States, Germany, Japan, Denmark, Italy, Sweden, the United Kingdom, South Korea, and Singapore. In his work "*The Competitive Advantage of Nations"* (Porter, 1990a), Porter investigates how nations achieve competitive advantage.

Classical economic theories have stated in their studies on competitive advantage that relative advantages such as natural resources, production factors, and land are determinative. However, Porter has pointed out that macro variables and government policies alone are insufficient for countries to achieve competitive advantage. In order to reach a more valid paradigm today, Porter has suggested that qualified workforce, technological advancement, and accumulation of knowledge on an industry-specific basis can come together under specific conditions to create a competitive advantage (Bulu, Eraslan, & Kaya, 2006).

Similar to Krugman, Porter emphasizes in his work that productivity is the most important concept in national competitiveness. While expressing national competitiveness as the country's share in the global market, he has stated that it is insufficient to link it to macroeconomic variables. The main purpose of the country is to increase the welfare level of its citizens. In order to achieve this, he has stated that the country needs to increase productivity through its labor force and capital (Gökmenoğlu, Akal, & Altunışık, 2012). In his study, Porter investigates why some nations have a competitive advantage in certain industries compared to other countries and attempts to explain the competitiveness relationship with the model he has constructed (Porter, 1990a). In the model he has established, as shown in the figure, he refers to four internal and two external factors that determine the competitiveness of nations. The internal factors that constitute the four corners of the Diamond Model are *"factor conditions*", *"demand conditions*", "*related and supporting industries",* and "*strategy, structure, and rivalry*". While these factors directly affect competitiveness, the external factors of "*government"* and *"chance"* that support the internal factors indirectly affect competitiveness (Porter, 1990a).

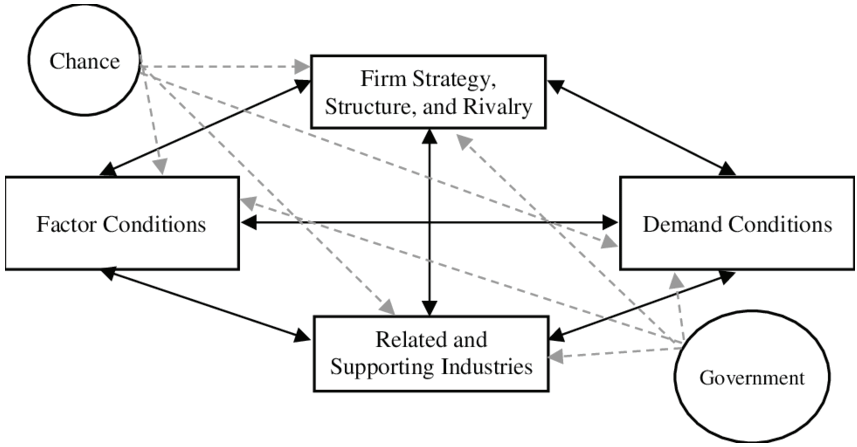

Figure 1: *Porter Diamond Model*

Source: *Porter (1990a), "The Competitive Advantages of Nations", Free Press, New York.*

Porter emphasizes the importance of the government's role in determining the international competitiveness of an industry, but states that it does not directly affect the main factors. Rather than trying to achieve competitive advantage, Porter suggests that the government should support the four corners of the diamond model. Additionally, the chance factor, which includes uncontrollable variables such as natural disasters and wars, is included in the model and is considered as situations that can change the direction of competitiveness (Koç & Özbozkurt, 2014; Porter, 1990b). As seen in Figure 1, government factor affects the four factors externally. While there are twelve internal interactions in the model, there are also eight external interactions. The degrees of impact and interactions of these can vary depending on the selected country, industry, or firm. The model aims to reveal the competitiveness levels of industries by demonstrating how one variable affects the others (Bulu, Eraslan, & Kaya, 2006).

Porter emphasized the key role of four factors and other external variables that arise from a country's own resources in providing companies with stable and sustainable competitive advantage. In the model, factors such as technological superiority, economies of scale, market structures, natural resources, and labor superiority were included as factors that create competitive advantage, not individually but as a whole, including their interactions with each other (Gürpınar & Sandıkçı, 2008). In general, if we evaluate the functioning of the model, it can be seen as a mechanism of positive and negative effects and interactions that operate as a whole system. In this process, competitive advantages are subject to change depending on the speed of innovations. The emergence of a wide and holistic effect depends on the nature and intensity of the mutual

interactions in the system. A competitive environment is formed by the presence of new knowledge, skilled labor, and continuous competition (Bulu, Eraslan, & Kaya, 2006).

According to Porter's theory, high intensity local competition provides nations with competitive advantage, and he states that the diamond model represents this best. If countries want to gain competitive advantage or sustain the advantages they have gained, they need to support the factors outlined in Diamond Model (factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry) as expressed by Karaaslan and Tuncer (2010). In the Diamond Model, when analyzing the competitive advantages of nations, Porter emphasizes that competitive advantages of different industries can be achieved through different sources. In addition, global companies competing on a global scale are not affected by domestic exchanges. This is because companies must develop products, produce innovations, and develop new technologies. Finally, companies must quickly enter new markets and try to gain competitive advantage there. In later stages of the model, it is stated that a country's competitive advantage in certain sectors can be classified into one of the following categories based on the country's level of development, taking into account the characteristics of the sectors where the country has competitive advantage (Porter, 1990a):

• The period where competitive advantage is dependent on factor conditions

• The period where competitive advantage is dependent on investment

• The period where competitive advantage is dependent on innovation

• The period where competitive advantage is dependent on existing wealth

Porter emphasized the importance of local focus by examining the impact of close business networks on competitive advantage. This led to the concept of clustering. Porter (1998) defined clustering as *"the geographic concentration of interconnected companies and institutions in a particular field, linked by commonalities and complementarities."* Countries competing on a global level should develop a development model based on the factor conditions they possess. Factor conditions refer to the labor, capital, and land factors that countries already have. If countries have a high number of unskilled workers, they should specialize in labor-intensive products in the international arena. Conversely, if they have a highly skilled workforce, they should focus on producing new technologies, products, or services (Koç & Özbozkurt, 2014).

If we look at the examples given by Porter as examples of factor conditions, a hospital in Denmark specializing in diabetes has achieved a significant market share in the global insulin market by innovating and developing technology. Similarly, the Netherlands has a significant share in global exports due to its specialization in the production, collection, and packaging of flowers and plants (Porter, 1990b). If local demand in a region can attract producer firms to produce new products or services more than other regions, it is expected that the region will gain a competitive advantage. In addition, local demand creates pressure on firms operating in the region to create new products or services, thus encouraging them to gain a competitive advantage (Porter, 1990a).

Porter identified the demand conditions factor in the competitiveness of countries, based on the conscious and strong local demand for the goods or services produced by firms (Koç & Özbozkurt, 2014). If the demand in a region is suitable and preferred for the needs of other countries, it can support the country's competitive advantage. Thus, specialization in local demand allows firms operating in the region to differentiate themselves and expand their market. Therefore, specialized local demand contributes to the development of local markets through innovation and product differentiation. Due to the nature of demand, it provides local players with insights into buyers' future behavior and acts as a warning system against potential trends in global markets (Eroğlu, 2013). In this context, Porter cited the example of Japanese firms becoming major players in the production of smaller, quieter, and more energy-efficient air conditioners, as they believed large and noisy air conditioners would not be suitable for small Japanese homes. Similarly, Danish firms developed effective devices for monitoring water pollution by considering people's environmental awareness. In addition, local businesses in America increased their competitiveness in the fast food market by catering to the local food culture, making American-based companies (such as McDonalds, Burger King, Subway, etc.) the largest players in the world's fast food market (Porter, 1990a).

Demand conditions in an industry must involve the presence of demand for products to be produced and developed. At the global level, the emergence of existing demand for a sector or product in a country contributes positively to competitive advantage internationally (Yüncü, 2010).

Porter creates industry clusters by bringing together all relevant and supporting industries, encompassing all direct and indirect players by indicating many members of the value chain (Porter, 1990a). Within the cluster, continuous knowledge exchange occurs due to close proximity and communication, leading to the generation of new ideas and innovation,

providing competitive advantage to firms. In Porter's studies, the aggregation of local related sectors in a certain region enables firms to develop new skills, leading to the formation of new ventures. For example, the relationship between Switzerland's success in the pharmaceutical industry and its previous success in the paint sector can be demonstrated (Porter, 1998).

Relevant and supportive organizations assist firms in gaining a competitive advantage in the international market in the following ways: first, by providing quick, timely, efficient, and cost-effective services; second, by assisting firms in innovation and product development activities. Finally, the dynamic structure among supportive firms contributes to the competitive advantage of firms and industries. Furthermore, it is not necessary for a firm to have a competitive advantage in all input conditions to gain international competitiveness. Firms can procure some inputs through imports without adversely affecting product performance and innovation levels (Uzunkaya, 2013).

Porter states that the last component of Diamond Model, which is firm structure, strategy, and the competitive element, does not have a specific management scheme that affects competitive advantage, as conditions differ in each country, region, and industry (Porter, 1990a). According to Porter, the strategies, organizational models, and production organizations that firms apply to achieve their objectives help them to gain competitive advantage. In this context, the work environment that managers create with employees aiming for the same goal during the stage of developing, implementing, and improving technological innovations is an important factor that significantly increases productivity (Porter, 1990a). Moreover, even if firms have a high degree of "*operational"* success, it is not sufficient for businesses to achieve sustainable competitive advantage. It is necessary for businesses to develop new strategies that differentiate themselves from their competitors (Porter, 1998).

3. Literature Summary on Competitiveness

The first theoretical work on countries' international competitive advantages was introduced by Adam Smith in 1776 with his book *"The Wealth of Nations"* and his theory of "*Absolute Advantage*". The theory established trade between two countries and two products based on the absolute advantages that each country possesses. Since then, the theory has been subjected to many changes and criticisms, and the search for the answer to the same question continues to this day.

Porter conducted a study titled "*The Competitive Advantage of Nations"* in which he examined how nations achieve competitive advantage (Porter, 1990a). The study, which lasted for three years, aimed to analyze

competitiveness at the firm and industry levels using a model that he developed himself. Porter applied this model to 10 countries (the United States, Germany, Japan, Denmark, Italy, Sweden, the United Kingdom, South Korea, and Singapore) and over 100 sectors. As a result of his study, Porter identified *"factor conditions," "demand conditions," "related and supporting industries," and "firm strategy, structure, and rivalry"* as factors that directly affect competitiveness. In addition that, he identified "*government"* and "*chance"* factors as external factors that indirectly affect competitiveness by supporting these internal factors (Porter, 1990a). Following this study, research continued to use the "*Diamond Model"* to investigate the competitive advantages of industries and firms in countries and to test the model.

Rugman and D'Cruz (1993) found that when they applied Porter's model to the Canadian economy, the diamond could not fully explain Canada's success. They proposed Double Diamond Model, which includes the most important trading partner in addition to the original diamond factors. Hodgetts (1993) applied the Double Diamond Model to Mexico and found that it had a competitive advantage in the petrochemical and automotive sectors. Similarly, Cartwrigth (1993) applied the model to export-oriented industries in New Zealand and found that the results supported the model.

Eickelpasch, Lejpras & Stephan (2007) applied the structural equation model using the Porter model on 2100 companies in East Germany and found that local level collaboration increased firms' competitive advantage. Herciu (2013) attempted to analyze Romania's international competitiveness according to the Porter model and stated that Romania had competitive disadvantages within the EU. Zuhuang (2014) developed the "*Dynamic Diamond Model"* on cultural trade in China using the Diamond Model and stated that cultural trade was weak in international competition in China and that the dynamic model had a significant impact on competition in the short term. Sledge (2005) researched the validity of the Diamond Model in the global automotive industry and demonstrated the validity of the model by comparing 50 automotive companies in eight different countries (Sledge, 2005). Rugman and Oh (2008) applied Rugman's regional matrix model on Asian companies listed in Fortune Global 500 and stated that Asian companies had more regional competitive powers rather than global ones. Wonglimpiyarat (2006) researched the impact of government programs on competitive advantage in high-tech industries in Silicon Valley in the United States using the Porter model and stated that venture capital provided by the government had a positive effect on competitive advantage. Mann and Byun (2011) applied the Porter model on the clothing retail industry after the liberalization of retail trade in

India in 2006 and identified the challenges and opportunities of the sector. Sterns and Spreen (2010) applied the Diamond Model comparatively on the processed citrus industry in Sao Paulo, Brazil and Florida, United States and revealed that although they used the same production techniques, they applied different company management strategies.

Oz (2002) applied Porter's model to Turkey and stated that the results confirmed the model. However, He also mentioned that the hypotheses of the model were not supported regarding internal competition and the role of the government. Ulengin et al. (2014) conducted on the Turkish automotive industry using the competitiveness indicators of the World Economic Forum (WEF) and the Bayesian Causality methodology, it was stated that Turkey's automotive industry has a competitive structure among developing countries. Karacaoglu (2009) applied Porter's model using YEM model on ISO 500 and stated that the manufacturing industry's competitive advantage comes from new entrants to the industry and substitute products. Aric (2012) applied the Diamond Model on Kayseri furniture sector and stated that the sector met the factors of the model and had a positive effect on competitiveness. Eraslan, Bakan, and Kuyucu (2008) stated in their study on the international competitiveness analysis of the Turkish textile and ready-to-wear industry that the industry has sustainable competitive power. Bulu, Eraslan, and Kaya (2006) analyzed the competitiveness of the electronics sector in Turkey using Porter's model and suggested that R&D investments should be prioritized as the competitiveness potential is strong. Bulu, Eraslan, and Sahin (2004) conducted a competition analysis of the informatics cluster in Ankara using Porter's model and stated that the competitiveness level was weak, and the sector continued with government support. Policy recommendations were listed to address the sector's shortcomings and gain sustainable competitive advantage. Aricioglu, Gokce, and Koras (2013) collected data from 175 companies in Konya casting cluster and conducted Porter's competition analysis. They stated that the sector would increase innovation and gain long-term competitive advantage by involving relevant and supporting organizations. Keskin (2013) analyzed the Western Mediterranean forest products sector using Porter's model and found that it had strong factor conditions, moderate firm strategy and competition, moderate demand conditions, and low competitiveness in relevant and supporting industries.

Conclusion

The fundamental condition for the economic development of countries and the increase of their welfare level is to specialize in the production of relatively superior goods and services. Michael Porter introduced "*Diamond Model"* in the early 1990s, focusing on the competitive advantages of countries. In developing this model, Porter drew upon other

theories that attempted to explain the competitive advantages of countries. These theories can generally be categorized as classical trade theories and new trade theories.

In classical trade theories, the production factors of labor, capital, and land represent a static situation. In his work, Porter noted that the concepts explaining competition in classical trade theory were evaluated statically, but today countries need to take into account dynamic production factors such as technological developments, human capital, innovation, and R&D. In new trade theories, countries' international competitive advantages are shaped according to their technological capabilities, and when a technological development emerges in a country, it is eventually transferred to other countries through imitation, neutralizing the competitive advantage of the country that originated the invention. Porter argues that countries can maintain their competitive advantages by constantly producing new technologies. Through new technologies and production methods, countries continue to maintain their competitive advantages over other countries. Porter suggests that a more valid paradigm can be achieved today by bringing together skilled labor, technological advancement, and knowledge accumulation factors in specific conditions within an industry, creating a competitive advantage.

Building upon his criticisms of classical trade theories and the principles of new trade theories, Porter associated countries' competitive advantages with the industries in which they have a comparative advantage. He argued that countries need to specialize in industries in which they have a competitive advantage and develop clustering policies accordingly. In this context, Porter examined how nations achieve competitive advantage in his 1990 work "*The Competitive Advantage of Nations".* To analyze competitiveness at the firm and industry levels, Porter developed a model and applied it to 10 countries (the United States, Germany, Japan, Denmark, Italy, Sweden, the United Kingdom, South Korea, and Singapore) and over 100 sectors. Porter (1990a) investigates why certain nations have a competitive advantage in certain industries compared to other countries and attempts to explain the competitiveness relationship through his established model. As shown in the figure, he mentions four internal and two external factors that determine a nation's competitive power in the model he established. The internal factors that form the four corners of the Diamond Model are *"factor conditions", "demand conditions", "related and supporting industries"*, and *"strategy, structure, and rivalry*", which directly affect competitiveness. The external factors that support these main internal factors are *"government*" and "*chance"* factors, which indirectly affect competitiveness.

Porter emphasizes the importance of the role of the government in determining the international competitiveness of an industry, although it does not directly affect the main factors of the diamond model. According to Porter, rather than trying to achieve competitive advantage, the government should support the four factors that make up the diamond model. In addition, the model includes the factor of chance, which represents uncontrollable variables that can change the direction of competitiveness (such as natural disasters or wars). In his theory, Porter lists the necessary abilities and resources for nations to create competitive advantage in their industries, including sufficient knowledge of the production field in terms of opportunities, abilities, and resources, awareness of competition among capitalists, managers, and workers, and the presence of an investment- and innovation-oriented business environment. In later works, Porter focused on the impact of nearby business environments on competitive advantage, highlighting the importance of local focuses. This led to the concept of clustering, which Porter (1998) defines as *"the concentration of competing and collaborating firms, specialized suppliers, service providers, and associated institutions and organizations in the same geographic area"*.

In general, if we evaluate the functioning of the model, the system emerges as a mechanism in which positive and negative effects and interactions occur as a whole. In this process, competitive advantages change depending on the speed of renewal and innovation. The emergence of a broad and comprehensive impact depends on the nature and intensity of mutual interactions as a whole system, and a process that involves new knowledge, qualified workforce, and continuous presence of competitors creates a competitive environment. Overall, the Porter Diamond Model suggests that policies aimed at improving factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry can help to enhance a country's competitive advantage in a particular industry. The policy recommendations of the diamond model are given below, similar to the results of the empirical study conducted by Kuloğlu (2016).

1.Factor Conditions:

- Invest in science, technology, engineering, and mathematics (STEM) education to develop a skilled workforce and encourage innovation.

- Provide tax incentives or grants for businesses that invest in research and development.

- Implement policies that promote the use of renewable energy and reduce carbon emissions, which can attract companies looking for environmentally sustainable practices.

2.Demand Conditions:

- Implement policies that support domestic consumption, such as subsidies for low-income households or investment in public infrastructure projects.
- Encourage the creation of new markets for products and services, such as through trade agreements, strategic partnerships with other countries, and market research.
- Provide training and support for small and medium-sized enterprises to help them enter new markets and expand their customer base.

3.Related and Supporting Industries:

- Encourage the formation of industry clusters that bring together companies, suppliers, and research institutions, which can promote innovation, knowledge sharing, and collaboration.
- Provide access to financing and resources for startups and small businesses, which can help to catalyze new industries and support job growth.
- Establish partnerships between universities and businesses to foster research and development, which can lead to new innovations and business opportunities.

4.Firm Strategy, Structure, and Rivalry:

- Encourage competition and prevent monopolies by enforcing antitrust laws and promoting fair competition.
- Support entrepreneurship and innovation by providing incubators, accelerators, and mentorship programs for startups and small businesses.
- Encourage collaboration and knowledge sharing among firms to promote learning and the exchange of best practices.

Overall, policies that support innovation, investment, and collaboration can help to strengthen the factors that make up the Porter Diamond Model and enhance a country's competitiveness in a particular industry. It is important to consider the unique circumstances of each country and industry when developing policy recommendations.

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CHAPTER 16

MAIN MENTAL DISEASES OF IMMIGRANTS AND ASYLUM SEEKERS

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Introduction

In the last ten years, there have been wars in which a large number of deaths have occurred in Syria. Millions of Syrians had to migrate to other countries and take shelter in neighboring countries. Because of this, many material and moral losses were experienced by the Syrian society. People who leave their countries are classified into two groups: immigrants and asylum seekers. While immigrants make a councious decision to leave their countries, for example to improve their wealth, asylum seekers are obbliged to leave their countries under the danger of war, discrimination or political and religious reasons. Asylum seekers can be investigated by the authorities of the host country (Akıncı et al., 2015).

Syrian immigrants experienced psychological issues in relation to war and consequent migration (Kaya, 2019). Post-traumatic stress disorder and depression have been documented in the literature. A study conducted with Syrian migrants shows that the continued hardship has many effects on the mental health and the psychosocial status of adult and child migrants (Karataştan, 2021). Other adverse events related to the war further complicate the stress they experience with migration. (Karataştan, 2021).

In a research conducted on 310 Syrian immigrants in the Reyhanlı region of Hatay in Turkey, it was stated that around 80% of the migrants participating in the sample showed signs of post-traumatic stress disorder (Cengiz et al., 2019).

Many migrants face a traumatic situation before and after migration, which will negatively affect their mental health. Pre-migration risk factors are linked with difficult economic conditions, poor educational and professional status, political situations, and deterioration of social relations (Kirmayer et al., 2011). In this context, many asylum seekers may be subject to torture, rape, imprisonment, and physical trauma before leaving their country behind (Lee et al., 2012).

Uncertainty, unemployment, and social status expose migrants to additional trauma after they move to a different country. At the same time, language, difficulty to adapt to a different culture adversely affect the psychological health of migrants (Teodorescu et al., 2012).

Sleep disorder, attention deficit, suicide, claustrophobia, psychosomatic disorders, depression, post-traumatic stress disorder have been documented in the literature (Lee et al., 2012).

People diagnosed with post-traumatic stress disorder have more disturbing symptoms, such as sleep problems, nightmares, and constant replay of bad memories. In addition, these people often repeat their past

negative experiences with restlessness, fear, startle, uncertainty about the future, inability to plan for the future, estrangement from the environment and themselves. Depression is also a common disorder. Pathologies that can be seen after trauma are: inability to enjoy life**,** depressed mood**,** decrease or increase in sleep and appetite (Kaya, 2019).

The types of depression are divided into two: psychotic and neurotic depression. Depression can sometimes cause hallucinations in people. In this case, the cognitive processes of individuals detach people from reality and form destructive beliefs for the person such as discomfort and guilt and disrupt self-perception. Some of one's thoughts are exaggerated. In such a case, the hallucinations that come with depression are also common. Patients with this type of depression may experience slowing down in their movements, difficulty in speaking, while at the same time exaggerated state of movement and rubbing their hands constantly can also occur. Patients who experience this type of depression and show this type of symptoms are known as severe depression (Aykut, 2019).

Although it was diagnosed, psychotic depression is not common. The incidence of nevrotic depressions is higher and remains milder than psychotic depressions (Aykut, 2019).

In the literature, unipolar and bipolar depression types are described: major depression is mostly described as unipolar, whereas the type of depression known as bipolar is defined as bipolar. Unipolar depression characterizes people who have been diagnosed with depression without intense depressive behaviours. The bipolar depression is characterized by symptoms such as exaggerated cheerfulness, the appearance of delusions, grandiose behavior, enthusiastic behavior, exaggerated movements and increased speech speed, remarkable decreases in sleep requirement, exaggerated sexual desire, exaggerated expenditures. This period is called the manic period. If the person is also experiencing a depressive mood, he is most likely to have a bipolar disorder (Murray and Lopez, 1997).

Immigrants had problems adapting to the cities they went to, and, at the same time, they isolated themselves from their long-term lives. Immigrants who have to adapt to urban life to sustain financially themselves and their families and, at the same time, are obliged to do illegal work, can also experience psychological disorders. In general, this disorder is also considered depression (Bartram, 2015).

The Impact of Wars and Conflicts on Migrants/Asylum Seekers

An "asylum seeker", as defined in the Geneva Convention of 1951, is defined as a person who leaves his/her country for reasons like religion, race, culture or political ideas and who cannot benefit from the security of

his/her home country or who does not want to benefit from it because of fear (Lomo, 1951).

Immigrants who migrate voluntarily or for economic reasons leave their country of citizenship and migrate to another country because they are in search of a better life for themselves. However, asylum seekers are mostly forced to leave their country due to the pressure and intimidation. The most important distinction between immigrants and economic asylum seekers is that immigrants do not benefit from state protection compared to economic asylum seekers (Karadağ and Altıntaş, 2010). Refugees who are affected by conflicts or fights in their countries may have a serious risk of psychological, physical and religious trauma leading to death (Kaya, 2019). In the researches, the trauma rate of immigrants varies according to the type of trauma experienced. Factors such as exposure to torture and loss of a family member are among the most important factors determining depression and post-traumatic stress disorder (Alpak et al., 2015).

Exposure to torture is the most important factor found with both post-traumatic stress disorder and depression according to a study conducted by Steel et al. (2009). Other studies indicate injuries, death and forced distance from their families as the biggest factors determining post-traumatic stress disorders.

Psychological Conditions of Immigrants

The psychological conditions, and the challenging events that immigrants and asylum seekers face, vary according to the stage of migration they are in. These are pre-migration, during migration, and after migration (Patricio, 2016).

1- Pre-migration period: death of family members, witnessing violent one-on-one situations, insufficient livelihoods and loss of personal properties, stampede in society, unintentional involvment in serious violent situations.

2- During Migration: Asylum seekers embark on a difficult journey with uncertainty about the future. Being hosted in refugee camps or detention centers can cause traumatic stress.

3- After Migration: establishing in resettlement areas in the host countries, adapting linguistically and culturally to the new country can cause post-traumatic stress disorder and depression.

According to the study conducted by Bhugra (2004), the migration period consists of three stages: the pre-migration period, the migration period and the post-migration period. In the pre-migration period, the traumatizing situations include violence experienced among family

members, death of one of the family members, financial losses. The migration period brings with it all type of uncertainties to the immigrants, and this causes traumatic stress. The post-migration period is the period in which pathologies are revealed. These include the traumatic stress experienced in the pre-migration and the period during migration (Acartürk, 2016).

The Most Common Pathologies in the Mental Health of Migrants/ Asylum Seekers

Migration increases psychological problems along with the reasons that arise between an individual's own desire and his/her economic conditions. However, mental health problems are more common in asylum seekers who are subjected to pressure and violence than individuals who migrate voluntarily in order to live in better conditions (Noredam et al., 2015).

In 2015, the World Federation for Mental Health (WPA) made an urgent call to action on the psychological health of asylum seekers affected by conflicts and wars and published it in the Cairo Declaration. In this declaration, according to the data of the World Health Organization (WPA), it was stated that eighty million people in the world are still affected by the conflict in their country, they are refugees, or they are displaced by moving within their country. 5-10% of these individuals have health problems that require more urgent treatment, such as depression, and all States, communities and all mental health organizations have requested that people engaged in the field of mental health, and humanitarian organizations, should work on refugees to protect their psychological wellbeing.

According to the literature, four different types of mental diseases are found among migrants: schizophrenia, somatization, depression, and post-traumatic stress disorder.

Schizophrenia. The World Psychiatric Association, founded in 2011, mentions a study conducted by Ödegaar in 1932. Norwegians who migrated to the United States have been reported to have a higher level of schizophrenia than people living in their home countries. They reported that schizophrenia was found to be associated with migration 10-12 years after it occurred (Bhugra et al., 2011).

Kirkbride et al. (2012) included and systematically reviewed eightythree of the studies conducted between 1950 and 2009 on schizophrenia and psychosis in the UK. In this meta-analysis study, it was revealed that although black people from the Caribbean and Africa were at the top of the hierarchy, black people had more schizophrenia and psychosis than white

people. There is little data in the literature on gender differentiation in the studies on psychosis (Başterzi, 2017).

In 1989, Cochrane and Ball's study of psychosis among patients hospitalized in the UK, found that the frequency of schizophrenia and psychotic conditions of Irish, Indian, Caribbean and Pakistani asylum seekers was higher than that of British locals; however, psychotic conditions were observed at a low rate in Pakistani women. At the end of this study, it was discovered that Pakistani women with psychotic conditions were sent back to their country. Pakistani men with psychotic conditions were hospitalized in the UK and continued to receive treatment, which provided distorted information about gender roles (Başterzi, 2017).

In addition to mental disorders, somatic disorders are also encountered among refugees. Somatic disorder is all of the physical symptoms that cause psychological discomfort in the person at the same time that there are mental conflicts.

According to Grinberg and Grinberg (1999), who analyzed the migration from a psychoanalytic perspective, the distrust of the asylum seekers, the anxiety of facing uncertainty and the conflicts that come with this anxiety are defined as psychological regression. Refugees are naturally subject to a change in identity; when this happens mental conflicts, dissociation and complex emotions occur. When the person is faced with this difficulty and cannot cope with it, the conflicts shift and the accompanying somatic disturbances arise.

According to a 2015 report by the World Health Organization Office for the European Region, one out fifteen individuals is diagnosed with Major Depressive Disorder, and four out of fifteen individuals have varying degrees of anxiety disorders and depression. The psychological problems seen in the refugees, and the traumas they were exposed to during the war while in their own countries, adversely affected their mental health by the stress that emerged after settling in their new country. Post-traumatic stress disorder and anxiety disorders have been observed to be over 20% each (WPA, 2015).

Studies conducted by Still and colleagues in Sweden in 2016 found that the rate at which asylum seekers faced a traumatic situation was 89%. 47% of the migrants had stress disorder after being clinically diagnosed trauma and 20% were diagnosed with major depression. This study reveals that the rate of men experiencing a traumatic situation and being exposed to many overlapping traumatic events was higher than women. This is attributed to the fact that men, more than women, are prone to financial concerns and discrimination (Başterzi, 2017).

In the research conducted by Haldane and Nickerson (2016) on the dimensions of trauma, they classified mostly traumas done by human will, in other words, traumas made by human beings such as harassment, rape, torture, killing family members and relatives in front of individuals. Trauma that is not from human will is categorized as non-interpersonal trauma: not being able to find food, not finding water sources, feeling face to face with death, death of family members due to scarsity of food or money. In this study, it was found that male people were in stark contrast to female people and the incidence of mental problems in the non-interpersonal trauma category, and especially depressed mood, was higher in man than women. This study is accepted as an important study on the extent to which gender roles are affected (Başterzi, 2017).

Post-Traumatic Stress Disorder

Post-Traumatic Stress Disorder is a psychological disorder affecting the physical integrity of an individual creating an unbearable trauma as a result of an ordinary or unusual event. By threatening the person, this feeling makes the person feel helpless and terrified. There are behavioral changes as a result of trauma. Behaviors based on mental processes such as startle, avoidance, hyperarousal, and flashback occur and cause deterioration of the functionality of the individual's life integrity (APA, 2000).

The results of traumatic situations on mental health date back to ancient times. The concept of "soldier's heart" is used to better understand the cognitive and physical exhaustion seen in soldiers in the wars of the 19th century. Later, when the historical dimensions are examined, different concepts such as "irritability heart", "nostalgia, cardiac neurosis" have started to be used. Some psychological symptoms that arise due to the fear experienced by soldiers who were in cover during World War I and waited for a long time are also known as "shrapnel shock" (Jones, 2006).

The definitions and designations of post-traumatic stress disorder began to become more realistic and revealing after the Second World War. The American Psychiatric Association (APA) observed the experiences of soldiers in World War II and published a first book, DMS-I, in 1952. In this book, which represents the first diagnostic guide of the disease, such trauma was named "Major Stress Reaction". In the subsequent edition, DSM-II, published in 1968, the trauma was called "Temporary Mental Disorder". Increasing in-depth studies in the field of post-traumatic stress disorder in the aftermath of the Vietnam War are known as an important milestone in a clearer definition of the disease. As a result of these studies, included in DSM-III, published in 1980, the trauma was further renamed into "Post Traumatic Stress Disorder" (Jones, 2006). In subsequent revisions - DSM

III-R (1987), DSM IV (1994), DSM IV-TR (2000) - the definition was expanded. In the most recent DSM V (2013), the definition was moved from the "Anxiety Disorder" category into the newly created "Trauma and Stress-Related Disorders" category. There are four basic characteristics of post-traumatic stress disorder, the criteria of which are explained in this DSM-V book:

1- Seeing and experiencing a certain traumatic event;

2- Having bad dreams and /or re-living symptoms;

3- The desire to avoid the place where a traumatic event is experienced or to stay away from people who remind of it;

4- Attention disorders, irritability such as overstimulation and sleep problems.

There are many cırcumstances that lead to post-traumatic stress disorder. The most important of these are wars and conflicts, natural disasters like floods, earthquakes, traffic and plane crashes, torture of a person, staying in the camps of immigrants, or being hostage in the hands of an enemy, experiences that can be called severe traumatic stress for everyone (Öztürk, 2011). Assisting the injury or the death of a person, having a serious accident, being involved in a natural disaster or being threathened with weapons are regarded as the most common trauma that human being are exposed to (Sareen et al., 2014). Epidemiological studies in the world show that most of the people in the society have experienced at least one traumatic situation that can meet the stress level of post-traumatic stress disorder (Keesler, 1995). The National Comorbidity Survey conducted in the United States also emphasized that 64% of the population had experienced at least one traumatic event during their lifetime. In another study conducted with 2,181 volunteer participants in the United States, the frequency of experiencing any trauma during their lives was reported as 89.6% (Breslau et al., 1998). Although the frequency of experiencing trauma leading to post-traumatic stress disorder is also very high, sometimes some people are not diagnosed with the disease. However, in the research, it was found that the rate of post-traumatic stress disorder was also very high among people who were in a conflict environment, people who were exposed to sexual assault or similar traumatic events like natural disasters (Sareen, 2014). In another study conducted in Europe, it was stated that the diagnosis of post-traumatic stress disorder by people who experienced trauma was 7.8%.

Depression

When we look at the literature, there are many different definitions about depression. However, these definitions have something in common. Depression is known as an emotional disorder that shows symptoms such

as the individual's inability to enjoy life, hopelessness, inability to make decisions, loss of desire and interest, and decrease in self-esteem (Öztürk, 2001).

Depressed mood, also known as depression, is when the individual feels deeply sad, sometimes parallel to moods such as sadness and depression. Unusual slowdown in both speech and physiological functions, being stagnant, as well as feeling mentally worthless and weak. It occurs after the deterioration of thoughts and emotions, including reluctance and pessimism in thoughts. It may be due to physical or mental pathologies. Many other factors are among the triggers of depression (Göğüş, 2007).

The depressed individuals always see the negative side of the events, and they see themselves as a failure in every task they undertake. At the same time, they see themselves powerless, useless. They convince themselves that others think the same way, and their self-confidence drop. They believe that even when they succeed, it is purely a coincidence. The depressed persons have low self-esteem and feel guilty about events related to their past and feel helpless and hopeless about their future. In depressed individuals, reluctance, loss of interest in the outside world, and inability to enjoy life are observed. They stay away from interpersonal relations as much as possible and are distant. They do not communicate with other people (Köroğlu, 2006).

Prevalence of Depression-PTSD Prevalence in Migrants and Asylum Seekers

Literature shows that the rate of post-traumatic stress disorder and depression is high in migrants and asylum seekers, but there are large differences in the frequencies. In a study conducted by Still et al. (2009), they reported that the rate of post-traumatic stress disorder varied between 0 and 99% and depression rates varied in the range of 3 and 85%. In another study conducted with migrants who experienced war trauma, it was found that the frequency of post-traumatic stress disorder varied between 4.4 and 86% and depression between 2.3 and 80% (Bogic et al., 2015). When the differences between these studies were examined, it was found that the diagnostic criteria used in the study were caused by methodological factors such as sample and width, as well as reasons such as the exposure of asylum seekers to some torture, their relocation processes, age ranges, and ethnic group origins (Steel et al., 2009).

In a study conducted using self-rating scales of 534 Bosnian people staying in refugee camps in Croatia, the incidence of post-traumatic stress disorder was 26.3% and the rate of depression 39.2% (Mollica et al., 1999).

Ai et al. (2002) in a similar research conducted with the same tecnique

on Kosovo immigrants found a rate of post-traumatic stress disorder at 60.5%.

Dahl et al. (1998) in another similar study on Bosnian women who migrated after the war, found a rate of post-traumatic stress disorder at 53.0%.

Acartürk et al. (2018) in a study on 718 individuals in a refugee camp in Kilis hosting Syrians refugees, the incidence of post-traumatic stress disorder was 83.4% and the rate of depression was 37.4%. On the other side, the rate of post-traumatic stress disorder and depression was found lower in studies conducted with clinical measurement tools.

A short, international neuro-psychiatric interview was conducted with Yugoslav immigrants who had been living for a long time in the United Kingdom, Germany, and Italy. The prevalence of post-traumatic stress disorder in Yugoslav immigrants in this study was 33.1% and the rate of depression was 15.6% (Bogic et al., 2012).

In 223 Cambodian asylum seekers living in New Zealand, diagnostic interview with self-rating scales was applied and the post-traumatic stress disorder was found at 12.1% (Cheung, 1994).

In the United States, a study conducted by using the CIDI interview to Cambodian asylum seekers living there for 20-22 years found that the incidence of depression and post-traumatic stress disorder was 51.8% and 62.0%, respectively. It was stated that the rates of depression and post-traumatic stress disorder were very high and that the refugee group participating in the study was exposed to serious trauma (Marshall et al., 2005).

In two different studies conducted with Syrian refugees in Lebanon, the incidence of post-traumatic stress disorder was 27.2%, and the rate of depression was 43.9% (Kazour et al., 2017).

In a study using DIS conducted by Alpak et al. (2015) with 304 Syrian migrants living in tents in Gaziantep, the rate of post-traumatic stress disorder was 33.5%.

Depression of Immigrants and Asylum Seekers and Factors Determining PTSD

The factors that determine post-traumatic stress disorder and depression in immigrants are mainly classified in four sub-areas (Bogic et al., 2015).

1- Socio-demographic factors

2- Having a mental problem before migration

3- Factors Related to War (Pre-Migration Factors)

4- Post-migration factors

Socio-Demographic Factors

When gender, age and education status of migrants and asylum seekers are considered, they are among the demographic factors mostly associated with post-traumatic stress disorder and depression. Nearly all studies on asylum seekers and immigrants have found an association between age and post-traumatic stress disorder and depression. Alpak et al. (2015), in a study on Syrians hosted in a camp in Gaziantep, also found a strong correlation between PTSD and occupation, gender and other mental illnesses, but little correlation with age and education level. In some of the related researches, children and adolescents emerged as a high-risk group (Fazel et al., 2005).

A significant part of the literature, noticed that the elderly group is in the highest risk group (Bogic et al., 2012). As an example, a study conducted by Eytan at al. (2004) with Kosovo immigrants found that the lowest rate of post-traumatic stress disorder was 12.6% in the 16 to 24-year-old group, and the highest rate was 44.4% in the over 65 years old group. It is known that the relationship between post-traumatic stress disorder and depression in the elderly is higher and they are more exposed to wars and, as well as having more financial problems and cultural and language problems in the country they migrate to (Perera et al., 2013). Factors such as inability to find a job, financial hardships and lack of a safe house significantly affect the psychological health of resettled refugees. Lack of work permits or under-employment, poor professional and linguistic skills, discrimination create barriers to many refugees looking for a job (Li SS et al., 2016).

Gender

Although most of the research with immigrants is at the forefront as a risk factor for post-traumatic stress disorder and depression for women (Alpak et al., 2015), there are also studies that give the opposite results (Tay et al., 2015).

In some research, it was noticed that there was no relationship between gender factor and post-traumatic stress disorder or depression (Kazour et al., 2017). There are also studies in which women are in the risk group for post-traumatic stress disorder or depression. These two pathologies may be higher in women, as result of rape, the loss of spouses or children, as well as the risks of widowhood or abandonment, and being a single parent (Ai et al., 2002).

Education Level

As with other socio-demographic factors, the relationship between the education level of migrants or asylum seekers and post-traumatic stress disorder and depression is not very clear according to the literature. Studies in which a low degree of education is correlated to post-traumatic stress disorder or depression are found in the literature (Bogic et al., 2012). There are also other studies that show no relationship (Alpak et al., 2015). When a low level of education is associated with post-traumatic stress disorder and depression, migrants and asylum seekers have more difficulty to learn the language in their new country, (Delic-Ovenia et al., 2010).

Having a Mental Problem Before Migration

One of the most important elements determining post-traumatic stress disorder and depression in migrants and asylum seekers is whether they have any mental problems themselves or in their family. If they have a history of illness, this will affect them negatively (Alpak et al., 2015).

5.3 Pre-Migration Factors (Factors Related to War)

War-related traumas before migration have been found to be important factors in depression and post-traumatic stress disorder (Bogic et al., 2015).

In a study on Vietnamese immigrants, Mollica et al. (1998) found that 90% of those who experienced an average of twelve traumatic events had PTSD and 49% had depression. On the other side, 79% of those who experienced an average of 2.6 traumatic events, used as a control group, had a rate of 15% with PTSD and depression.

In another similar study on 993 Cambodian immigrants, Mollica et al. (1998) found a significant correlation between the number of traumas and variables in depression and post-traumatic stress disorder.

Beiser (2006) found that asylum seekers staying in a refugee camp were associated with post-traumatic stress disorder and depression.

The relationship between the torture experienced by migrants and post-traumatic stress disorder and depression has been proven in many similar studies (Basoglu et al., 2005).

Post-Migration Factors

After migration, asylum seekers are now in safer places, but they face new challenges. Asylum seekers also have concerns about many issues, such as the cultural barriers, legal rights and legal status in the new the country; at the same time, problems such as finding a job, meeting their physiological needs, meeting their security needs are also important stress factors (Craig and Jajua, 2006). Unemployment, low salary, poverty, not

knowing the native language of the country they are in, insufficient social support, not being married, and the period of time spent as an immigrant are the most discussed factors in the field of post-traumatic stress disorder and depression. These factors can be grouped under four main categories (Kaya, 2019):

1- Socio-demographic factors (such as poverty and housing problems);

2- Inability to use language/Lack of speaking skills;

3- Immigration process and immigration policies;

4- Interpersonal communication and social factors.

Language Skills

In a survey of immigrants in the United States, 77% of immigrants stated that the stress that affected them the most in their first year in the United States was not being able to speak English proficiently (Blair, 2000). Similarly, many studies have found that the lack of language proficiency is an important stress factor for immigrants and that this is also associated with depression and post-traumatic stress disorder (Bhugra, 2004).

Steel et al. (2002) conducted a large sample of 1,413 Vietnamese immigrants using the CIDI interview and found a significant relationship between poor English language skills and psychological problems.

Asylum Process and Immigration Policies

With an increasing affluence of refugees in many countries, more restrictive policies are enforced. These include: increasing mandatory detention periods, prolonging the asylum process, and issuance of temporary visa applications instead of permanent ones. Refugees therefore face greater uncertainty and more complex legal processes (Li et al., 2016).

In a study conducted in Australia, Silo et al. (1998) stated that the process of admission to the country is an important stress factor for immigrants. In another study conducted with Iraqi asylum seekers in the Netherlands, it was stated that the long duration of immigration was also related to psychiatric disorders (Laban et al., 2004).

Interpersonal Communication and Social Factors

Refugees who migrated from wars and conflicts are in foreign environments. They have to cope with physical and cultural difficulties. Lack of family unity, leaving their loved ones, friends and relatives behind, social withdrawal, loneliness, facing discrimination, and lack of social ties are among the major problems that immigrants have to deal with (Li et al., 2016).

In the studies conducted with immigrants, it was found that factors like lack of social support, discrimination against immigrants, being away from their families, loneliness, not being married were the most important post-migration factors for post-traumatic stress disorder and depression (Perrin et al., 2014).

Research on Immigrants and Asylum Seekers

In a study conducted with asylum seekers, after standardizing according to age, it was found that immigrants may be ten times more likely to show PTSD symptoms than in the local population (Fazel et al., 2005).

An epidiomological study conducted in Norway found pathologies of depression and anxiety as well as physiological signs of somatization in asylum seekers. It is stated that these complaints are common (Dalgard et al., 2006). In a similar Finnish study, it was again found that the incidence of depressed mood and sleep problems was one and a half times to twice higher in asylum seekers than in the local community (Molsa et al., 2014). In these cases, migrants seriously need to benefit from mental health services; however, it has been observed that language and cultural barriers, as well as lack of institutions providing such services, represent an impediment for the improvement in refugees' conditions. For this reason, it is stated that special studies should be carried out and medical structures should become a priority (WHO, 2015).

In a study conducted in China, social inequality, poor living conditions, and discrimination caused by forced migration were identified as factors increasing the risk of depression and suicidal behavior (Jing et al., 2015).

In China's Wuhan province, people living in the countryside and people living in urban areas migrated to urban settlements, and it was found that women had more stress than men. In another case, it was also seen that men left their wives in rural areas and migrated to other cities alone. In this case, the stress factor on the women increases and the tolerance level is low. Male immigrants work overtime and work with low salaries in jobs that people are less interested in, such as transporting chemical and sewage wastes and transporting corpses. In these conditions, individuals feel that they are discriminated, and this leads to depression (Guo et al., 2016).

Babaoğlu (2013), in studying the psychological problems of Turkish immigrant women in Germany, reported that immigrant women who have been in the country for more than 10 years carry a risk depression and psychosomatic disorders.

Rieceken (2001), in his clinical study on immigrants in Germany, shows that factors such as loneliness, inadequacy of the support systems, heavy working conditions, and low wages generate depressive conditions among immigrants.

Queue	Year	**Researcher**	**Research Name**	**Result**
1	2001	Riecken, A	Psychiatric disorders in the process of migration and integration.	The level and duration of depressive symptoms of migrants may vary depending on factors like loneliness, insufficient support systems, heavy working conditions, lower wages, and feeling discriminated.
2	2005	Fazel M et al.	The prevalence of serious mental disorders in 7,000 refugees resettled in Western countries.	Immigrants are 10 times more likely to show PTSD symptoms than the local population.
3	2006	Dalgard OS et al.	Migration, lack of control and psychological distress: findings from the Oslo Health Study.	In addition to pathologies of depression and anxiety, physiological symptoms of somatization were also found in asylum seekers.
4	2013	Babaoğlu	Problem Areas of Migrant Turkish Women Living in a Settlement in Germany Determined by Qualitative Method. International Journal of Human Sciences	Prolonged immigrant status increases risk of depression and psychosomatic disorders. The study focused on Turkish women immigrated into Germany for more than ten years.
5	2014	Molsa M et al.	Mental and somatic health among the elderly, and factors before and after migration.	The rate of depressed mood and sleep problems in asylum seekers is one and a half and twice as high as in the local community.
6	2015	Jing Dai et al.	Chinese, internal migration, mental health and suicidal behaviour among young people in rural China	Social inequality, poor living conditions, and discrimination caused by forced migration are identified as factors increasing the risk of depression and suicidal behavior.
7	2016	Guo Y ve ark.	The Relationship Between Spouse/Child Separation and Migration-Related Stress in a Rural to Urban Sample in Wuhan, China	Asylum seekers feel discriminated and suffer depression.

Conclusions

The migration process is multidimensional and has become an important phenomenon in psychology and psychiatry and has also been supported by national and international studies and multidisciplinary research. It is known that there are irregular dynamics in communities where there are already immigrants and asylum seekers. It is seen that the immigrants migrate to the nearest country or region voluntarily or compulsorily due to the violence-based events such as war/conflict, which can change at any time, and the problems related to the level of security and peace of the societies they belong to. Today, the importance of psychosocial support professionals such as psychologists, psychiatrists and social workers working with immigrants has increased considerably due to the fact that migration is perceived as a significant crisis experience

and the negative effects of this process on mental health are perceived as a devastating human experience (Öztürk et al., 2019).

Accordingly, various awareness-raising activities should be carried out in cooperation with public institutions, non-governmental organizations and universities on the psychological support immigrants need. Psychological support services for refugees and asylum seekers should be expanded. Psychiatrists, clinical psychologists and academics who are interested in immigration are mainly responsible for immigrants who are forced to act against their will. It is known that this group is one of the most exposed and risky groups in terms of diagnoses such as dissociative disorders, somatic disorders, depression, schizophrenia, and post-traumatic stress disorder (Bhugra et al., 2014).

In addition, the employment of Syrian health personnel initiated by the Turkish Ministry of Health, within the framework of SIHHAT, should be expanded and continued. In Turkey, there is a need for activities that will increase the health literacy of asylum seekers in all fields, particularly in the promotion and development of health. Asylum seekers who need general and mental health services should be better guided. These trainings can be made through various public services, as well as using printed material prepared in Arabic such as brochures, posters, etc. that can be displayed in migrant health centers.

Intervention methods to be adopted by countries are important to treat the traumas of immigrants and asylum seekers resulting from migration, as well as facilitating their adaptation to the society and culture that opens their doors to them (Derin, 2020). Awareness-raising activities can be done with public announcements on mental health both on television and radio channels followed by refugees and asylum seekers. In addition, similar messages can be sent to mobile phones. Awareness-raising activities should explain what these psychological problems are and how to deal with them. Policies and strategies followed by many States regarding immigrants are planned and implemented on the basis of ensuring the integration of the asylum seeker and immigrant group with the society as soon as possible and providing them with psychological assistance under appropriate structures (Derin, 2020). Immigrant Health Centers (GSM) and Strengthened Migrant Health Centers (GGSM) can be used effectively to reach refugees and asylum seekers who also need psychological health services as primary and secondary health care services. Psychological and social support services for refugees and asylum seekers should be strengthened by employing psychologists and social workers in the care centers. On the other hand, when the society accepts the immigration policies, the immigrants and asylum seekers will be a part of that society and, eventually, a more understanding social structure will be formed.

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CHAPTER 17

THE EFFECT OF THE COVİD-19 PANDEMİC ON THE BANKİNG SECTOR

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INTRODUCTION

This paper provides some basic historical information about the banking sector and its evolution through time. It also investigates the effect of the COVID-19 pandemic on the banking sector. For the first time, bank-established empires demanded a means to pay for foreign products and services with a currency that was easily traded, and this is when banking first developed. Over time, fragile, impermanent paper bills gave way to coins of various shapes and materials. Roman Empire's banking industry; in this empire, skillful founders and managers arranged banking inside of separate structures and separated it from such temples. Like loan companies today, moneylenders benefited during that time; however, the majority of legitimate traders for all of those government expenditures used an established bank. And finally, European monarchs understood the significance of the banking sector. Because banks operated on the kindness, purpose, and specific laws and agreements of the ruling authority, the royal powers started to accept loans, frequently under the king's circumstances, to make up for bad periods at the royal treasury. This easy funding encouraged kings to invest in unnecessary extravagances, expensive wars, and arms races with nearby kingdoms, which frequently resulted in crushing debt. However, Adam Smith explained his inaccessible hand theories and models when he created the first free-market bank in the Empire of British in 1776. The government's involvement in the banking industry and the economy at huge was confined by money - lenders and bankers due to their belief in a self-regulating economy. This competitive banking and free-market capitalism found lucrative regions around the world, where America would grow. So after that, merchant banks gain power, and the national banking system handled the majority of these banks' economic activities. Following that, in the 1800s, J.P. Morgan rescued the banking sector, which was associated with the global financial center and had significant political power in America. Through the revolutionary use of trysts and a disregard for the Sherman antitrust act, he established American Steel, AT&T, and International Harvester, along with duopolies and approaches in the train and shipping sectors. During the Second World War, the banking sector became modern, which saved the banking sector from destruction. The war demanded financial strategies requiring billions of dollars for banks and the Federal. This huge financing process produced firms with huge credit demands, prompting banks to combine to satisfy the demand. These massive banks had a global market. Despite this, the banking industry during the 1980s, particularly the 1990s, when the internet first appeared, was the most significant development time for the banking industry's digitalization system. The growing popularity of smartphones and phone banking speeded up the trend still further. While

many customers continue to do some of their banking at different places, based on a J.D. Electric survey taken in 2021, 41% had also moved online.

As the definition of banking is a financial organization that works with money. Banks take investments and make loans, earning a profit from the different activities as well as the interest rates paid and charged. The existence of banks is explained in five theories; the main theories explained the existence of banks and which is relating the most important role of banks as "monitors" of borrow, giving borrow to customers who have risk, and also the bank expertise and efficiency in interpreting data on borrowers' risks. The second theory is information production it assists the customers to find the right information on production costs and banks benefit from the finance of scale and other capabilities in analyzing data about deficit components. The third theory is liquidity transformation. A crucial function of many financial facilitators is the production of liquid claims supported by illiquid assets. The fourth theory is smoothing consumption which is the method of setting an equilibrium between spending for present necessities and saving for the future. The goal is to achieve equilibrium among spending and conserving at different steps of life. Obtaining this balance is a significant money-planning task for anyone. Finally, the fifth theory (commitment mechanisms) explains to clarifying how illiquid financial resources (loans) are funded by demand deposits, which enable clients to come and require liquidation of those liquid funds.

TYPES OF BANKS

In the 21st century, different types of banking are working in miscellaneous types of activities. Traditional banking, modern banking, private or banking accounts (commercial banks, savings banks, cooperative banks, smaller banks, local banks, and financial services companies), private banking, investment banking, universal banking, and specialist banking. Here gives some information regarding traditional versus modern banking, Over the last 30 years or so, the banking industry has seen a major shift as banks transition from limited services and activities to full-service banking. The main activities of traditional banks taking deposits and lending, which provided a significant percentage of their revenue. The major factors of bank revenue were net interest margins (the differential between the interest profit from loaning and interest costs on deposits). To increase revenues in that situation, the bank attempted to maximize interest margins while controlling activity costs, staff costs, and other costs. However, the bank focused strategically on lending and deposit collection as its primary goals. Several banking industries were highly restricted, and competition was limited until the 1990s. Until 1986, banks inside the United Kingdom were banned from performing various securities and investment banking operations, but later reforms allowed the

banking industry to acquire stockbroking firms. Till 1992, through Spain and Italy, there were branching regulations, and the types of business that banks could engage in were constrained. The second Banking Directive of the European Union, implemented in 1992, created an official meaning of what constituted the banking industry throughout the EU, leading to what became the model of universal banking. The financial industry is generally defined in the universal banking model as including all aspects of financial service activity, such as securities, operational processes, insurance, pensions, leasing, and so on. This intended that beginning in 1992, banks all through Europe could participate in a huge variety of financial services activities.

TRADITIONAL BANKS

Traditional banking was founded on the concept of capital creation. Traditional banks and other financial institutions usually rely on clients depositing money into banking institutions and then lending such money to other clients in the form of mortgages and loan agreements. Borrowers pay interest as well as fees on the funds they borrow, which also creates revenue and capital for the such bank. The whole process of the traditional bank such as products and services which is loan and deposits and the income saucers of the traditional bank are net interest income, the competitive environment of the traditional bank is restricted, and the strategic focus is wealth size and growth and that clients emphasis of traditional banks is supply led.

Traditional Banking
The services and products: which are limited in the traditional bank ▪ Loans. ▪ Deposits
The income sources of traditional banks: ▪ Net Interest income
The competitive environment of traditional banks ▪ Restricted
The strategic focus of traditional banks: ▪ Assets size and growth

Source: Introduction to banking by Casu, et al., (2006).

MODERN BANKS

The modern bank; is a modern banking institution, as well referred to as an electronic banking structure, and is a windows-accessible, full-featured level on-premise business offering fundamental data processing approaches, item seize, imaging solutions, and information management

systems. All of these programs are essential components of the overall solution. The modern bank included different activities which are; the products and services of financial services offered by modern banks include loans, pensions, insurance, securities/investment banking, deposits, and other financial products Net-interest revenue as well as fee and commission revenue are the sources of funding for modern banks. Despite the intense competition, modern banks place a planned emphasis on shareholder returns and value creation (creating a ROE that is greater than the cost of capital).

Modern Banking
The services and products: which is universal in modern bank the following: loans, deposits, banking investments, securities, retirement benefits, and insurance
The income bases of modern bank Revenues, net interest, and commission profit and fee
The competitive environment of modern banks: There is strong competition.
The strategic focus of modern bank: The formation of value for shareholders and shareholders
The customer focus of modern banks: Demand and customer value creation

Source: Introduction to banking by Casu, et al., (2006).

LITERATURE REVIEW

The reason for conducting this investigation is to contribute to the effect of the COVID-19 coronavirus pandemic on the banking industry by finding banking industry strategies employed throughout health crises, to demonstrate in the preview research paper as literature the different kinds of carrying out the study, services, and operations that have been accomplished in the banking industry during the Coronavirus crisis. In terms of 2008 and the 1930s, the banking industry was at the center of the crisis, but each crisis is unique, and this crisis is associated with health problems (Theo Notteboom, et al. 2021). Banks were viewed as a contributing factor in the run-up to the crisis, but instead, they are regarded as part of the solution. The condition of the coronavirus crisis improves the financial sector's significance, and the strategies adopted by banks have an impact on the entire economy. The coronavirus has altered the worldwide economy and had a major effect on the majority

of businesses. The banking industry is playing an important role in the pandemic crisis because it is an essential element from a financial standpoint. In recent years, the banking system has continuously adapted—it has indeed been recreated to maintain up with customer perceptions and the need for cost savings. The COVID-19 pandemic has speeded up the integration in the banking industry, even though the need for creativity and digital approaches was essential in banking even before the pandemic began. This paper also presents an opinion based on a narrative literature review and an overview of the most critical parts that redesign the banking system in the context of the COVID-19 pandemic. Because the COVID-19 pandemic is a new experience for the world, the literature on the pandemic as well as its implications for the banking system is still working to develop.

Positive relationship

Hamzeh et al (2021) examined the consequences of COVID-19 on the banking industry of Saudi Arabia which used the Artificial Neural Network model. Empirical findings from regression analysis indicate that oil prices and new cases of Covid-19 had a significant positive effect on the banking industry. However, a decrease in interest rates had to find a negative significant effect on the banking industry. Muhammad, et al. (2022) studied the effect of Coronavirus and support to the banking sector of Indonesia on Islamic bank revenues. The findings of this research paper demonstrate, using the ARDL method, that Coronavirus has a negative long-term association with the profitability of Islamic banks. Although, in short term, transportation, warehousing, communication, and financing have positive correlations, which explain the higher profitability, Islamic Banks are expected to make the appropriate investments in financing business industries accordingly to maintain their revenues.

Mateev, et al. (2021) researched capital growth, competition, and developing markets in Coronavirus, with implications for the security of the banking sector. Both the exploratory and the confirmatory frameworks were used in the research paper. The study's results indicate that the two activities Arab Spring and COVID-19—share some resemblances. Furthermore, three key factors are recognized: the trust gap, fiscal and monetary policy, and inherited economic features. The authors suggest that the banking strategy be changed and significantly structured. Concerning financial stability, the study on COVID-19's impacts is limited and contradictory results. The research paper finds out the effect of Coronavirus on economic services improves effectiveness in assisting economically struggling organizations (large, small, and middle) and households in the Emirate. The scholars looked at the efficacy of the respite promotion issued by the National Bank of the Emirate in their analysis and decided that the

respite promotion would affect the losses experienced by various kinds of businesses, industries, and households during the time of coronavirus.

Emon, et al. (2022) in this research paper examined the instability of the American stock market and commercial policy during Coronavirus, which used the step-by-step regression and vector autoregression approaches. The finding of this paper shows that markets experience negative cumulative abnormal returns in answer to the publication of new records of death, while they experience positive average cumulative returns in response to the announcement of the banking bailout. The reported number of deaths and cases of stock index volatility has a negative and significant effect. It implies that the American equity markets are extremely vulnerable to COVID-19. economic policy uncertainty greatly reduces volatility in the US stock market, and instability is cointegrated and proceeds in a unidirectional manner. The existence of a long-term connection between the variables is taken into consideration in this research, which suggests the United States stock market is much more vulnerable to COVID-19 than the world as a whole. Xingjian et al., (2021) investigated the impact of profit diversification on banking profit and risk, during the COVID-19 pandemic. This study discovered that non-interest profit bases are positive performances but negatively associated with risk. The study's outcomes support a positive diversity effect from banks extending further than traditional loan revenue sources during the coronavirus.

Negative relationship

Since the beginning of 2020, a significant number of businesses worldwide have been impacted by the economic impact of the coronavirus pandemic (COVID-19). Despite exceptional government actions, COVID-19 caused the world's largest economic harm in many years. According to the 2020 World Bank report (Blake, et al. 2020), Covid-19 has caused a worldwide economic downturn and has pushed 88 million people into extreme poverty. So according to Bartik et al. (2020), 43 percent of the total small businesses in America have stopped temporarily, and employment has fallen through 40%. Correspondingly, the coronavirus has had a serious impact on Businesses in Europe. McKinsey (2020) and Dimson et al. (2020) demonstrated that European Businesses have reported experiencing an unplanned and remarkable drop in profits and purchases. Nearly all European Businesses (90%) record a decrease in profit, and 55 percent of respondents have stated they might shut down by September 2021. Cusmano and Raes (2020) stated a loss of Business profit and purchases in Japan, Korea, as well as other Asian countries in a revised OECD report (2020).

Stiroh (2004) determined that this study has positive effects on expanding away from activities that consistently generate fee income, transaction income, and other types of non-interest income in the US financial sector. evaluated. Net operating income is generally quite volatile and becomes more and more closely related to net interest income, so a reduction in the volatility of that income reflects a reduction in volatility. A greater reliance on non-interest income, especially trading income, is associated with lower risk-adjusted profits and increased risk at the bank level. This suggests that there are not many obvious diversification benefits in the continued shift to interest-free income. Stiroh (2006) examines the effects of higher non-interest profit on stock market risk and return estimates for US bank corporative using a portfolio framework. As shown by his findings, banks that rely on non-interest lines of business make lower average equity returns and are unstable.

DeYoung, et al. (2013) studied the relationship between non-traditional bank operations and bank breakdowns at the time of the economic crisis. They discover that not the whole non-interest bases of profit have a similar effect on failure probability. Rather, it is discovered that events for instance, insurance sales, and financial services reduced the possibility of failure, While the likelihood of failure increased with venture funding, asset bank guarantees, and investment banking. They also discovered that banks that took more risks in nontraditional activities also took more risks in standard activities.

Jian et al. (2022) examined the effect of knowledgeable capital on bank performance during the Coronavirus in China and Pakistan. The findings of this paper demonstrate that intellectual capital has managed to maintain its significant impact on banking revenue in China and Pakistan. The study indicates that human assets are the only intellectual capital factor that keeps on enhancing the ROA and ROE of Chinese and Pakistani banks during the time of the Coronavirus. In addition, the paper recommended that policymakers give greater consideration to intellectual capital resources, which have the possibility of enhancing banking performance even through crisis periods.

Kocha et al., (2020) addressed the COVID-19 pandemic, the impact of the price of oil, and the solvency of the financial system. According to the empirical findings, a strong correlation between COVID-19 and modifications in the profitability of Nigeria's financial system has been found. On the other hand, the fall in oil prices has shown that there is a negative, substantial association between oil prices and the revenue of the financial system. Granger causality results provide evidence of a bidirectional causal association between COVID-19 and banking industry profitability. This paper suggests the COVID-19 and oil price shocks had a significant impact on the profit of the Nigerian banking system.

Demirgue et al. (2020) analyzed the COVID-19 crisis's effects on the financial industry's profitability. Based on the research paper, the crisis and the forecasted position of banks as countercyclical lenders have significantly stressed banking systems, with bank stocks outperforming in their domestic markets when compared to those of other non-banking banking institutions.

Duan, Y, et al. (2021) examined the systemic risk of banks related to Coronavirus, the results presented in this paper describe the methodical risk of banks throughout the COVID-19 pandemic period, which attempts to estimate which elements impacted the systemic risk of banks. They found a sizable company that was heavily leveraged, had a high loan-to-asset ratio, lacked the capital to operate normally, and had network problems that raised systemic risk for banks at the time.

CONCLUSION

The world economy has suffered as a result of the COVID-19 virus. This study attempts to investigate the effect of COVID-19 on the banking industry by using also the literature survey. Several research papers have focused on the reaction of the banking sector both domestically and globally. Several authors implement different econometric techniques to investigate the aforementioned nexus. The coronavirus has resulted in a significant reduction in activities such as; small businesses, manufacturing, entertainment, and tourism, and the stock market has all seen a drop in profit. Authorities take action to control the spread of diseases by imposing strict curfews, lockdowns, and a high death toll. This eventually caused a disruption in the banking sector in both developed and developing countries. Xingjian, et al. (2021) examine the connection between the profit rates of banks and risk, as well as the use of non-interest income sources, using the economic crisis caused by the COVID-19 pandemic. The virus's effects on the economy led to tighter credit standards and a decline in the demand for various types of loans.

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CHAPTER 18

THE IMPACT OF DECLINE IN MORTALITY RATE ON ECONOMIC GROWTH IN THE LATE OTTOMAN EMPIRE[1]

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Introduction

Many academicians see two problems in developing and least developed countries, the first is a lack of capital and the second is the inability to follow the technological developments made by Europe (Cıpolla, 1980; p. 128); (Kaku, 2011; p. 296). However, Pamuk states that population decline due to continuous wars was the most important factor in the decline of the Ottoman Empire in the last centuries (1984; p. 85). Moreover, Zürcher compares the Ottomans with Russia, France, Germany, Great Britain and Austria-Hungary in terms of income, population, coal production and railways. He states that the Ottomans lagged behind European countries in all of the above factors (2010; pp. 63-66).

In this research, we take Zürcher's approach one step further and defend the idea that the limiting factor in Ottoman economic growth, which hindered coal production, the spread of railways, and the rise in income, was neither the lack of capital nor the lack of technology transfer, but the lack of labor.

Foreign Debt in the Industrialization Process

If the limiting factor in economic growth is a lack of capital, we should expect that borrowing money should help to solve economic problems. However, foreign debt in Ottomans did not help to solve economic problems. Ottoman Empire took its first foreign debt in 1854 and went bankrupt in 1875. In 1881, in exchange for forgiving 44% of the debt, the Ottoman Public Debt Administration was established and thus part of its income was diverted to pay the foreign debt (Tezel, 2002; pp. 81, 83).

This money was used to buy modern European weapons instead of investing in long-term economic growth (Zürcher, 2010; p. 65). The Ottoman Empire faced urgent military threats. Naturally, they spent the money they borrowed to buy weapons. Shabbir notes that a country cannot develop only with borrowed debt; the Ottomans learned this from their own experience (2008; p. 16). Trying to solve economic problems by borrowing foreign debt did not end well, but the Ottoman Empire continued to struggle for its existence. Ottomans with foreign direct investment started coal production and railway investment that enabled the economic growth process.

Coal Production and Railways

The Ottoman Empire had plenty of lands. They hoped that there might be coal mines. The Ottoman Navy showed coal samples to discharged soldiers and asked them to look for these mines in their villages, and in this way, coal was found in 1829. Production with modern technology started through foreign direct investment from Britain in 1848 during the Crimean

War (Güney, 1966; pp. 106-107). Coal preserved its strategic importance for a long time (Müftüoğlu and Taniş, 2010; p. 196). However, the coal mines could not operate at full capacity due to the lack of both qualified and unqualified workforce (Özeken, 1948, p. 70).

In 1867, the Ottoman Empire tried to overcome the shortage of workforce with "involuntary servitude" (Makal, 2006; p. 72). Once coal production started in Anatolia, Ottomans learned this technology, but it was not able to utilize the full capacity of the mine because of the shortage of workforce. Moreover, the reason for the failure of the Ottomans to industrialize at the level of Germany or Japan was also the lack of manpower. Even if Ottomans had been able to raise capital and transfer technology to build factories, it would have been an impossible task to find enough workforce for the mines. What if Ottoman Empire had concentrated its population in one region or one city to have a workforce for factories? Ottomans realized this possibility with Istanbul.

The primary reason for the stagnation of the population was the high death rate of the Ottomans (Pamuk, 1984; p. 85); (Zürcher, 2010; p. 64). Obviously, only decreasing the death rate would solve this problem. Müderrisoğlu states that with special permission from the Sultan, Istanbul residents were not conscripted into the army (1988; p. 10). In this way, the Ottoman Empire tried to prevent the population of Istanbul from diminishing due to war casualties. In the first metropolitan area of London, the concentration of population and industrialization happened simultaneously with the construction of railways and waterways around the city (Oren, 2002; p. 2, 6-7); (Stearns et. al., 2008; p. 631). Istanbul was already located between sea routes. Further concentration of population in Istanbul could be achieved only by connecting Istanbul with the Balkans, Anatolia and Arabia by railways.

"*The first railway line was opened in Britain in 1825*" (Yıldırım, 2002; p. 312). The first railway line in the Ottoman Empire was built in 1856 with the help of foreign direct investment from Britain. Istanbul, like Rome at the height of the Roman Empire, was a city with a huge population that was the capital of the empire. It needed food in huge quantities to feed its residents. The wheat was coming from overseas provinces such as Egypt. However, when the Ottoman Empire lost its overseas provinces, it became dependent on wheat imports from Europe and the USA despite having immense agricultural production capacity in Central Anatolia, which the Ottomans could not utilize due to high transportation costs. In 1893, the Baghdad railway line was built with German direct investment so that the Ottomans could feed the population of Istanbul with food from central Anatolia (Ortaylı, 2006; pp. 143-144); (McEvedy, 2004; p. 92); (Boratav, 2013; p. 28). The Ottomans crowned this process with the Hejaz

Railway. The most important feature of the Hejaz Railway was that it was completed without the use of foreign capital. Moreover, Turkish and foreign engineers worked together for its construction. Furthermore, the shortage of manpower was overcome by hiring one thousand five hundred of Italian unqualified workers and soldiers. The last part of the Hejaz Railway was completed by Turkish engineers and workers in 1908 (Aksay, 1999; pp. 12-13); (Hülagü, 2008; p. 92); (Gülsoy, 1994; pp. 126, 141); (Yıldırım, 2002; p. 313); (Ortaylı, 2006; pp. 143-144).

Ottomans had rapid economic growth at that time (Pamuk, 1984; p. 79-80); (Ortaylı, 2006; p. 144). Unfortunately, the only challenge Ottoman Empire faced was not Industrial Revolution. Another issue was that most of Asia and Africa was colonized by European Powers and their next target was the Ottoman Empire (Öke, 1983; p. 130).

Population Development

Gallup and Sachs draw attention to the role of a country's geography in high mortality rates from a malaria perspective. According to this perspective, countries with tropical climates lose the battle against malaria. Widespread malaria increases mortality and slows economic growth (1998; pp. 1-2).

The most important effect of the industrial revolution in Europe was to reduce mortality, which allowed rapid population growth. Japan experienced the same process in its industrialization. Japan finally established its nation-state after a hundred years of civil war, and between 1603-1867, it isolated itself from the rest of the world, where its main goal was political stability (Vansteenburg, 2006; p. 1). This era of political stability decreased the death rate, so the population increased and the economy grew rapidly (Boserup, 1965; p.50). However, Ottoman Empire, unlike Japan, an archipelago far away from Europe, was next to the European imperial powers. Ottomans had many wars with European powers to protect its territorial integrity, which increased the death rate, thus, did not allow population increase and economic growth.

In the 1850s, the Ottoman Empire had more population than Austria-Hungary and Great Britain, and less population than France, Germany, and Russia. While in 1901, it had the lowest population among these countries (Zürcher, 2010; p. 64); (McEvedy, 2003; p. 9). In the Ottoman Empire, continuous wars were the reason for the decline in average life expectancy. In 1913, the average life expectancy was only 30 years (Pamuk, 2007; p. 267). Because of the low average life expectancy, economic growth through increased productivity was not possible. Chakraborty states that this situation reduces the returns on investment in education (2003; p. 128). Under these circumstances, even if Ottomans had been able to increase

their education investment, it would have been enough to set up economic growth. At this time, the population of Europe did not outscore only against Ottoman Empire but the whole World.

Between 1800 and 1900, the population of Europe and North America increased from 203 million to 408 million. Their population increased not only numerically but also proportionally during this period. In 1800, Europe, the USA and Canada accounted for 2/10 of the world's population. By 1900, it was 3/10, an increase of 50%. Thus, in addition to its technological superiority, Europe had a numerical superiority (UN Report, 2014)

Genç points out that the question we should ask is not why the Ottoman Empire retreated in the face of Europe, which was growing tremendously, but how the Ottoman Empire slowly retreated in the face of Europe (2010; pp. 39-40). Moreover, we should ask the question of how Turks managed to build a strong nation out of a destroyed empire. The Ottoman Empire was in an impossible struggle against the European countries. In the best possible scenario, the Ottomans were able to close their demographic gap with Europe in the long run. It had to build its foreign policy in such a way that it could gain time for itself. To achieve this goal, the most important strategy used by the Ottomans was the policy of balance.

1) "1791 (...)-1878: Pact with Britain against Russian aggression.

2) 1888 – 1918: Pact with Germany Against England and Russian aggression ". (Armaoğlu, 1987; p. 43).

The greatest loss for the Ottomans in World War I was not land, but their limited human capital. Could the Ottomans avoid this by remaining neutral in World War I? At that time, however, the biggest problem for a country was not the consequence of losing a battle, land or people, but the possibility that all its neighbors would join forces against it. This happened to Poland twice. First, in the 18th century, Austria-Hungary, Russia and Prussia shared Poland on paper and then wiped it off the map. Poland won its independence after World War I, but in 1939, Germany and Russia shared Poland on paper and invaded. Therefore, the country lost its independence for the second time (Pavlovic′, 2008; pp. 39-44).

The rivalry between Britain and Russia provided a living space for the Ottomans. "*Russian and English negotiations started in 1906 and resulted in an agreement on August 31, 1907"* (Öke, 1983; p. 127). The biggest problem in the partition was who would take Istanbul. "*London did not believe that the Turks could protect the Bosporus and the Dardanelles (...) and stated that in a gradually approaching partition of the Ottomans, as long as it controlled Egypt, it would allow Russia to have Istanbul*" (Öke,

1983; p. 128). It meant the end of the Ottomans on paper, just like Poland. Under these circumstances, the neutral Ottoman Empire would have a dark future after the First World War.

The Ottomans took this condition into consideration and adopted a balancing policy. The main goal of this policy was to prevent Ottoman Empire from becoming like Poland. Finally, the Ottomans achieved their first goal. They lost their empire but managed to build a nation out of regions with dominant ethnic Turks, and in a large part of these lands, independence was protected uninterruptedly.

Poland won its independence, but both its borders and its regime were decided by the winners of the Second World War. Part of Poland was annexed by Russia and part of Germany was given to Poland. Germans living in the newly created Poland were forced to migrate to Germany, and Poles living in the land annexed by Russia were forced to migrate to Poland (Pavlovic´, 2008; pp. 44-45). On the other hand, the only loss for modern Turkey was Mosul in Iraq, which had a significant Turkish population (Değerli, 2007; p. 138).

The second important strategy was the integration of immigrants into society. There was a continuous and dense Muslim migration from the lands lost by the Ottoman Empire to the remaining part of the empire (Kazgan 1974, cited by Pamuk, 1984; p. 190). Integration policies were implemented in parallel with railway investments. Migrants settled along the nearby railway line and increased agricultural production in these regions (Ortaylı, 2006; p. 144). In this way, the problem of labor shortage in agriculture was partially solved.

Genç summarizes three important characteristics of the Ottoman Empire: low productivity, difficult and expensive transportation, and limited production for the market economy (2000; p. 50). After the 1850s, with the increase in transportation, the Ottoman Empire transformed itself and had rapid economic growth. The Ottomans closely followed European technological development, especially in railways and coal production. Moreover, its agricultural production and export increased rapidly (Pamuk, 1984; pp. 79-80). The biggest problem of the shortage of workforce in both coal and agricultural production fell during the peace period, thanks to low death rates (Zürcher, 2010; p. 64).

The lack of hygiene in moving armies and the economic damage of war cause the spread of epidemics (Dağlar, 2008; p. xi). Epidemics, if they are widespread, could cause a large decrease in the total population. Before the industrial revolution, the biggest cause of death was an epidemic (Riley, 2008; p. 23). After the industrial revolution, there were huge improvements against the epidemic fight. This provided a stable increase in the number of

both workers and consumers. Even developing countries like the Ottomans took advantage of this development. Increased demand in industrialized countries increased production and exports in the Ottoman Empire, which had strong economic ties with Europe. Unfortunately, wars reversed these developments. "*The population of Turkey decreased from 17 million in 1914 to 13 million in 1924*" (Cem, 1995, Eldem 1970, cited by Pamuk, 2007; p. 275). Not only war, but also epidemics, harsh climate, and war-induced famine caused huge human losses.

Conclusion

When the Industrial Revolution began in 1800, not all nations were in the same condition. Poland was missing from the map. At a time when nationalist ideas were spreading, Ottomans were trying to keep an empire together. Under these circumstances, the Ottomans identified their priorities. It defended itself against threats to its territorial integrity with a policy of balance. Moreover, the Ottoman Empire prevented Istanbul's dependence on food imports by building the Baghdad Railway, and brought Muslim migrants to Anatolia from the Caucasus and the Balkans, from territories that the Ottoman Empire had lost, thus increasing the population and production in Anatolia. In addition to all this, it achieved technology and capital transfer in many sectors through foreign direct investment (Ortaylı, 2006; p. 144); (Armaoğlu, 1987; p. 43); (Güney, 1966; p. 107); (Pavlovic′, 2008; p. 41).

The Ottomans followed the technological developments in the West in the two areas we have closely examined, railways and coal mines. Ottomans did not have huge capital accumulation, but the problem with increasing production in agriculture and coal mine was a shortage of workforce. Similarly, the low population density was the reason for the limiting factor in the spread of railways.

Ottoman historians, Zürcher and Pamuk state that continuous wars in the Ottoman Empire did not allow any increase in population. Finally, the curtain of catastrophe knitted by high death rates ended a period in Anatolia.

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CHAPTER 19

SHORT-TERM METRIC IN TV ADVERTISEMENTS: AN EXPERIMENTAL APPLICATION[1]

Fatma Nur YORGANCILAR ATATOPRAK[2]

1 In this study, the part of conceptual framework was produced from the doctoral thesis titled "'Tüketici Davranışı Nörolojisi: Nöroekonomi-EEG Yöntemiyle Nöromarketing Uygulaması / Neurology of Consumer Behavior: Neuromarketing Application with Neuroeconomics-EEG Method", which was carried out at Selçuk University, Institute of Social Sciences and published as a book by Çizgi Bookstore.

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As cited by Yorgancılar (2015), Richard Caton, English physicist, discovered the presence of electricity current the rhythm in the brain produces and Hans Berger (1873-1941), German scientist, with an ordinary radio device he himself made, succeeded EEG (electroencephalograph) electrical activation of the brain- in recording to the paper. Therefore, according to the studies by Hans Berger, to whom we owe the current presence of Neurofeedback education, cerebral waves vary according to the conscious state of the person and is oscillated in the different frequencies. These cerebral waves in the different frequencies, as mentioned in the previous parts, are divided into four groups as Beta, Alpha, Theta, Delta". Also in this study, incoming signals and cerebral waves are measured by means of electrodes, and the relevant cerebral regions are shortly mentioned as follows. Although cerebral cortex forms the largest section of neural system, what are known about cerebral cortex, one of the structure belonging to the brain, are rather limited.

Temporal lobe (T7, T8): Temporal lobe memorial lobe, which takes place below Sulcus lateralisis, is quite important in evaluating the various senses for intellectual functions. Temporal lobe cortex, which stays below lateral fissure, has generally the features of six-layered neocortex and allocortex. Although neocortex undertakes the functions related to hearing, vestibular emotion, personality, memory and behavior, allocoretex (hippocampus and gyrus dentatus) is related to sense of smell and limbic system. Primary hearing area that is 41st and 42nd area of . Brodmann and Wernike area that is 22nd area of Brodmann also take place here. To shortly express, temporal lobe has features such as understanding tone of voice, its rhythm and its distance and what the voice belongs to. The part of temporal lobe neocortex near polus, with its connections with frontal and limbic lobes, makes relation [considered] associated with the behavior, emotion and personality. Although this part is also named as psychic cortex, the most medial part of temporal lobe cortex is hippocampus. The view that this region is related to learning and instantaneous memory is prevalent in medical literature. Posterior part is an area, where the information coming from hearing, seeing and somesthetic areas is integrated. In temporal lobe, there are primary hearing area (Brodman's 41st and 42nd areas) secondary hearing area (Brodman's 22nd area), taste center (Brodman's 43 area), smell (Brodman's 34th area) and smell association center (Brodman's 28th area) Lobus temporalis primary hearing center takes hearing sense from coti organ, and secondary hearing center is the part conserving previously learnt meaning of the voices and words heard. Therefore, it gives information to the individuals about the meaning of the voices heard, namely, memory refers to memory centers. Wernicke area of secondary talking center receives sensorial impulse from cortical seeing and hearing center and

gives the meaning of those read and spoken as basic function. In related to hearing center in temporal lobe, emotional behavior and memory, audial interpretation and speaking and memory patterns also occur in this lobe taking place in the lower part of the brain. In addition, this lobe, due to the fact that it is a place, in which there is primary audial cortex, is important in interpreting the voices we hear and language. Again, due to the fact that hippocampus takes place in temporal lobe, this section of the brain is the place, where the sorts of memory are brought together.

Occipital lobe (O1, 02) is a part making connection with the centers of brainstem and enabling the eye to be focused on the point to be paid attention, and where facial recognition function actualizes via seeing function.

Frontal lobe (AF3, AF4, F3, F4, F7, F8):. Frontal lobe forming one-third of total cortex takes place in front of Sulcus Centralis and in upper part of Sulcus Lateralis. Frontal lobe is a cerebral center arranging the functions such as basic motor, speaking center, effective functions based on experiences –learning, ritualistic behavior, foresight, kindness, personality development, processing and maturing thought. Control of all voluntary muscles takes place in frontal lobe.

Frontal eye field, independently from seeing sense, controls voluntary movements of the eyes. Broca area, thanks to its connection with primary motor field, plays role shaping words. Sending proper impulses to the mouth, tongue, soft palate and inhalation muscles, it forms motor speaking function. This lobe taking place in the frontal part of the brain is also related to reasoning, motor skills, high level cognitive abilities, and speaking language. In the back part of the frontal lobe, motor cortex lies down. This area of the brain receives the information coming from the various lobes from the brain and utilizes this information to complete body movement.

Prefrontal lobe (FC5, FC6): This part that developed well in humans covers the areas 9,10, 12, 46 of Brodman. This part of the cortex, which more evolved phylogenetically, has much more afferent and efferent connections with thalamus, limbic system, hypothalamus and the other sections of cortex. Planning and starting such as motor movements connotation, abstract thinking, integration of idea activities, foresight, memory, ability to make decision, mature thinking, supplementary motor areas form as a result of arranging emotional reactions according to the conditions. As a result, these are the areas, in which the complex responses such as frenzy, calmness, sorrow, happiness, friendship, bad temper in a person emerges. Automated responses (such as blood pressure , variation in inhalation rate) in emotional states are provided by the ways, projected

from prefrontal area to hypothalamus. Although it is known that prefrontal area is related to personality and behaviors, evaluating many data coming from cortical and subcortical centers to prefrontal lobe, it is an area, in which the sensitivities of the people against the events is identified. Prefrontal area is also effective on making decision and personality. İt is generally accepted that lobus prefrontalis consists of 9, 10, 12 and 46th areas of prefrontal cortex in convexity and in the medial face of frontal lobe and 11 and 47th areas in the lower part of frontal lobe, which is later named as orbital lobe. By stimulating all these area, any motor response is not obtained. Although it is generally thought that it is related to high psychic functions, somesthetic association areas enable the senses to be perceived in detail and, thus, the person to be informed about himself/herself and his/her environment. High cortical functions such as reading, writing, calculating, understanding also actualize in this region.

Parietal lobe (P7-P8: Parietal lobe cortex extending from backside of central sulcus to paraoccipital sulcus, along with the fact that the emotional modality processes coming from thalamus are performed at high level, it is a region, where neural information coming from hearing, seeing and cortical areas is integrated. This part of the cortex has also motor functions. This region, where there are the functions such as paying attention to the internal and external stimulations, calculating, distancing right and left, also functions in perceiving and processing somatic emotional area, heat, touching, body position and pain. Integrating emotional and motor functions, it receives input from visual and audial cortexes.

On the other hand, parietal lobe plays important role in integrating the information coming from the basic sensorial center, association center and tasting center Parietal lobe, which takes place in the middle of the brain, is a region, which is associated with processing the information about tasting sense such as pressure, tasting and pain. This section of the brain, also known as somatosensory cortex, takes place in parietal lobe and is related to processing body senses.

Table1 . Short-term Attention Score Variations

Saniye	**Erkek**	**Değişim (E)**	**Kadın**	**Değişim (K)**	**Tümü**
1	0,72	0	0,74	0	0,73
2	0,76	+4	0,72	-2	0,74
3	0,71	-5	0,69	-3	0,70
4	0,69	-2	0,63	-6	0,66
5	0,69	0	0,59	-4	0,64
6	0,71	+2	0,56	-3	0,64
7	0,71	0	0,55	-1	0,63

8	0,72	+	0,56	+1	0,64
9	0,71	-1	0,55	-1	0,63
10	0,68	-3	0,52	-3	0,60
11	0,66	-2	0,51	-1	0,59
12	0,63	-3	0,53	+2	0,58
13	0,61	-2	0,54	+1	0,58
14	0,61	0	0,50	-4	0,56
15	0,57	-4	0,49	-1	0,53
16	0,57	0	0,50	+1	0,53
17	0,57	0	0,52	+2	0,55
18	0,52	-5	0,57	+5	0,55
19	0,47	-5	0,55	-2	0,51
20	0,45	-2	0,52	-3	0,49
21	0,49	+4	0,49	-3	0,49
22	0,52	+3	0,47	-2	0,50
23	0,55	+3	0,49	+2	0,52
24	0,53	-2	0,50	+1	0,52
25	0,55	+2	0,51	+1	0,53
26	0,54	-1	0,51	0	0,53
27	0,52	-2	0,52	+1	0,52
28	0,52	0	0,52	0	0,52
29	0,50	-2	0,51	-1	0,50
30	0,48	-2	0,52	+1	0,50
31	0,45	-3	0,52	0	0,49
32	0,46	+1	0,54	+2	0,50
33	0,48	+2	0,56	+2	0,52
34	0,48	0	0,62	+6	0,55
35	0,48	0	0,65	+3	0,57
36	0,49	+1	0,62	-3	0,55
37	0,56	+7	0,60	-2	0,58
38	0,67	+11	0,56	-4	0,61
39	0,69	+2	0,52	-4	0,61
40	0,71	+2	0,47	-5	0,59
41	0,73	+2	0,50	+3	0,62
42	0,72	-1	0,54	+4	0,63
43	0,70	-1	0,51	-3	0,60
44	0,68	-2	0,47	-4	0,57
45	0,68	0	0,48	+1	0,58
46	0,71	+3	0,49	+1	0,60
47	0,72	+1	0,47	-2	0,59
48	0,72	0	0,45	-2	0,59
49	0,69	-3	0,46	+1	0,57
50	0,66	-3	0,47	+1	0,56
51	0,66	0	0,47	0	0,57
52	0,60	-6	0,50	+3	0,55
53	0,59	-1	0,52	+2	0,56
54	0,58	-1	0,50	-2	0,54

55	0,65	+7	0,50	0	0,57
56	0,67	+2	0,49	-1	0,58
57	0,67	0	0,54	+5	0,61
58	0,63	-4	0,58	+4	0,61
59	0,51	-12	0,53	-5	0,52
60	0,45	-6	0,48	-5	0,47
61	0,40	-5	0,51	+3	0,46
62	0,37	-3	0,54	+3	0,45
63	0,37	0	0,57	+3	0,47
64	0,41	+4	0,54	-3	0,48
65	0,41	0	0,55	+1	0,48
66	0,41	0	0,55	0	0,48
67	0,42	+1	0,53	-2	0,48
68	0,44	+2	0,49	-4	0,46
69	0,46	+2	0,43	-6	0,44
70	0,47	+1	0,37	-6	0,42
71	0,45	-2	0,35	-2	0,41
72	0,42	-3	0,39	+4	0,41
73	0,35	-7	0,39	0	0,37
74	0,38	+3	0,42	+3	0,40
75	0,38	0	0,43	+1	0,41
76	0,38	0	0,41	-2	0,39
77	0,49	+11	0,42	+1	0,46
78	0,52	+3	0,50	+8	0,51
79	0,54	+2	0,60	+10	0,57
80	0,63	+9	0,69	+9	0,66
81	0,67	+4	0,72	+3	0,70
82	0,74	+7	0,75	+3	0,74
83	0,70	-4	0,75	0	0,73
84	0,74	+4	0,77	+2	0,75
85	0,74	0	0,75	-2	0,75
86	0,68	-6	0,73	-2	0,70
87	0,69	+1	0,71	-2	0,70
88	0,72	+3	0,68	-3	0,70
89	0,73	+1	0,58	-10	0,65
90	0,72	-1	0,53	-5	0,62
91	0,69	-3	0,51	-2	0,60
92	0,70	+1	0,47	-4	0,59

In the range of 2nd and 4th seconds, In nightfall, in a foggy and scaring atmosphere, in front of the bushes, a mysterious man looking at a three-storey house is seen. The light reflecting from the third floor of the house stands out foggy weather. It is seen that the entrance door of the house is open.

That the coming sound in the background is a voice resembling thunder and rain causes a decreases of 4 each units in the variation of long-term memory score. In the range of 10th and 12th seconds, the aged woman and mysterious man are slowly approaching toward stairs as facing back and, that footfalls are heard, that the mysterious man hesitates for a moment, turns his head to nightstand and carefully looks at the photographs on nightstand, that the aged woman and mysterious man hesitates a little, while going toward stairs and that the mysterious man begin to pray lead to decreases of 4 and 5 units in the range of the seconds specified.

In 14th and 16th seconds, the decreases of 3 each units are observed. The reason for this is that the aged woman and priest looks at each other in fear and ticktacks of the clock accompany with this. In 17th and 18th seconds, that the voice of a praying man is heard causes an increase of 2 units.

In 19th second, that the man worriedly continues to pray causes a decrease of 4 units. In 20th and 21st seconds, along with the fact that the paying man slowly disappears, a fall of two units occurs. In 23rd and 24th seconds, that the priest crosses himself as a requirement of his belief and, soon after, that firmly hugs to Bible causes an increase of 2 units.

In the range of 25th and 28th seconds, the screams are heard but a steady state is observed. In 29th second, the aged woman and priest come eye to eye. This case causes a decrease of 2 units. In 33rd second, that the intensity of the screams increases and that the priest and aged woman go toward that direct cause an increase of 2 units.

In 34th second, the screams increase more and more and the face of the aged woman is covered with fear. In this case, an increase of 3 units occurs. In 35th second, that the priest takes his hand to his cross causes an increase of 2 units.

At the beginning of 36th second, it is seen that the priest deeply breathes due to fear, and that the sound of breath is heard. This case leads to a decrease of 2 units. In 37th and 38th seconds, it is seen that the aged woman firmly keeps her vest in fear and that they approach toward the direction, from which the screams come. As a result of this observation, in the seconds specified, increases of 3 each units.

At the beginning of 40th second, a decrease of 2 units is observed. The cause of this is attributed to the fact that while the priest goes to the room, from the screams come, wooden floors groan. In 41st second, along with seeing that the aged woman follows the priest, while the priest hesitates to open the door of the room in front of the door and whether or not he worries to open the door, an increase of 3 units occurs.

In 43rd and 44th seconds, along with the fact that the priest hesitates to open the door in indecisiveness, still continuing suspense music cause decreases of 3 each units. In 46th second, that the priest kisses the cross and lowers to the floor cause an increase of 2 units.

In 49th second, in company with the suspense music, that the priest still stay indecisive about opening the door leads to a decrease of 2 units. In 52nd and 54th seconds, along with opening the door, the shadow of the priest appears, and a painting in the room stands out. In this case, a decrease of 3 units are experienced.

In 55th second, increase in the intensity of suspense music causes an increase of 3 units. In 57th and 58th seconds, suspense music quickly ends, and attention is attracted to the bed. Along with opening the door, the pages of the book on the nightstand are begun to be opened one by one in view of the wind. As a result of this case, decrease of 3 units occurs.

At the beginning of 59th second, that a totally decrease of 9 units is remarkable. It is observed that the cause of this is that the sound of wind reflects a scaring atmosphere. In 60th second, when the priest appears with his beetle brow and bemusedly, a decrease of 5 units occurs. In 62nd second, along with the fact that the priest raises his head, that he sees the girl, whose arms are spread, whose hairs are flown to the front, who has indistinct face and wears nightclothes, and who exposed to the devil in the way attached to the wall as in the film "Exorscict" causes a decrease of 2 units.

At the beginning of 63rd second, the priest seeing the girl exposed to the devil opens his mouth in fear. This case causes an increase of 2 units. The range in 64th and 67th seconds are steadily proceeding. In the range of 68th and 70th seconds, decreases of 2 each units.

In 73rd second, along with the fact that the third floor of the house slowly appears, a decrease of 4 units is experienced. In 74th second, along with the fact that the image becomes clear, somebody in the upper floor of the house appears to sweep the room by means of vacuum cleaner. In this case, an decrease of 3 units occurs.

In 76th second, when it is seen that the aged woman sweeps the room with a great pleasure in company with the foreign music, taking the vacuum cleaner forwardly and backwardly, a decrease of 2 units more is experienced. In 77th second, along with the fact that the aged woman, whose face is not full clearly seen from the side profile continues to sweep the room with a pleasure in company with the music, a decrease of 3 units more experienced.

At the beginning of 78th second, along with the fact that the face expression of the aged woman, whose face appears, reflects her happiness, an increase of 5 units is experienced. 79th second, when the aged woman sweeps the room with a great pleasure and accompanies with the playing song, causes an increase of 6 units. In 80th second, the aged woman go out from the angle of objective and the edge part of the vacuum cleaner appears. In this case, an increase of 9 units more occurs.

In 81st second, as a result of that the edge of vacuum cleaner goes forwardly and backwardly, and that the brand of vacuum cleaner attracts attention, an increase of 4 units is seen. In 82nd second, in fact, in company with the music, along with understanding that the aged woman sweeping the room with a great pleasure pulls upward the girl in lower floor, who screams as if she exposed to devil, thanks to the suction power of vacuum cleaner, an increase of 4 units occurs.

In the range of 86th and 88th seconds, a decrease of 5 units is seen. The cause of this decrease is attributed to that the voice of devil appears in company with the music and writing, that the writing "you know when the devil it is" is also a reflected state of the girl hung on ceiling as a result of suction power of vacuum cleaner, and soon after that the brand of vacuum cleaner appears. While an increase is seen in the range of seconds specified in the scores of confusion, in short-term score variations, a decrease is observed. At the beginning of 89th second, that the plug of vacuum cleaner is plugged to the triple socket attracts attention.

This case leads to a decrease of 5 units. In 90th second, following that the plug of vacuum cleaner is removed from the socket, along with the fact that the sound of falling comes, a decrease of 3 units occurs. In 91st and 92nd second, along with the fact that black display appears, a decrease of 2 units occurs.

AS A RESULT…

In this study, using the EEG method; The mental change processes of the people participating in the experiment in the face of the TV commercial were examined. At the end of the commercial, which resembles a horror movie and contains religious elements, there are elements that make you smile and surprise.

To evaluate in general; Fear, curiosity and music are very important on people's short-term memory metric.

On the other hand, it would be appropriate to state that religious themes are not effective at the desired level.

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CHAPTER 20

THE EFFECT OF STRATEGIC LEADERSHIP ON PRODUCT AND SERVICE INNOVATION: THE MODERATOR ROLE OF PERCEIVED ORGANIZATIONAL SUPPORT

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1. INTRODUCTION

The rapid environmental changes and increasing competition caused by globalization make it difficult for businesses to survive. At this point, innovation is no longer a luxury for businesses, on the contrary, it becomes a necessity (Pelenk, 2016: 4). Innovation refers to both a process and an outcome. It is possible for businesses to increase their productivity by gaining competence in innovation. In this context, innovation is transforming new ideas into value-creating outputs. In a way, it is combining creativity with commercial mastery (Emiroğlu, 2018, p. 2). Innovation can happen in the company's products or services. Product innovation refers to taking existing products to the next level (incremental innovation) or introducing a completely new product (radical innovation) (Kırım, 2006 & Durna, 2002). In this context, the business can add different features to its existing product or service or create original new products or services that were not previously in the market. On the other hand, environmental business conditions, economic uncertainties, competition, increasing customer expectations, conscious consumers have made it necessary for businesses to adapt to innovation and change in terms of quality and functionality of products and services.

Innovation was first cited by the economist and political scientist Joseph Schumpeter (1934) as the driving force of development and defined it as "the introduction of a product that customers do not know yet, or a new feature of an existing product; the introduction of a new production method; opening of a new market, finding a new source for the supply of raw materials or semi-finished products, and having a new organization of an industry" (Emiroğlu, 2018: 4). In addition, innovation is a factor that increases product and service quality and functionality. However, many businesses do not realize or are yet to realize the importance of innovation. Businesses that are aware of innovation successfully implement this change in product, service, marketing, financial or organizational and reflect it on company performance.

According to OECD literature, innovation plays a central role in the growth of productivity and production. Thanks to the faster flow of information and technological advances, knowledge has become the main driver of economic growth and innovation. Along with the importance of knowledge, the pioneer of innovation, J. Schumpeter has largely formed the theories of innovation. In this context, economic development takes place through creative destruction, a dynamic process where "new technology replaces old one". According to Schumpeter (1934), radical innovations create significant destructive changes, on the other hand, incremental (gradual-incremental) innovations move the change process forward (Oslo Guide, 2005: 33). However, the trigger, driver and complement of the innovation process is the leader.

A leader is the person who creates awareness for innovation, locks all other managers and employees to a common goal, ensures that the roadmap in the business plan is drawn with the contribution of everyone, allocates the necessary resources and creates an atmosphere that encourages innovation (Emiroğlu, 2018: 64-65). Especially in uncertain sector conditions, the enterprise needs a leader-manager who takes effective decisions and gives confidence in line with its goals and objectives. On the other hand, it is only possible for the business to adapt to change by producing innovative products and services. However, innovation is a risky and expensive process with a high success rate. In this process, it is important to provide both physical (machine-equipment, technological infrastructure, R&D, finance, etc.) and motivational support to employees. In this context, it is believed that organizational support perceived by employees is a trade-off between the organization and employees. Therefore, perceived organizational support is the belief to what extent the organization values the employee's contribution to the organization and the extent to which the organization attaches importance to the employee's welfare (Ahmed & Nawaz, 2015: 867-868). In order for the employee to contribute to the business, the leader must recognize and evaluate the employee's talent, motivate the employee and direct him to the right job. Because leaders are the biggest force behind successful business. The leader and his team provide the necessary dynamics to initiate and maintain change with strategic business plans. Leadership in innovation is the process of directing and coordinating the actions of team members to achieve goals. Therefore, the leader has a significant influence on the behavior of the individual in the team. At this point, the leader makes the employees willing to do the job beyond giving orders (Göktepe, 2004: 5-4). However, the leader must have some characteristics in terms of effective thinking and decision making. For example, the leader must be not only a strategic planner but also a creative strategic thinker. Because plans, goals, tactics and actions vary depending on the internal and external environment or other possibilities. However, the purpose of strategic thinking is to maintain a sense of purpose and directionality in the ups and downs of institutional demands. Thinking strategically is done by focusing on the values, vision and mission of the organization. In other words, this way of thinking is about maintaining the internal order in the seeming disorder of organizational life (Bouhali et al., 2015: 78). In this context, as a result of sectoral difficulties, economic crises, changes in customer demand, and chaos, the strategic leader ensures the stable progress of the enterprise and the preservation of its internal order.

Strategic leadership studies have gained weight since the mid-1980s. Strategic leadership focuses on managers with overall responsibility for

an organization (Jansen et al., 2009: 6). Therefore, strategic leadership does not depend on the top management as a single individual, but focuses on all employees who have comprehensive and detailed responsibilities for the enterprise (Göktepe, 2004: 60-61). At this point, this type of leadership begins with the identification of environmental opportunities and threats (external environmental analysis). However, top management can interpret environmental opportunities or threats in different ways, and choosing a good strategy with these interpretations brings business innovation success. There are studies in the literature that include the relationship between strategic leadership, leadership and innovation (Bouhali et al., 2015; Schweitzer, 2014; Jansen et al., 2009). One of these studies belongs to Jansen et al. (2009:15) and in the related study, it was determined that the transformational leadership included in strategic leadership is related to exploratory innovation and transactional leadership is related to exploitative innovation. In this context, while transformative behaviors support organizational members to challenge institutionalized learning and adopt productive and exploratory thinking processes, transactional behaviors support improvement and development by assuming a maintenance role. Likewise, according to Schweitzer (2014:442), operational leadership behaviors are not only related to operational capability development, but also contribute significantly to the development of innovation abilities. In this context, the type of leadership has important contributions to the innovation process and its success. Along with the leadership type, the perceived support of the employees can also increase their motivation. Perception of organizational support is a driving factor that motivates employees to achieve business goals. In this context, organizational support consists of the roles assumed by the employees and the organization for constructive reciprocity. While perceived organizational support is a sign of the value given to the effort and contribution of the employee, it is also an indicator of the employee's well-being. Business management has increased its innovation success thanks to positive and productive employees. Innovation requires positivity and creativity as well as observation and foresight. When employees perceive organizational support, they gain confidence and motivation, so they want to do something and be useful for their organization. Employees develop their skills and knowledge in this direction. In a way, stable strategic target can ensure innovation success together with support.

The relationship between strategic leadership and innovation has been studied by some researchers (Cortes, 2020; Kurzhals et al., 2020; Walden, 2020; Mascarenhas, 2011; Barsh et al., 2008; Elenkov et al., 2005). In these studies, it is emphasized that strategic leadership and leader behaviors are the basic values for innovation. Organizational acceptance and promotion

of innovation requires support from top management (Elenkov, Judge & Wright, 2005: 669). The aim of the research is to examine the moderator role of organizational support perception in the effect of strategic leadership on product and service innovation. Innovation is a concept that J. Schumpeter introduced to the literature. In terms of the importance of the research, competition among businesses makes it necessary to produce new products and services. In this context, innovative services and products both stimulate the market and strengthen the profitability of the enterprise. In this way, the business makes its place in the sector permanent by branding its new product or service. The socio-economic effects of this situation are the provision of more employment and qualified workforce, and the added value to the country's economy with the innovative product and service revenues of the enterprises. On the other hand, the firm can increase its performance in line with profitability and efficiency through innovation. Employees can be more creative and productive with leader trust and support. This can increase their self-confidence and make them more qualified.

The first problem of this research is whether the strategic leader influences product and service innovation. The second problem of the research is whether perceived organizational support has a moderating role in the effect of the strategic leader on product and service innovation. A new product or service is possible with a planned innovation process. First of all, the applicable ones among many new ideas are selected by the business. Then, the feasibility studies of the business for this product are reviewed, so the business is preparing to launch a new product or service. With the necessary production process and inspection stages, the prototype product is produced and introduced to the market, and then the mass production decision is taken by evaluating the feedback. All these important steps can only be possible with a leader who can think strategically and predict the future, and who believes in innovation first. The strategy requires the leader to see the opportunities and threats of the environment and to compare the strengths and weaknesses of the business, due to a good SWOT analysis. At this point, it is only the work of a leader with a vision to respond to the demands and expectations of the sector, to catch an economical and functional product and service that is not in the market, to introduce this product to the market and to make it a brand. On the other hand, finance, R&D, production-marketing support, regional-global supports and leaders who are perceived as a model enable innovation to be achieved. In this context, the leader should make people believe in the success of innovation and create an innovation culture in the business. This research contributes to the literature and the sector in terms of the necessity of the presence of a leader who makes the employees

aware of the new product and service process in terms of its importance and results, and the effect of this process on success when organized with organizational support.

2. CONCEPTUAL FRAMEWORK

2.1. Strategic Leadership

Leadership is organizing a group of people to achieve a common goal. In this social impact process, a person can get the help and support of his colleagues to fulfill a common task (Slimane, 2015: 218). In order for managers to be qualified as a strategic leader, they must have basic qualities such as being able to manage strategic change, making strategic decisions in an environment of uncertainty, being innovative, having strategic flexibility, and being able to lead in a crisis environment (Akgemci, 2015: 559). In this context, it is important for the strategic leader to adapt the change to the business by observing and internalizing it.

Leadership perception combines with values to form the basis for strategic choice. Values are treated as elements that can enter into a strategic choice while influencing perceptions. At this point, the heterogeneity of management will eliminate limited production and evaluation. In the related model, psychological and observable top management features such as product innovation, reaction time, etc. is the precursor of strategic choices. In addition, these features are shown as factors that can affect the profitability, profitability variation, development and performance of the enterprise (Hambrick & Mason, 1984: 195-198). In this context, strategic leadership is a set of activities related to the development and management of the organization as a whole to reflect long-term policies (Akgemci, 2015: 556), while focusing on human, structure and social capital capabilities to respond to opportunities and threats, it is a roadmap that develops the business by making sense of chaos and uncertainty. (Akgemci, 2015: 557). Therefore, the strategic leader evaluates the current resource of the organization and also plans the future business success. The ability of the strategic leader to be a guide that improves the business by making sense of the uncertainty is an ability to support innovation. Strategic leaders differ from traditional leaders with their ability to design the future and turn crisis into opportunity.

The innovation manager focuses on the target, recognizes opportunities before anyone else and comes up with striking ideas, has high self-confidence and self-discipline, attaches importance to quality communication and cooperation, is flexible and constructive in adapting to change, manages risk well by creating an innovation climate, believes and empowers the employee. Managers use the competencies of inquiry, observation, networking, experimentation, and association. At this point,

innovation is the responsibility of all employees, not just the manager (Emiroğlu, 2018: 63-65).

Strategic leadership starts with a vision and there are two ways to achieve the vision. The first way is related to the processes that create the corporate climate and are linked to the strategy. The second way is related to the skill and ability of the employee who creates the corporate culture within the framework of human resource management and can achieve business results (Akgemci, 2015: 562-563). At this point, it is important to equip the employee to achieve the goal and to guide the leader in the innovation process. Innovation strategies affect innovation success. According to Calabrese and Costa (2015: 25), creating a strategy is the cognitive decision-making process undertaken by the leader for the successful management of the company. In this context, the decisions of strategic leaders are important in product and service innovation, which is the driving force of change and difference. Designing a new product or service and stimulating the demand in the market can be possible with leaders who can realize the opportunities-threats of the sector and develop forward-looking ideas.

It is in question that managers who manage in a strategic way support innovation activities and are in favor of change. In this respect, strategic managers are expected to support all stages of innovation, to form teams for innovation, to strive for the construction of an innovative culture in their businesses, and to apply different methods compared to other management styles in the idea generation, development and commercialization stages of innovation. For example, while the dissatisfaction feature of the strategic manager is the motivating factor for innovation, the ability to develop strategic skills will lead to the effective management of the innovation process. In this context, strategic managers have features such as giving strategic direction to the business, turning the strategy into action, determining effective strategic turning points, developing strategic skills, not stopping, being able to carry, adapting, and wisdom (Taşgit & Torun, 2016: 130).

Strategy is the whole of information gathering, analysis, selection, decision and implementation activities in order to maintain the competitiveness and existence of the enterprise. Today, innovation does not only go parallel to technology, but businesses also have to adopt innovation strategies and strategies for competition. Therefore, the analysis of the economic, social, political and technological environment developing outside the enterprise, the analysis of the resources of the enterprise, the general strategy of the enterprise, the analysis of the information infrastructure of the enterprise, the analysis of the financial resources of the enterprise and the analysis of the R&D structure of the

enterprise are required. While coordinating these analyzes, the strategic leader uses human and physical resources to achieve the innovation goal. The most rational strategies and policies in innovation are those created by top management to guide subordinates in their work (Originated Strategy). The strategic leader can take into account unexpected events, changed approaches in practice, secondary and derivative support strategies and policies, or the basic strategies and policies, all of which are supported by the business mission and purpose (Emiroğlu, 2018: 79-84).

2.2.Product and Service Innovation

Product innovation includes significant advances in technology to develop new products unlike existing ones, and represents a radical change for the business when compared to product development. In terms of businesses, innovation can be examined in two dimensions as new products for the business and the market. The new product for the enterprise measures how innovative the new product is compared to the existing product of the enterprise, while the new product for the market measures how new the product is for the market (Kılıç, 2013: 144-145). Therefore, the frequency of incremental as well as radical innovation increases the market share of the enterprise and is important for the survival of the enterprise. In the related study, reactive and proactive market orientation, incremental (gradual) and radical product innovation variables are discussed and it is stated that the competitive advantage of enterprises is not only possible with reactive market orientation, but also with proactive market orientation. Based on the related study, predicting future consumer expectations by the strategic leader and initiating the necessary innovation process can increase the success rate of the business. Because product innovation is seen in new outputs released for the benefit of consumers, this is perceived as the most critical factor contributing to the competitive advantage of the firm (Chang, Bai & Li, 2015: 19). For example, the Togg electric domestic car, which offers a third living space with user-oriented, empathetic, autonomous, smart technology, designs the future with its human-oriented and life-facilitating design and ergonomics of use (Togg, 2022). Businesses in the automotive and technology sectors should give importance to service innovation as much as product innovation in terms of quality and safety. Service innovation is an important resource that provides competitive advantage and is driven by the complex demands of customers for the improvement of services (Işık, 2018: 356), it is the innovation and difference in a service, delivery and delivery method that has changed significantly. Therefore, developing such an innovation market is an important factor for retaining customers, adding value and growing. According to Taşgit and Torun (2016: 123-124), innovation activities contribute to the national economy and provide

better service to customers. In addition, innovation is important in terms of productivity, profitability and the continuation of business existence.

While service innovation is generally positioned as organizational innovation, businesses in the manufacturing sector mostly prefer process and product innovations. Customers frequently receive feedback on new service requests, how the service can be improved, and inadequacies in the current service, and service quality is improved in many sectors. There are four factors that affect innovative service innovation. These factors are, respectively, market attractiveness, strategic human resources management, market sensitivity and pre-launch activities (Yurt, 2021: 70-74).

The extent to which leadership behavior can motivate innovation through organizational knowledge depends on whether organizational strategies can support overcoming the innovation impasse by rapidly evaluating knowledge resources. At this point, strategic flexibility is an institutional ability to deal with innovative uncertainty through flexible adjustment in strategy. Resource allocation in innovative activities is a reflection of organizational flexibility and is closely related to knowledge management. Businesses with high strategic flexibility can fully discern major changes in corporate innovative activities and rapidly mobilize available resources to respond to these changes. In addition, strategic flexibility can reduce the time for organizations to respond to changes in innovative uncertainty, which supports the transformation of information resources into innovation (Jia et al., 2021: 782). At this point, the effect of the leader's strategic choice and decisions in innovation is important. While determining an innovative strategy in product and service, the company's desire to turn to products and services is of priority. If the business is following an intensive innovation strategy, it will give direction to enter the existing product market or expand its market by entering markets that it has not entered before. If the business is following an extensive innovation strategy, then it will decide in three main directions. First of all, it will follow a vertical integrity and ensure the sales of its brand (Adidas brand). Second, the business will choose to market products because it is confident in its ability, capacity, robustness, and utility. Third, it will choose a product that will not have much difficulty in market convenience, new product development, management and financial resources. In this context, what is our job while developing an innovation strategy? Who are our consumers and what do they want? What is the consumer's expectation of the product price? Do we want to be a product leader? Do we want to develop new products? What are our advantages in responding to consumer needs? Who are our current and potential competitors? How long can we continue to respond to consumer needs? What is our expected

profit margin? What basic form should our strategies take? The leader should ask definite questions and get clear answers (Emiroğlu, 2018: 85-87).

According to Lightfoot and Gebauer (2011), businesses implementing an after-sales service strategy should focus on a narrow set of determinants for service innovations. In addition, customer needs compliance, product functionality and market competitiveness play an incremental role in after-sales service. In the related study, it has been determined that innovation culture and managers are among the antecedents that affect innovation success. Accordingly, managers need to be open and creative, creating a culture of innovation that encourages current norms to go beyond technical boundaries. Team culture is necessary for the information sharing behavior of the employees and the performance of the business in the service delivery process and in the new service that meets the demands of the customers (Yurt, 2021: 72). In the research conducted with 120 employees of innovative enterprises, it was determined that as the applications for knowledge management increased, business innovation increased (Pelenk, 2018: 12). Hu et al. (2008: 41) found a significant and strong relationship between knowledge sharing, team culture and service innovation in their research with 621 people working in an international tourist hotel. In this context, in order to achieve high service innovation performance, organizations first need to develop knowledge sharing behaviors and a better team culture. Effective teams for innovation can be established by an expert and idealistic manager.

Managers can create a culture of innovation by taking risks, breaking resistance to change, and encouraging their employees to support new idea generation. In the study conducted with 101 middle and senior managers, the relationship between individual innovativeness and job satisfaction was investigated. As a result of the research, it has been determined that opinion leadership and risk taking from individual innovativeness dimensions increase job satisfaction, and resistance to change reduces job satisfaction of managers. In this context, managers can do their jobs more efficiently as they lead innovation, take risks and resist change. The satisfaction of the managers with their job will also reflect on the motivation of the employees (Pelenk, 2019: 1149). In another study conducted with 126 managers working in medium-sized enterprises, it was determined that the most important management style that affects the innovation performance of the enterprise is charismatic and strategic management, and the variable that has the highest positive effect on strategic management is competitive advantage.

Along with strategic management and perceived organizational support, employee behavior is important in terms of innovation speed

and effectiveness. The innovative behavior of the employees can affect the perception and way of working even in situations of economic crisis and dismissal. As a result of Pelenk's (2020: 214) study with 125 personnel working in a large-scale automobile factory, the moderator role of innovative behavior in the relationship between job insecurity and task performance was determined. At this point, innovative behavior with the support of the leader can also increase task performance towards innovation. But leaders' rationality is limited because the leader's strategic thinking is a mix of rationality and insight. Therefore, strategic thinking should explore both rationality and intuition that can support business innovation (Calabrese & Costa, 2015: 24). In this context, innovation consists of a strategic combination of all resources in order to bring competitiveness to the business.

In the study conducted with 102 managers working in manufacturing companies in terms of competitive strategies, which is a fundamental issue in strategic management, it was determined that competitive strategy is the variable that determines product quality. In this context, competitive strategy can affect product quality. In the related study, it has been determined that the strategy of differentiation from competitive strategies has a positive and significant effect on product quality, and the cost leadership strategy has a regulatory effect. Accordingly, as cost leadership increases, product quality also increases (Prajogo, 2007: 76-78). Cusumano et al. (2015: 560-564) evaluated the competitive strategies of manufacturing companies according to service. In the related article, an example of Xerox company that has been applying the same service policy since 1960 is given. Xerox company does not hold real users responsible for maintenance, repair, insurance, rental costs. In this respect, the company has broader service agreements for the rental of basic computers and office machines. Therefore, the investment made in the service determines the position of the product in the market. In this context, the quality and diversity of the service can give businesses a competitive advantage. In addition, it can be stated that strategic leaders and managers turn to product and service innovation to gain competitive advantage and ensure the permanence of innovation with strategic decisions.

Makri and Scandura (2010: 83), in their study investigating the effect of creative CEO leadership on innovation in high-tech companies, found that creative and operational leadership behaviors were associated with innovation quality, but creative leadership behaviors were more effective in using science in innovation. At this point, innovation is a planned and scientific process under the coordination of the leader and is based on teamwork.

Strategic leadership focuses on multifunctional tasks that are inherently uncertain and complex in order to improve firm performance and harmonize the internal and external environment. Strategic leadership consists of six practices. These are estimation, challenge, interpretation, decision making, alignment and learning (Quansah et al., 2022: 1309). Elenkov, Judge, and Wright (2005: 665) found that strategic leadership behaviors have a strong positive effect on both product-market and administrative innovations. Chang, Bai and Li (2015: 24) investigated the impact of leaders on product and process innovation in China. One of the research results is that the ability to acquire knowledge strengthens the positive relationship between transactional leadership and product innovation. Based on the literature, the first and second hypotheses of the research are as follows:

H_1: Strategic leadership effects product innovation positively and significantly.

H_2: Strategic leadership effects service innovation positively and significantly.

2.3.The Moderator Role of Perception of Organizational Support

The perception of organizational support is an important variable for the organization to reach its goals and is the psychological contract that the employee has made with the organization (Aselage & Eisenberger, 2003: 491). By providing the necessary organizational support in this contract, employees focus on their work with a positive work attitude. This situation creates mutual cooperation between the organization and the employee. Organizational support, which includes the mutual norm in the employee-employer relationship, is expressed by the Organizational Support Theory. If employees believe that the organization supports them, they usually contribute more to the organization to respond to this support. Perceived organizational support is the role of the organization for constructive reciprocity, and positive behaviors of employees take place against it. According to Social Exchange Theory, employees tend to have more organizational commitment, contribution, perception of organizational support, and less avoidance. For this reason, when employees' perceptions of organizational support increase, they feel obliged to contribute to success and help the company reach its goals (as cited in Shehzad et al., 2022). In a study conducted with 98 employees working in a food business, it was determined that while superior support and colleague support are factors that increase organizational support, superior support affects the perception of organizational support more than colleague support (Yüksel, 2006: 27). In this context, with the expression of organizational support, the management support can be understood as the leader's technical,

financial and intellectual support, guidance and contribution can enable the employees to work with a goal-oriented and faith. There may be positive changes in the career of an employee who receives support from the leader. Based on the relationship between organizational support and career satisfaction, if businesses try to improve their managers, managers also show more commitment to their businesses and develop their employees more (Tansky & Cohen, 2001: 285). Supporting innovation is the premise of creativity and innovative behavior. Individuals who receive strong support for innovation live in a psychologically safe climate that allows and encourages them to propose, discuss and develop new ideas (Devloo et al., 2016: 516). Accordingly, when employees are supported by the leader, they will gain more autonomy and freedom in their innovative behaviors (Foss, Woll & Moilanen, 2013). In this context, it may be possible for leaders to ensure the success of innovative products and services by directing their employees with the right decisions through knowledge, experience and abilities.

Employees develop perceptions of the value given by the organization and overall views of how leaders value their contributions and care about their well-being. Since supervisors are the representatives of the organization with the responsibility of directing and evaluating the performance of their subordinates, employees accept the positive or negative actions of their supervisors as an indicator of organizational support (Rhoades & Eisenberger, 2002: 700). In this context, employees perceive leader support as organizational support.

As a result of Ahmed and Nawaz's (2015: 867) study, perceived organizational support was largely influenced by fairness, growth opportunities, leader support and colleague support, and it also significantly affected employee engagement, job satisfaction and organizational commitment. On the other hand, it has been determined that it affects organizational citizenship behavior and intention to leave. As a result, manager and leader support can be one of the antecedents of perceived organizational support.

The relationship between leadership and innovation has been included in many studies (Slimane, 2015; Vaccaro et al., 2012; Agbor, 2008; Etro, 2004). However, no comprehensive study has been found in the literature examining the regulatory role of organizational support in the effect of strategic leadership on product and service innovation. At this point, product and service innovation can stimulate the sales of the business and increase its profitability. At the same time, since the business develops in a different field with new products and services, it can stimulate the economy by creating employment and provide added value to the sector. Since the success rate of innovation is a risky and costly process, many

managers may not take this risk for their business. For this reason, a good strategy should be applied in the implementation of an innovative idea. The concepts of strategy and innovation intersect at the point of predicting the future and forward-looking decisions. Strategic leaders are a guiding and motivating factor for employees to adopt the aim of innovation and work efficiently. On the other hand, the innovation success of any business cannot be realized without support. Therefore, perceived organizational support can provide the necessary resources to employees in this difficult process. The moderator effect of organizational support has been examined in various studies in the literature. Shehzad, Zhang, Alam, Cao, Boamah and Ahmad (2022) showed that perceived organizational support improves the effects of collective culture on knowledge management processes and has a moderator effect. In the study of Cheng and Yi (2018), with 355 hotel employees, the moderating effect of perceived organizational support on the relationship between job resourcefulness, burnout and job satisfaction was determined. Qi et al. (2019: 9), identified the mediating role of organizational support in the effect of inclusive leadership on the innovative behavior of employees. When employees perceive that ideas, technologies and processes are more covered by leaders in the study, they feel more valuable and important, and thus their innovative behavior increases. In a way, the leader's appreciation of employees, valuing their ideas and increasing their participation in the work positively affect innovation. Based on the literature, the third and fourth hypotheses of the research are as follows:

H_3: Perceived organizational support has a moderator role in the effect of strategic leadership on product innovation.

H_4: Perceived organizational support has a moderator role in the effect of strategic leadership on service innovation.

Based on the research hypotheses, the model of the research is shown in Figure 1:

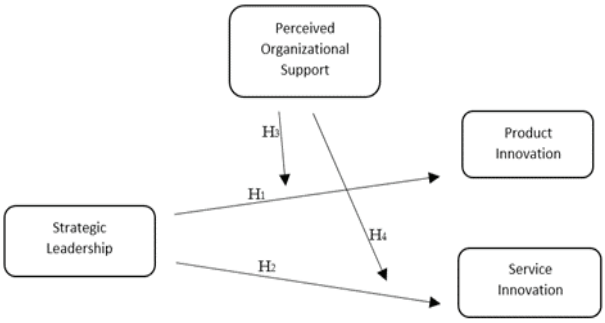

Figure 1. *Model of the Research*

3.METHOD

3.1. Scales of the Research

The first part of the questionnaire consists of questions about gender, education, position, marital status and age to measure demographic infor

mation. 283 people participated in the survey. 45% of the participants (127 people) are women and 55% (156 people) of the participants are men. 65% of the participants (184 people) have a university graduate.15% of the participants (42 people) have a master's degree. 10% (28 people) of the participants are doctoral graduates. The remaining participants (10% of the participants) are vocational high school graduates. 55% of the participants (156 people) consist of middle and senior employees. 40% (113 people) of the remaining participants are civil servants. 5% of the participants are security personnel. 62% of the participants (175 people) are married. The average age of the participants is 36.

In the second part of the questionnaire, a questionnaire consisting of twenty-eight questions was used to measure the perception of strategic leadership, product innovation, service innovation and perceived organizational support. In order to measure strategic leadership in the survey, the strategic leadership scale consisting of 10 questions used by Ergen (2011) was used. The Cronbach Alpha coefficient of the scale was determined as 0.62. One of the scale questions is "I encourage my subordinates to participate in decision making". In this study, the Cronbach Alpha coefficient of the strategic leadership scale was determined as 0.97.

In order to measure product innovation in the questionnaire, the product innovation scale consisting of 5 items and one dimension used by Guijarro (2001), Vila and Kuster (2007) was used. The Cronbach Alpha coefficient of the scale was determined as 0.75. One of the scale questions is "The product has perceived technological sophistication". In this study, the Cronbach Alpha coefficient of product innovation is 0.94. The 5-item service innovation scale used by Avlonitis et al.(2001), Hsu et al. (2018) in their studies was used to measure service innovation in the survey. The Cronbach Alpha coefficient of the scale was determined as 0.88. One of the scale questions is "There are extended service lines available". In this study, the Cronbach Alpha coefficient of service innovation is 0.970. Eisenberger et al.'s (1986) perceived organizational support scale, consisting of 8 items and one dimension, was used to measure perceived organizational support in the questionnaire. The Cronbach Alpha coefficient of the scale was determined as 0.87. One of the scale questions is "The organization is proud of my achievements at work". The Cronbach Alpha coefficient of perceived organizational support in this study was 0.972. A 5-point Likert scale was used in the study, and the answers were scored from strongly disagree (1) to strongly agree (5).

3.2. The Universe and Sample of the Research

The universe of the research consists of 300 employees of a large-scale enterprise operating in Istanbul, producing computers and by-products and having technical service. An online questionnaire was distributed to the participants and feedback was received from 290 employees. After removing seven incorrect and incompletely filled questionnaires from the returned questionnaires, the remaining 283 questionnaires constitute the sample of the research. Accordingly, the rate of return to the questionnaires is 0.94. The size of the sample was reached through the formula below (Köse, 2018: 76).

$n_0 = (t^2 X\ p.q) / d^2$; $n_0 = 1.96^2 X\ 0.25 / 0.05^2$; $n_0 = 0.9604 / 0.0025$; $n_0 = 384.16$

$n = n_0 / [\ 1 + (n_0\ 1) / N\ ]$; $n = 384.16 / [1 + (384.16 – 1) / 300]$; $n = 384.16 / [1 +383.16 /300]$; $n = 384.16/2.2772$; $n = 168,6$

Estimated deviation value of the population was taken as d = 0.05, confidence level (1 – α) = 0.95. The t value corresponding to the confidence level in the table is 1.96. The p value was taken as 0.5 to give the largest variance for the appropriate sample size. Accordingly, the sample size (168.6) was calculated as approximately 169 people. In this study, 283 samples were included in the analysis, which is above the required number of samples. Research data were collected between 1 July 2019 and 1 December 2019.

4. METHODOLOGY

The aim of this research is to examine the moderator role of perceived organizational support in the effect of strategic leadership on product and service innovation. For this reason, a survey study was conducted in a company operating in the field of technology in Istanbul. The universe of the research consists of 300 employees of a large-scale enterprise operating in Istanbul, producing computers and by-products, and having technical service. An online questionnaire was distributed to the participants. After removing seven incorrect and incompletely filled questionnaires from the returned questionnaires, the remaining 283 questionnaires constitute the sample of the research. Survey tool and convenience sampling method were used in the research. Research data were analyzed with SPSS 23 program and multiple regression analysis.

The reason why the sample was chosen from the technology sector is that they implement the innovation process and produce innovative products. Businesses in the field of technology often innovate products and services. In this context, the type of innovation can be radical or incremental according to customer demand and market conditions.

The questionnaire consists of two parts, including demographic and scale questions. The first part of the questionnaire consists of questions about gender, education, position, marital status and age to measure demographic information. The second part of the questionnaire consists of twenty-eight questions to measure the perception of strategic leadership, product innovation, service innovation and perceived organizational support. The questionnaire was evaluated with a five-point Likert scale.

5. FINDINGS

5.1.Validity and Reliability Analysis of Scales

Exploratory factor analysis was performed for the validity of the scales used in the study. Cronbach Alpha values were calculated to determine the reliability. SPSS 23 Program was used in the analysis of the research data. The data are normally distributed. The Kaiser-Meyer-Olkin (KMO) test was used to determine whether the sample size was sufficient for factor analysis. The KMO values of the scales were found to be 0.50 above the accepted threshold value (Field, 2000). While examining the factors, those with eigenvalues greater than 1 were taken as the basis. Cronbach Alpha values of 0.70 and above indicate the reliability of the scales (Kalaycı, 2008). In this study, Cronbach Alpha values were found to be over 0.70. The results of the validity and reliability analyzes of the research scales are shown in Table1, Table 2 and Table 3.

Table 1. *Factor and Reliability Analysis of the Strategic Leadership Scale*

Scale	Scale Items	Factor Load	Cronbach Alpha Coefficient (α)
Strategic Leadership (SL)	SL1	0,911	0,970
	SL2	0,887	
	SL3	0,877	
	SL4	0,884	
	SL5	0,845	
	SL6	0,882	
	SL7	0,905	
	SL8	0,876	
	SL9	0,914	
	SL10	0,920	
Eigen Value			7,928
Total Variance Explained			%79,27
KMO Value			0,946
Bartlett Test of Sphericity			X^2= 3418,690; p=0,000

In Table 1, the factor loads of strategic leadership vary between 0.882 and 0.920. The eigenvalue of strategic leadership is 7,928 and the eigenvalue is greater than 1. The total variance explained by the strategic leadership is 79.27%, and the Cronbach Alpha (α) is 0.970.

Table 2. *Factor and Reliability Analyzes of the Perceived Organizational Support Scale*

Scale	Scale Items	Factor Load	Cronbach Alpha Coefficient (α)
Perceived Organizational Support (POS)	POS1	0,840	0,972
	POS2	0,901	
	POS3	0,935	
	POS4	0,895	
	POS5	0,936	
	POS6	0,927	
	POS7	0,950	
	POS8	0,938	
	Eigen Value		6,710
	Total Variance Explained		%83,87
	KMO Value		0,930
	Bartlett Test of Sphericity		X^2= 3228,175; p=0,000

In Table 2, the factor loads of perceived organizational support are between 0.840 and 0.950.The eigenvalue of strategic leadership is 6,710, and eigenvalue is greater than 1. The total variance explained by the strategic leadership is 83.87%, and the Cronbach Alpha (α) is 0.972.

Table 3. *Factor and Reliability Analyzes of Product and Service Innovation Scales*

Scale	Scale Items	Factor Load	Cronbach Alpha Coefficient (α)
Product Innovation (PI)	PI1	0,925	0,949
	PI2	0,919	
	PI3	0,907	
	PI4	0,894	
	PI5	0,916	
Service Innovation (SI)	SI1	0,943	0,970
	SI2	0,958	
	SI3	0,941	
	SI4	0,928	
	SI5	0,959	
	Product Innovation		
	Eigen Value		4,473
	Total Variance Explained		%89,46
	KMO Value		0,919
	Bartlett Test of Sphericity		X^2= 1890,236; p=0,000
	Service Innovation		
	Eigen Value		4,163
	Total Variance Explained		%83,25
	KMO Value		0,895
	Bartlett Test of Sphericity		X^2= 1391,865; p=0,000

In Table 3, product innovation factor loads are between 0.894 and 0.925. The eigenvalue of product innovation is 4,473, and the eigenvalue is greater than 1. The total variance explained by product innovation is 89.46%, and the Cronbach Alpha (α) is 0.949. In Table 3, service innovation factor loads are between 0.928 and 0.959. The eigenvalue of service innovation is 4,163, and the eigenvalue is greater than 1. The total variance explained by service innovation is 83.25%, and the Cronbach Alpha (α) is 0.970.

5.2. Hypothesis Tests

In order to test the relationships between dependent variables (product and service innovation) and independent variable (strategic leadership) and moderator variable (perceived organizational support) in the research model, correlation and multiple regression analysis were performed. The correlation table showing the direction of the relationship between all variables is shown in Table 4.

Table 4. *Correlation Table*

Variables	SL	POS	PI	SI
SL	1	0,333**	0,420**	0,405**
POS	0,333**	1	0,826**	0,783**
PI	0,420**	0,826**	1	
SI	0,405**	0,783**		1
sd	0,982	0,928	0,845	0,866
Mean	4,024	4,274	4,279	4,224

*n= 283; *p<0,05,**p<0,01*

According to the data in the correlation table in Table 4, strategic leadership and perceived organizational support are moderately and positively related (r=0.333**; p<0.01), strategic leadership and product innovation are moderately and positively related (r= 0.420**; p<0.01), strategic leadership and service innovation are moderately and positively correlated (r=0.405**; p<0.01), perceived organizational support and product innovation are highly and positively correlated (r =0.826**; p<0.01), perceived organizational support and service innovation were highly and positively related (r=0.783**; p<0.01).

Before starting the analysis, the normal distribution of the research data was determined. In a normal distribution, the skewness and kurtosis coefficients should be between -1 and 1 (Tabanchnick & Fidell, 2013), or if the skewness coefficient is between -1 and 1, the kurtosis coefficient should be between -2 and 2, if the kurtosis coefficient is between -1 and 1, the skewness coefficient should be between -2. It is stated that it can

be in the range of 2 to 2 (George & Mallery, 2001). Among the research variables, the control of the multilinear problem was made. In this context, VIF values are considered. If VIF (Variance Inflation Factor-Variance Increase Factor) is equal to or greater than 10, it indicates that there is a multicollinearity problem (Büyükuysal & Öz, 2016: 111). However, the existence of autocorrelation between the data was determined by the Durbin-Watson coefficient. Accordingly, it is desirable that the Durbin-Watson coefficients be between "1.50 and 2.50" (Uslu & Aktaş, 2017: 149). Both statistical values were checked and it was determined that there was no problem and regression analysis was started.

Table 5. *The Impact of Strategic Leadership on Product Innovation*

Model 1	β	Standart Error	t	p	95%Confidence Interval Lower-Upper Limit		VIF
Constant		0,219	12,460	0,000	2,302	3,167	
Strategic Leadership	0,444	0,053	7,321	0,000	0,281	0,488	1,000
F Statistic (p value)				53,604	(0,000)		
R^2					0,197		
Adjusted R^2					0,194		

Dependent Variable: Product Innovation

Durbin-Watson = 2,495. The standardized values of the variables are taken in the table.

In Table 5, Model-1 is statistically significant (R^2= 0.197; F=53,604; p=0.000). As a result of the analysis, strategic leadership positively and significantly affected product innovation (β= 0.444; t= 7.321; p=0.000). H_1 hypothesis was supported.

Table 6. *The Impact of Strategic Leadership on Service Innovation*

Model 2	β	Standart Error	t	p	95% Confidence Interval Lower -Upper Limit		VIF
Constant		0,199	13,996	0,000	2,397	3,181	
Strategic Leadership	0,405	0,048	7,416	0,000	0,262	0,451	1,000
F Statistic (p value)				55,001	(0,000)		
R^2					0,164		
Adjusted R^2					0,161		

Dependent Variable: Service Innovation

Durbin-Watson = 2,401. The standardized values of the variables are taken in the table.

In Table 6, the model is statistically significant (R^2= 0.164; F=55.001; p=0.000). The analyzes showed that strategic leadership positively and significantly affects service innovation (β= 0.405; t= 7.416; p=0.000). H_2 hypothesis was supported.

In order to measure the moderator role of perceived organizational support in the effect of strategic leadership on product and service

innovation, multiple regression analysis was performed in SPSS.23 program. In order to solve the multicollinearity problem that may arise in the variables, the independent variable and the moderator variable were centralized (Aiken & West, 1991; Cohen & Cohen, 1983), the interaction value was found as standardized. Regression data were analyzed at 95% confidence interval.

Table 7. *The Moderator Role of Perceived Organizational Support in the Effect of Strategic Leadership on Product Innovation*

Model 3	β	Standart Error	t	p	95% Confidence Interval Lower	-Upper Limit	VIF
Strategic Leadership	0,197	0,037	5,395	0,000	0,125	0,270	1,301
Perceived Org. Support	0,820	0,039	21,041	0,000	0,744	0,897	1,475
Interaction Variable (Strategic Leadership×Perceived Organizational Support)	0,107	0,025	2,558	0,011	0,015	0,113	1,693

F Statistic (p value)	230,530 (0,000)
R^2	0,713
Adjusted R^2	0,709
Dependent Variable: Product Innovation	
Interaction Result R^2	
Change in R^2	0,007
F	6,546
p	0,01

Durbin -Watson= 2.282

The regression model for the moderator effect of perceived organizational support in Table 7 is statistically significant (Model-3: R^2=0.713; F=230.530; p=0.00). The statistical significance of the regulatory role of the interaction variable in Model-3 (β= 0.107; p=0.011; p<0.05) in the relationship between strategic leadership and product innovation was determined, and the H_3 hypothesis was supported.

Table 8. *The Moderator Role of Perceived Organizational Support in the Effect of Strategic Leadership on Service Innovation*

Model 4	β	Standart Error	t	p	95% Confidence Interval Lower	-Upper Limit	VIF
Strategic Leadership	0,193	0,035	4,715	0,000	0,097	0,237	1,301
Perceived Org. Support	0,772	0,038	17,738	0,000	0,595	0,743	1,475
Interaction Variable (Strategic Leadership×Perceived Organizational Support)	0,095	0,024	2,030	0,043	0,001	0,097	1,693

F Statistic (p value)	166,549 (0,000)
R^2	0,642
Adjusted R^2	0,638
Dependent Variable: Service Innovation	
Interaction Result R^2	
Change in R^2	0,005
F	
p	0,043

Durbin -Watson= 2,134

The regression in Table 8 is statistically significant (R^2=0.642; F=166.549; p=0.00). As a result of the analysis, the moderator role of the interaction variable (β= 0.095; p=0.043; p<0.05) in the Model-4 in

the relationship between strategic leadership and service innovation was statistically significant and the H_4 hypothesis was supported.

6. CONCLUSION

In today's conditions, the success of businesses depends on the application of innovation (Mc Adam & Keogh, 2004). Globalization, destructive competition, technological developments and rapid changes in consumer preferences require innovation. J. Schumpeter (1934), who introduced the concept of innovation to the literature, defined innovation as the reflection of a new product, a new production method, a new market, a new source of supply or new outputs of a new organizational structure. Therefore, innovation is important in terms of productivity of enterprises as well as providing the development of the economy. New products, new product line, functional new services, different designs can be counted as innovations. In addition, innovative solutions in after-sales service in sectors such as consumer durables, technology and automotive can increase customer satisfaction with products and services.

Good management ensures that the business maintains its existence and is efficient. Businesses, one of the basic factors of the economy, need managers who think strategically. Because technological developments and market competition, globalization and brand process, and the selection of a qualified employee's job lead managers to think about the next move. Strategic management provides the company with competitive ability in line with the business purpose. Innovation also includes strategy. Innovation is a process that is flexible and adaptable to change, takes risks and includes fault tolerance. So, can a manager with strict adherence to rules and access to professional networks ensure the success of innovation? The strategic leader can see innovation as a part of the strategic plans created in line with the purpose and mission of the enterprise. Studies have shown that managers in positions of authority with access to strong professional networks and corporate resources are more active innovators (Jolles et al., 2016: 424). In this context, the manager may accept an innovative system or model depending on whether it benefits the institution.

Innovation is an economic concept that affects business profitability and efficiency. After the strategic environmental analysis, it is discussed whether to continue with the imitation product or the original product in order for the business to survive. At this point, unopened markets with the blue ocean strategy, radical product or service innovation can be preferred to stimulate future demand and create demand. Innovation has an impact on business performance, productivity, and creating new markets with technology and business model innovation. Now, instead of linear models in innovation, systematic and learning network models

with a self-renewing, flexible and learning structure are used (Emiroğlu, 2018: 50). Therefore, innovation progresses by learning. The success of innovation primarily occurs when managers believe in innovation. The organizational support provided with the innovation culture to be created by the manager increases the success of innovation. The success of service innovation depends on factors such as focusing on new service strategies related to business strategies, using communication channels actively in the development of new ideas, originality, and employing multifunctional organization members in the organization. At this point, customers determine the value and quality of the product and service (Yurt, 2021:76).

Innovation performance of enterprises Blue Ocean Strategy, Competition Strategy Theory; Innovation abilities of employees can be explained by Leader-Member Interaction Theory and Self-Efficacy Theory. Leader support (Akkoç, Turunç & Çalışkan, 2011), leadership style (Jung, 2001), perceived organizational support (Yuan & Woodman, 2010) are counted among the organizational and managerial antecedents of innovation and performance. In this context, it is possible for employees to transform their skills and knowledge into successful innovative products and services with the organizational support they perceive.

According to the result of the first hypothesis test of this research, in which the moderator role of perceived organizational support perception in the effect of strategic leadership on product and service innovation was examined, strategic leadership positively and significantly effected product innovation and H_1 hypothesis was supported. According to this result, the strategic leader's decisions and thoughts increase product innovation. This conclusion is supported by the studies of Chang, Bai and Li (2015), Makri and Scandura (2010), Elenkov, Judge and Wright (2005). As a result of the second hypothesis test of the research, strategic leadership positively and significantly effected service innovation and H_2 hypothesis was supported. According to this result, the strategic leader's decisions and thoughts increase service innovation and the result is supported by the Lightfoot and Gebauer (2011) study. As a result of the third hypothesis test of the research, the moderator role of perceived organizational support in the relationship between strategic leadership and product innovation was determined and H_3 hypothesis was supported. According to this result, perceived organizational support regulates the effect of the strategic leader on product innovation. Therefore, employees can positively reflect the support they receive from managers to their work. Thus, more efficient results can be obtained from innovation with the adoption of the common goal of the employees. This idea is similar to the study results of Qi et al. (2019), Foss et al. (2013). As a result of the fourth hypothesis test of the research, the regulatory role of perceived organizational support in

the relationship between strategic leadership and service innovation was determined and H_4 hypothesis was supported. According to this result, perceived organizational support regulates the effect of the strategic leader on service innovation. At this point, employees accept the leader's positive approach to themselves as an indicator of organizational support (Yüksel, 2006; Rhoades & Eisenberger, 2002). Therefore, perceived organizational support is affected by managerial support (Ahmed & Nawaz, 2015). Is product or service innovation possible when employees do not perceive organizational support? Many studies confirm that innovation can only solve an existing problem or create a useful product/service with good motivation. The fact that the leader is the first perceived example of the employees at the point of organizational support shows that the human being, who is a psychological being, needs motivation.

This study provides important contributions to the management and innovation literature. In this study, a positive and significant effect of the strategic leader on product and service innovation was determined. In addition, it has been determined that perceived organizational support plays a moderator role in this effect. First of all, strategic leaders are a motivating force in the development of competitively important products and services, and in directing qualified employees towards the goal of innovation. At the same time, the leader is a person who turns the mistakes in the innovation process of the employees into success, creates an innovation culture and climate, takes an active role in teamwork, has a high impact and is taken as a model. In addition, employees can produce products or services in a more motivated and target-oriented manner with the organizational support they perceive. The leader should adopt the strategic importance of innovation to subordinates through benchmarking, practical examples and group work. When creativity and predictive ability in innovation are combined with the aim of providing solutions to problems and facilitating life, they emerge as products of different designs or services with improved benefits. At this point, it is possible for managers to extend the life of products and services by combining innovation with strategy. Managers can develop their innovation strategies towards employee talents, environmental opportunities and increase the impact of innovation. Businesses most commonly use strategies and policies invented in innovation. Managers should communicate the innovation strategy to subordinates in HR meetings, innovation teamwork and training and be able to apply different innovation strategies (basic, derivative, secondary, etc.) situationally.

Since innovation is a risky process, not every manager looks at innovation moderately. However, this perception has evolved today. Businesses have started to use nanotechnology, key technology, basic technology and pioneering technologies for competition. While technology

provides quality services and products above consumer expectations, it provides economic production opportunities. Thus, business resources are evaluated more efficiently. When the constructive and predictive decisions of the managers regarding the external environment opportunities are combined with the core capability of the business, innovation success is inevitable. In terms of the importance of this research, the strategic decisions of the leader in innovation success and process should be included with organizational support. Undoubtedly, not every business has the means to successfully complete this difficult process with its financial and technological infrastructure. However, the leader's environment, communication, transformation and adaptation to change are effective in the management of the product life cycle. In this context, the strategic leader aims to discover and develop employee talents in order to use an effective innovation strategy, which technology to use, and to turn new product development into a competitive advantage. For this purpose, it makes systematic decisions, sees the organization as a whole, collects, analyzes and evaluates information as an open system.

As a result of this research, it is recommended that managers make a business plan in line with the abilities of their employees while making strategic decisions. Managers must use "inquiry, observation, networking, experimentation and association competencies" for a successful innovation process. Creative and productive thinking of employees can be achieved through idea generation meetings, seminars, technology-based trainings and brainstorming techniques for the design, creation and implementation of future products and services. Managers should not only be good mentors, but also show their support to employees by participating in teamwork. Employees should not be pressured to "never make a mistake". In order for employees to think freely and flexibly, a culture of innovation should be created. At this point, first of all, the manager should believe in innovation. This research was carried out with the employees of an organization that has a wide range of products in the field of technology and has a different perspective in the field of service. The limitation of the study is that it was conducted only in the technology sector. In future research, it is recommended to examine innovation in different sectors that can be applied both on a product basis and on a service basis.

AUTHORS' DECLARATION:

This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support. There is no need to obtain ethical permission for the current study as per the legislation. Because this research data were collected in 2019. According to the official publication procedure, ethics committee approval is required for studies in 2020 and beyond.

AUTHORS' CONTRIBUTIONS:

All processes including conceptualization, original draft writing, editing, data collection, methodology, formal analysis, final approval and accountability were done by the corresponding author.

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