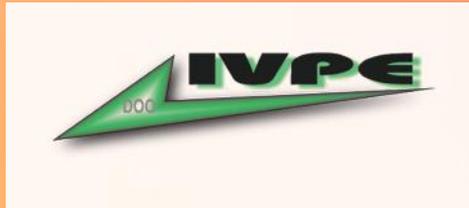


ADMINISTRATIVE AND ECONOMICS SCIENCES

Theory, Current Researches and New Trends

Assoc. Prof. Dr. Yüksel Akay Unvan

ADMINISTRATIVE AND ECONOMICS SCIENCES



ISBN: 978-9940-46-037-2



ADMINISTRATIVE
AND
ECONOMICS SCIENCES
Theory, Current Researches and New Trends

Editor
Assoc. Prof. Dr. Yüksel Akay UNVAN

Editor
Assoc. Prof. Dr. Yüksel Akay UNVAN

First Edition •© October 2020 /Cetinje-Montenegro

ISBN • 978-9940-46-037-2

© copyright All Rights Reserved

web: www.ivpe.me

Tel. +382 41 234 709

e-mail: office@ivpe.me



Cetinje, Montenegro

PREFACE

Dear academicians, we continue to produce during this delicate period. We would also like to thank the authors and readers who made this book possible during the Covid-19 process. This epidemic has shown that it is important that the economy is as strong as the immune system. In order to achieve this, we need different approaches and solutions related to the financial sector. These works also serve this purpose as a result. Whether theoretical or practical studies are very valuable in this sense. The works in the book have different titles, but they are fragments of a whole. The economy is at the point of determining the fate of the countries. These studies are almost an early warning system for what needs to be done before a crisis environment occurs. We hope to contribute to the literature and our readers to the extent we want.

Best regards.

CONTENTS

PREFACE	I
CONTENTS	II
REFEREES	V
CHAPTER I	
Ayşegül GÜNGÖR	
RED FLAGS IN IDENTIFYING PURCHASING FRAUD AND CASE EXAMPLES	1
CHAPTER II	
Duygu ŞENGÜL ÇELİKAY	
THE EFFECT OF NEW REGULATIONS ON PARTICIPATION BANKS' ACCOUNTING AND AUDITING PRACTICES IN TURKEY	17
CHAPTER III	
Leyla İŞBİLEN YÜCEL	
BASICS OF CONJOINT ANALYSIS	33
CHAPTER IV	
M. Burak ERTURAN	
FORECASTING AIRLINE PASSENGER AND FREIGHT FLOW: A COMPARISON OF HIERARCHICAL TIME SERIES APPROACHES	53
CHAPTER V	
Yüksel Akay UNVAN	
A SENTIMENT ANALYSIS OF TWITTER DATA FOR PREDICTING STOCK MARKET PRICE	65
CHAPTER VI	
H. Işıl ALKAN	
MOST WOMEN AT (EQUALITARIAN) WORK: WHAT IS THE SECRET OF NORDIC SUCCESS? LESSONS FOR DEVELOPING WORLD	77

CHAPTER VII

Neslihan ÇELİK

“AFFORDABLE HOUSING” APPROACH AND ECONOMIC POLICIES91

CHAPTER VIII

Pınar KARAHAN-DURSUN

DOES FOREIGN DIRECT INVESTMENT CONTRIBUTE CO₂ EMISSIONS? REVISITING THE POLLUTION HAVEN HYPOTHESIS FOR TURKEY111

CHAPTER IX

Yasemin DUMRUL

OPTIMAL SIZE OF GOVERNMENT AND ECONOMIC GROWTH: AN EMPIRICAL ANALYSIS OF THE ARMEY CURVE IN TURKEY.....130

CHAPTER X

Kutay MUTDOĞAN

THE ROLE OF THE DESIGN CONCEPT WITHIN DESIGN INNOVATION: A CASE STUDY FROM TURKISH CONSUMER ELECTRONICS MARKET150

CHAPTER XI

Osman EROĞLU

THE FINANCIAL EFFECTS OF COVID-19 ON BUSINESSES IN TURKEY164

CHAPTER XII

Emrah Sitki YILMAZ

A REVIEW OF THE RELATIONSHIP OF SOCIAL MEDIA WITH EDUCATION AND ACADEMIC PERFORMANCE180

CHAPTER XIII

Gülşen Serap ÇEKEROL& Özer COŞMAN

BASIC ARTIFICIAL INTELLIGENCE APPLICATIONS IN SUPPLY CHAIN MANAGEMENT192

CHAPTER XIV

Vesile OZCİFCİ

GREEN IRONY: GREENWASHING203

CHAPTER XV

Nesrin DEMİR & Nezih Metin ÖZMUTAF

**INTERNATIONALNON-GOVERNMENTAL
ORGANIZATIONS AND HUMAN RIGHTS A RESEARCH IN
THE CITY OF IZMIR216**

CHAPTER XVI

Burcu AKDENİZ

**CAN CULTURE EFFECT SAFETY BEHAVIOR? AN
EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN
ORGANIZATIONAL CULTURE AND SAFETY CULTURE
.....237**

CHAPTER XVII

Ahmet Niyazi ÖZKER

**SYSTEMIC FINANCIAL RISK COMPONENTS IN MACRO-
PRUDENTIAL POLICIES AND STRUCTURAL
DISCREPANCY IMPACTS IN THE EU256**

CHAPTER XVIII

Fatih AKÇAY& Sevinç YARAŞIR TÛLÛMCE

**THE CASUAL LINK BETWEEN INFLATION AND BUDGET
DEFICIT IN THE G7 COUNTRIES276**

CHAPTER XIX

Hakan İNANKUL

**ANTIDOTE TO CORRUPTION IN TURKISH PUBLIC
ADMINISTRATION: ETHICAL VALUES291**

REFEREES

Prof. Dr. Abdullah Yılmaz, Anadolu University, Turkey

Prof. Dr. Kemal Öktem, Hacettepe University, Turkey

Prof. Dr. Levent Aytemiz, Bandırma Onyedi Eylül University, Turkey

Prof. Dr. Necdet Sağlam, Anadolu University, Turkey

Prof. Dr. Niyazi Kurnaz, Kütahya Dumlupınar University, Turkey

Assoc. Prof. Dr. Fahriye Merdivenci, Akdeniz University, Turkey

Assoc. Prof. Dr. Hanifi Murat Mutlu, Gaziantep University, Turkey

Assoc. Prof. Dr. Kübra Önder, Burdur Mehmet Akif Ersoy University, Turkey

Assoc. Prof. Dr. Zerrin Kılıçarslan, Kayseri University, Turkey

Assoc. Prof. Dr. Yüksel Akay Unvan, Ankara Yıldırım Beyazıt University, Turkey

Asst. Prof. Dr. Taha Emre Çiftçi, Necmettin Erbakan University, Turkey

CHAPTER I

RED FLAGS IN IDENTIFYING PURCHASING FRAUD AND CASE EXAMPLES

Dr. Ayşegül GÜNGÖR

Nisantasi University, Istanbul, Turkey,
e-mail: aysegul.gungor@nisantasi.edu.tr, Orcid ID: 0000-0001-6704-9309

1.Introduction

Nowadays, losses of assets by firms through fraud have reached substantial sums. For this reason, fraud has turned into a significant problem for firms, and work to investigate, identify and prevent fraud has gained momentum. The victims of frauds are not only firms, but also the state, creditors and investors. Therefore, the entire society is harmed. Especially fraud and irregularities emerging in financial statements affect the respectability, market value and reliability of the firm. This situation leads to significant losses especially in multinational firms. Thus, it is needed to reveal fraud and irregularities at firms and minimize risks related to fraud and irregularities.

Purchasing fraud is one of the types of fraud that are the least noticed among all fraud types but lead to the highest costs. It may be encountered in many firms, especially in public procurements, and leads to large financial losses. This study discusses the types of purchasing fraud, red flags in the purchasing and payment cycle and precautions that can be taken for risks of fraud.

2.The Concept Of Fraud And Its Elements

There is no synonymous word in the literature to be able to completely express the concept of “fraud”. However, characteristics that first come to mind when fraud is mentioned and constitute the elements of fraud are listed below. (Steve,2009:7)

- It is a covertly conducted activity.
- The person committing the fraud has the objective of gaining benefit.
- It is a deliberate act.
- The victim is deceived and harmed.

Considering these characteristics, fraud may be defined as a person gaining personal benefit by using their job or the assets and resources of the firm they work for in their personal interest. Fraud, which is in fact a crime, refers to an employee using or acquiring the resources and assets of

their firm deliberately and inappropriately and obtaining unjust gains. (Arens et al. 2006:314) There needs to be three elements for formation of fraud. These are pressure, opportunity and rationalization. These three elements are called the fraud triangle and shown in Figure 1.

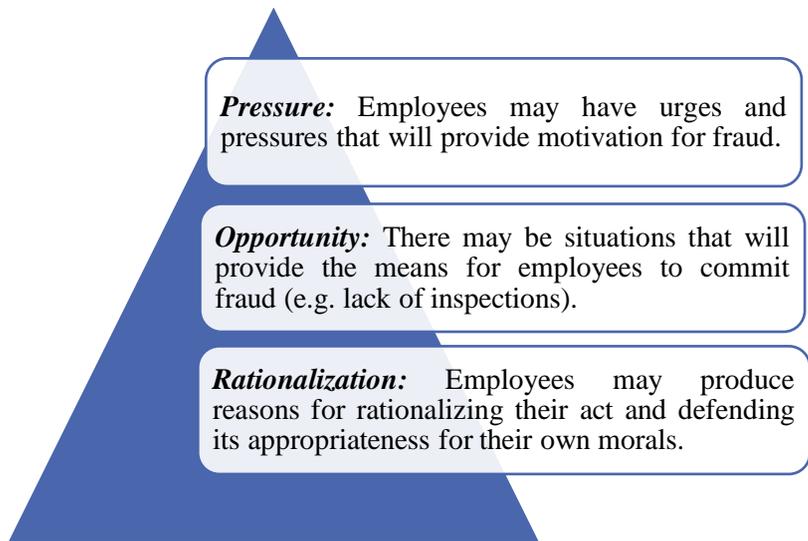


Figure 1: The Fraud Triangle

(Ramos, Michael, “Auditor’s Responsibility for Fraud Detection”,
Journal of Accountancy, January 2003,195)

Types of fraud that are encountered at firms are usually categorized under three titles. These are: Asset Misappropriation, Corruption and Financial Statement Fraud. According to the 2020 report by ACFE, types of fraud based on frequency of encounter and median loss are shown in Table 1 (ACFE, 2020: 10). Asset misappropriation, which involves an employee stealing or misusing the employing organization’s resources, occurs in the vast majority of fraud schemes (86% of cases). However, these schemes also tend to cause the lowest median loss at USD 100,000 per case. In contrast, financial statement fraud schemes, in which the perpetrator intentionally causes a material misstatement or omission in the organization’s financial statements, are the least common (10% of schemes) but the costliest category of occupational fraud. The third category, corruption—which includes offenses such as bribery, conflicts of interest and extortion—falls in the middle in terms of both frequency and financial damage. These schemes occur in 43% of cases and cause a median loss of USD 200,000. As some fraud cases involve multiple types, the sum of the percentages for a year exceeds 100%.

Table 1. Fraud Types and Costs to Firms According to the Report by ACFE

Categories of Fraud	Percentage of Cases	Median Loss
Asset Misappropriation	86%	USD 100,000
Corruption	43%	USD 200,000
Financial Statement Fraud	10%	USD 954,000

(Source: ACFE, 2020:10)

Another categorization regarding types of fraud is as follows:

Table 2: Groups of Fraud

Type of Fraud	Victim	Perpetrator	Explanation
Employee Fraud	Employer	Employees	Employee commits theft.
Management Fraud	Financial Statement Specialists	Top Managers	Financial Statements are misreported.
Investment Fraud	Investors	Individuals	Money is invested into the investment.
Sales Fraud	Purchasing Firms	Vendors	Prices are spiked up, money is obtained without delivery.
Customer Fraud	Selling Firms	Customers	The vendor is deceived.

(Source: Bozkurt,2009:.65)

As our study discusses the topic of “purchasing fraud” among fraud groups, other fraud groups are listed only as main titles.

3.Purchasing Fraud

Purchasing fraud is one of the types of fraud that are the least noticed among all fraud types but lead to the highest costs. As such fraud cases

have a damaging role on the image of the firm, they are usually not disclosed. Such types of fraud are usually committed in the form of the employee agreeing with a supplier from outside and purchasing undelivered goods without documents or with counterfeit documents. Purchasing fraud also includes low pricing, incomplete good or part deliveries, price fixing, bid rigging and product changing.

According to the 2020 report of ACFE, among a total of 1,875 fraud cases categorized based on firm departments, 96 took place at the purchasing department. In the distribution of purchasing fraud, billing fraud takes the first place, constituting 22% of all cases. The average cost of the aforementioned purchasing fraud cases was identified as approximately USD 200,000 (Source: ACFE, 2020:10)

The main types of purchasing fraud are as follows:

- Bribery and Kickback from Suppliers during the Purchasing Process
 - Purchasing Fraud Committed with Proponent Vendors
 - Purchasing with Firm Resources for Personal Use
 - Conflict of Interest
 - Phantom Vendors
 - Purchasing Fraud Committed by Creating False Invoices in the Name of Non-Proponent Vendors
 - Split Purchasing

3.1. Bribery And Kickback From Suppliers During The Purchasing Process

Bribery is defined as acceptance of a non-standard good to gain interest or the exchange of money or other benefits between the person providing the good and service and the employee for obtaining illegal information. (Uzunöz,2006:31) Bribery does not have to be in monetary form. Bribes may be received, for example, in the form of meeting one's travel costs or giving one valuable gifts. Bribery involves acquisition or provision of a value for a future situation that is desired to happen or for affecting a procedure. (Coenen;2008)

Considering in terms of firm officials, bribery is covert provision or acquisition of something of value to affect a commercial decision. The main factor in this act is that this operation does not occur in the case that the owner or top management of the firm in question knows about it. For reasons such as to preserve their existing customers, gain new customers, sell their defective products, sell their products at a higher price, firms may

resort to giving bribes, gifts and kickback to the employees and managers of other firms that carry out purchasing. In this case, while there is a gain on the side of the vendor and the bribe taker, the purchasing firm is on the side with losses.

Various negative effects of commercial bribery on firms may be listed. The most significant of these is that the costs of the purchasing firm increase. It is clear that a bribe given the employee of a client for the sale of a good will be reflected on the sales price of that good. This will result in the purchasing firm getting a good or raw material with a higher cost. More importantly, as the vendor will know that their good will be purchased anyway, they may include two or three times the bribe within the sales price. (Stevens, 2009:160)

Kickback is a type of bribery. It refers to a payment made for a favorable agreement to occur, and it usually emerges as a function of the process in business contracts. For example, an insurance marketer may offer to pay a certain percentage of the sales commission that they will gain in exchange of the insurance policy they sell to the risk manager of a company. (Berumen;2003) In this case, the risk manager gains personal interest as a result of the kickback they receive from the insurance marketer.

3.2. Purchasing Fraud Committed With Proponent Vendors

In purchasing fraud committed with proponent vendors, the purchasing officials or collaborators of firms and the firm making the sales act together, and fraud emerges. As a result, the firm where purchasing is made bears losses from this situation.

3.3. Purchase With Firm Resources For Personal Use

In the fraud type of purchasing for personal use, there is a question of the employee purchasing a product that is not needed by the firm for personal use or personally using the excess of a product that is needed by the firm but purchased in excess amounts. In this type of fraud, the employee makes a purchase for their own needs, gets the invoice organized in the name of the firm, and makes the payment from the firm's resources. The absence of the principle of segregation of duties at the firm and the weakness in the internal control system are perceived by the employee as an opportunity and direct the employee towards fraud.

3.4. Conflict Of Interest

Conflict of interest arises when the employee, manager or owner of a firm has a secret relation that will affect the firm negatively during any situation or procedure. While the employee benefits this secret relationship, the firm is harmed. (Coenen, 2009:156) Conflict of interest is

categorized in two ways as financial and non-financial. Financial conflict of interest involves a real or potential financial gain. Such gains involve a public official or a family member of a public official having ownership of the property or shares of a firm entering public procurements or having a duty in the firm, or accepting gifts and offers or gaining income from a second job.

Non-financial conflict of interest does not have a financial dimension. Such conflicts may arise from personal or family relations or sports, social and cultural activities. (Gençkaya,2009:4-6)

3.5. Purchasing Fraud Committed By Creating False Invoices In The Name Of Non-Proponent Vendors

In this type of fraud, the employee committing the act of fraud creates a false invoice in the name of a vendor with which the firm has a relation and receives the payment for this invoice themselves. The firm in the vendor position is not aware of this situation.

3.6. Phantom Vendors, Shell Companies

This is the type of fraud among purchasing fraud types that harms the firms most. Although there is no entry of goods to the firm, payment is made to a phantom firm with a real invoice, and the purchasing firm bears losses. In this type of fraud committed via firms known as phantom vendor or shell company, there are real vendor firms on paper, but these firms do not have any existence other than their names. The person, manager or specialist responsible for purchasing at the firm firstly finds a shell company. Although the company does not have any existence or activity in real life, it appears to be operational in the legal sense. The fraud starts by the firm making an order from the shell company, the company in the position of vendor issues and sends an invoice to the firm, and the invoice is put into the records of the firm. However, delivery of goods to the firm is not in question. When the firm receiving the invoice makes a payment to the vendor company, the fraud process is completed, and the resources of the firm are transferred to those committing the act of fraud via the shell company

3.7. Split Purchase

The split purchasing method involves purchasing specialists make purchases by dividing the purchase operations of products to be purchased into certain units for the purpose of avoiding the bidding process, continuing purchasing operations with contracted vendors involving fraud or kickback, and this way, obtaining financial gains from the purchasing process. For example, if there is a requirement to have a bidding for good and service purchases of higher than USD 30,000 at a firm, and the sum of the good or service to be purchased for the firm is USD 40,000, the

purchasing official or officials at the firm will facilitate the purchase without bidding by dividing the purchase into two USD 20,000 parts. The reason why employees resort to this method is to transform the purchasing process into financial gain in their favor. Here, the organization that is harmed will be clearly the firm conducting the purchasing operation. This is because, as a result of the purchasing operation, a low-quality product or service which has a higher price than the market may have been purchased.

4. Identification Of Purchasing Fraud And Red Flags Indicative Of Purchasing Fraud

4.1. Process Of Identifying Purchasing Fraud

Fraud identification is a difficult process, and especially the case that trusted members are suspected makes this situation even more difficult. It is easy to catch fraud by strict operational inspections. Still, most importantly, training employees on this issue is the most efficient and least costly way of reducing fraud. The purchasing department of every firm is one of the departments closest to fraud, that is, where fraud is most frequently encountered. Precautions regarding this issue have been in the agenda by both academic and occupational research.

The things that must be done in fighting purchasing fraud shortly include the following.

Step 1: Talk to the team. Get the low down on processes and approaches in use by anyone in purchasing or procurement. Find out all their data sources and tracking methods. Learn about any concerns they may have about what, why and whether they feel there is anywhere to improve.

Step 2: Examine purchase orders. Random samples or a deeper pool of forms will need to be sifted through and analyzed. Are they for legitimate orders with real vendors and prior approval?

Step 3: If purchasing order forms are constantly getting lost, or if only their copies are present, this may be perceived as an indicator of fraud. If purchasing costs are increasing although there are no extraordinary situations such as improvement of business or excessive inflation increase, the cause of this must be investigated.

Step 4: Inspect vendors. Make sure all vendors have been approved. In the case that supplier firms are very frequently changed by the purchasing department, the employees need to be asked about the reason for this. When a satisfying answer cannot be obtained, the supplier firm must be directly contacted towards identification of the problem.

Step 5: Audit the processes. Can things be done more efficiently? Are there areas you have encountered that seem primed for abuse or

embezzling? Make a note of where changes can happen and what can be improved.

Step 6: Pay attention to the noticeable behaviors and attitudes of the employees, as well as sudden changes in the financial statuses of the employees. Sudden changes in the living standards of the employee such as excessive borrowing or expensive habits may be an indicator of fraud.

4.2. Red Flags Indicative Of Purchasing Fraud

Red flags are an indicator that reveals something might be wrong without the necessary evidence. Red flags are used by auditors or other officials as an 'early warning system' in assessing fraud risk. (Bozkurt,2009:65) Red flags that are defined as indicative of fraud allow noticing of fraud and carry characteristics that are guiding for revealing fraud. Red flags regarding purchasing fraud are as follows depending on the types of fraud:

a. Bribery and Kickback

- Inexplicably favoring a certain supplier
- Inexplicable price increases
- Extraordinary volumes of purchasing
- Unnecessary and unreasonable purchases
- Constantly selecting the same supplier
- Purchasing low-quality products that are delivered late
- Close relations between public officials and suppliers
- Acceptance of inappropriate gifts of public officials
- Increase in the personal assets of public officials
- Suppliers known for commission distribution
- Presence of unnecessary intermediaries in purchases
- Directly preferring one supplier without utilizing the supplier pool
- Undocumented purchases in addition to purchasing agreements
- Purchasing official insisting on one supplier
- Purchasing official staying in the same position for long years
- Purchasing official taking too little leave or not at all

b. Fraudulent Price Offers

- Getting bids with a higher cost than projected
- Acquisition of the firm losing the bid by the firm winning the bid as a subcontractor
- Bid offers inexplicably consisting of too different or too similar sums
 - Clear connections between bidding firms (the same address, etc.)
 - Joining bids entered as a single firm by having covert agreements with other firms
 - Presence of very few firms entering bids in the sector
 - Similar offers of bid-losing firms on other jobs
 - Distant firms entering bids offering lower price than local firms
 - Presence of the same calculations and same errors in multiple bid offers
 - Firm offering a low price leaving the bid and becoming the subcontractor of the firm winning the bid
- c. Imbalanced Price Offers
 - Close relations between the purchasing official and the supplier
 - The price given for a certain good being much lower than the market price
 - Product items to be purchased being different to those in the purchase agreement
- d. After-Order Changes
 - Too frequent after-order changes
 - After-order changes not checked
 - Approval of the changes of a certain supplier by the same person
 - After-order changes being higher than the prices in agreements
 - After-order changes being very close to the upper limit
 - Purchasing employee intervening much with after-order changes
 - Insisting on after-order changes rather than re-bidding
- e. Contract Partnerships
 - Giving different prices to the same jobs

- Provision of the same invoices for different purchases by the supplier

f. Conflict of Interest

- Favoring a certain firm
- Paying high prices to the supplier
- Acceptance of high-price and low-quality purchases
- Purchasing employee preferring a certain supplier
- The address of the supplier not having a P.O. box

g. Mispricing

Inability or lateness of demonstration of cost-related documents by the supplier

A higher price in comparison to similar purchases

High profit margins

Usage of different materials to those written in agreements

Supplier failing to make discounts or paybacks

h. Exclusion of Adequate Firms from Bids

- Inclusion of fewer than normal firms in the bid
- Shorter than normal term of bidding
- Presence of extraordinary preliminary conditions
- Insufficient announcement of the bid
- Lack of transparency in the bid

i. Failure to Comply with Agreement Conditions

• Incompliance between inspection outcomes and product properties given in the agreement

- Incomplete or missing test or inspection documents
- Low quality, weak performance in the product or too many complaints about the product
- The product not meeting the expected properties in tests and inspections
- Inspector accepting gifts

- Contractor resisting inclusion of inspection-related articles in the agreement

- Contractor not having the equipment and labor required for the job

j. Inaccurate, Erroneous and Double Invoices

- Incomplete or no controls on payment receipts and invoices

- Incomplete, copied or altered documents

- Incomplete or copied job orders or delivery documents

- Provision of different invoices or documents to original invoices

- Making more payment to the vendor than the total sum indicated on the agreement or job order

- Rounded invoice payments

- Purchases of goods and services that cannot be included in the inventory or goods records of the firm based on its operations

- Suspicious or incomplete job orders for invoiced goods or services

- Similar payments invoiced at the same sums

k. False Declarations and Claims

- Incompliance between reported data and observed data or supplementary documents

- Incompliance between reports and test results or control results

- Vendor refusing or failing to provide supplementary documents

- Insufficient or altered supplementary documents

- Illogical declarations or claims when compared to industry standards or previous performance.

l. Leakage of Bid Information

- Weak control mechanism in bid procedures

- Winning offer being slightly different to the next offer or slightly under the estimations of the firm

- Acceptance of late offers

- Unnecessary extension of final offer dates

- Late offer being the winning offer

- Advisors or intermediaries being included in the bid process

- Public officials having relations to bid participants thought to be suspicious or accepting gifts

m. Bid Rigging

- Inadequate controls and offer procedures
- Display of changes in offers after purchase
- Cancellation of the winning offer due to errors and the job being opened for offers again or given to another branch
- Offers getting lost
- Agreements changing after reception of offers or someone else winning the bid by re-bidding
- Disqualification of a qualified person or organization making an offer due to questionable reasons
- Not going into re-bidding despite the lower number of offers than the minimum
- Sending offer requests to unqualified branches or those that previously refused to make an offer

n. Split Purchasing

Two or more purchases from the same branch slightly under the purchasing sum that requires a bid

Unnecessary separate purchasing procedures for related products and services

o. Phantom Vendors

- Branches whose payments have been made not being in the approved branches list or business and phone lists
- Failure to identify or confirm the location of invoiced equipment or services
- Inadequate branch-identifying information
- False or nonexistent address or phone number
- The same branch address or phone number as those of state employees
- Larger purchases following initial purchases made from the branch
- Payment without invoice

- Copied or unfamiliar supplementary documents, approval of the purchasing order or received document without an invoice

p. Changes in Product Qualities

- Difference between the definition and real appearance of the product

- Packing is unfamiliar or has incomplete information (such as lack of producing firm name)

- A product listed as new appearing to be actually used

- Frequent complaints about products and services by the user

- A malfunction in a new product

- The contractor person selecting the testing firm or conducting the tests in themselves

- Test records not showing errors or being previously modified, disposed of or cannot be found

- Materials submitted for approval or inspection not being the same as those that are used in production or manufacturing of the product

- Usage of an old or incorrectly calibrated device for approval tests

- Winning offer being clearly lower than the offers of other contractors

- Contractor being late or failing to provide the required product properties

- Contractor not making the necessary payments to sub-contractors

- Contractor getting into impoundment in other jobs or government contracts

r. Employee Change or False Calculation of Employee Wage Sums

- Requests of capacity such as education, qualification and experience for working hour contracts

- Unimportant or there is minimum requirement for the necessary position

- Appearance that state personnel choose certain individuals in hiring

- Presence of obligation of the contract holder to hire a lot of personnel fast

- Contract holder not having a control system to check the capacities of the sub-contract personnel

- Contract holder failing to provide employee resumé when requested

- Resumés not being valid, approved or clear

- Contract personnel working on different contracts and tasks belonging to other working categories

- In the case that contract personnel leave the job, their position being filled by less experienced and less qualified personnel

- The real wage of the contract employee being lower than what has been determined for that person by the branch

- Direct and indirect inexplicable fluctuations between labor wages

- More indebtedness of different personnel than offered for the contract

- Contract holder personnel very rarely requesting leave or termination

- Irregularity of working hours or their appearance as unnecessary

- Incomplete or missing personnel files

s. Purchasing for Personal Use and Resale of Purchased Product

- Extraordinary purchasing of products that are suitable for personal use or resale

- Products that are not in the inventory or records

- Purchased objects being returned to the branch without refund

- Suspicious sales of suspicious products

- Inadequacy of analyses or documents supporting need for purchasing a product

t. Changing Specification Conditions

- Only one or a few participants make an offer to the auction

- Similarity between the products and services of the provider of the winning offer and the specifications

- Clear narrowness or breadth of conditions in the specification in comparison to previous specifications

- Unusual specifications for acquired services and products

- Changes that have not been explained in the specifications of previous similar products or offers
- Too many change orders with one contract holder
- Direct usage of a new name for requirements rather than general definition
- Split purchasing so that the purchasing need stays under the sum that requires a bid

5. Discussion and Conclusions

As a consequence of elimination of economic borders, the competition environment has become swifter, and preservation of firms' existence has become important. According to the 2018 corruption report of ACFE, firms lose 5% of their total revenues as a result of corruptions. The estimated gross product of the world for 2017 was USD 79.6 trillion, and based on this ratio, it is estimated that there was a global loss of approximately USD 4 trillion due to fraud. This is why it is needed to identify and prevent in-firm corruption and fraud cases that damage firm assets to a serious extent. The way to fight against fraud and corruption passes through application of an effective internal control system that functions efficiently and presence of an inspection mechanism. Considering fraud in terms of purchasing, it is needed to identify situations that may provide an opportunity for fraud and existing weaknesses in the purchasing process and eliminate such opportunities. This requires a good analysis of the firm's operations, establishment of working procedures, foundation of internal control systems, effective application of the principle of segregation of duties, and most importantly, having knowledge about the act of fraud. Protection of firms especially from invoice fraud committed with the employee-vendor collaboration is possible by accurate implementation of preventive measures.

Consequently, to be protected from the potential harms of financial deception and fraud, it is needed to understand fraud, know about the causes of fraud, have knowledge on the characteristics of individuals who may commit fraud, examine and follow up on the types of fraud, keep the firm constantly under check and make technological investments on this issue.

References

ACFE (Association of Certified Fraud Examiners) (2020), "Report To The Nations On Occupational Fraud and Abuse", <https://www.acfe.com/report-to-the-nations/2020/> (13.05.2020).

- ACFE (Association of Certified Fraud Examiners) (2018), "Report To The Nations On Occupational Fraud and Abuse", <https://www.acfe.com/report-to-the-nations/2018/default.aspx> (13.05.2020).
- Albrecht, Steve W., Albrecht Conan C., Albrecht Chad O., Zimbelman, Mark, (2009). Fraud Examination.Southwestern-Cengage Learning, USA, p.7.
- Arens A., Randal J. Elder, Mark S. Beasley, (2006). Auditing and Assurance Services: An Integrated Approach.Pearson Prentice Hall, 11. Edition, p.314.
- Berumen, E. M. (2003) Do No Evil Ethichs With Applications to Economic Theory and Business, Universe, USA.
- Bozkurt, N. (2009). İşletmelerin Kara Deliği Hile – Çalışan Hileleri, Alfa Yayınları, İstanbul, 1. Baskı.
- Coenen, T. (2008). Essentials of Corporate Fraud, John Wiley & Son's Inc., USA.
- Coenen, Tracy L. (2009). Expert Fraud Investigation, Wiley & Son's Inc., New Jersey,p.156
- http://books.google.com/books?id=Nb2wigM_inoC&printsec=frontcover&dq=expert+fraud&hl=tr&cd=1#v=onepage&q=&f=false (10.06.2020).
- Gençkaya, F. (2009). Çıkar Çatışması, Türkiyede Yolsuzluğun Önlenmesi İçin Etik Projesi Akademik Araştırma Çalışması, p.4-6
- Ramos, M. (2003). Auditor's responsibility for fraud detection. Journal of Accountancy,p. 195.
- Stevens, W. H. S. (2009). Some Economic Consequences of Commercial Bribery, Harvard Business Review, Vol. 7, Issue 2, p.160
- Uzunöz, İ. (2006). ASOSAI Yolsuzluk ve Sahtecilikle Mücadele Rehberi, Sayıştay Dergisi, p.31

CHAPTER II

THE EFFECT OF NEW REGULATIONS ON PARTICIPATION BANKS' ACCOUNTING AND AUDITING PRACTICES IN TURKEY

Asst. Prof. Dr. Duygu ŞENGÜL ÇELİKAY

Eskişehir Osmangazi University, Eskişehir, Turkey
e-mail: duyguceelikay@gmail.com, Orcid ID: 0000-0002-5222-6816

1. Introduction

Participation banking is the name of interest-free banks in Turkey, the MENA region, and in other pan-Islamic countries. This banking system is a type of financial intermediation created in Muslim geography. It does not allow interest, risky and uncertain transactions, and connection with activities that are thought to damage society's social structure, such as alcoholic beverage trading, betting, and gambling. It aims to bring the savings of those sensitive to these issues into the banking system by offering the savings and/or goods on a partnership basis (Işık, 2018, pp. 41). Although every Islamic bank is an interest-free bank, every interest-free bank did not have to be an Islamic bank (Akın, 1986, pp.110). However, almost every interest-free bank in the world continues its operations with the perspective of Islamic banking.

Since the operation of this banking system, whose rules are based on the Qur'an, is different from other banks in many respects, generally accepted accounting practices could not be sufficient to respond to the demands of these banks. When banks have tried to develop their own recording and reporting techniques, comparability and reliability problems arose. Therefore, some national and international organizations have been working to develop accounting standards since the early 90s to ensure uniformity among the Islamic banks operating worldwide. With these standards, it is planned that both the reports will be more accurate and convenient, and it will be easier to compare the related institutions with each other.

In line with the developments worldwide, the Public Oversight Accounting and Auditing Standards Authority (Kamu Gözetimi Kurumu, hereafter KGK) has made various attempts to ensure standardization in the participation banking sector since 2017. Besides, the Banking Regulation and Supervision Agency (Bankacılık Düzenleme ve Denetleme Kurumu, hereafter BDDK) and the Participation Banks Association of Turkey (Türkiye Katılım Bankaları Birliği, hereafter TKBB) started to establish regulations in this area in 2018.

This study aims to determine the status of accounting and auditing in the participation banking sector of Turkey. In particular, contemporary reforms and their possible consequences are mentioned. After examining the development of standards in the world and Turkey; published, or draft standards, the communiqués of BDDK and TKBB are also discussed, and a final assessment is made.

2. Development and Current Status of the Islamic Banking System in the World

Although the origin of Islamic banking dates back to the beginning of Islam in the seventh century, the first modern Islamic bank, Nasser Social Bank, was founded in Egypt in 1971. After that, the first Saudi Arabian Islamic bank was established in Jeddah in 1975; the first Bahrain Islamic bank was established in 1979 (Pomeranz, 1997). Moore (1997) and Wilson (1997) believe that the real rise in the sector started after the increase in oil prices in 1973-1974 (as cited in Karim, 2001, pp.172). As of 2018, the Islamic banking system's total asset size has reached \$2.5 trillion worldwide (SME Finance Forum, 2018, pp.15).

The Islamic finance global market has grown 6.5% between 2016 and 2017, with banks accounting for \$1.7 trillion. Besides the banks that make up 71% of the market, other investment tools like the Sukuk market (17%), funds (4%), takaful (2%) are also available in the Islamic financial market. Different sharia compatible securities used to finance environmentally friendly projects such as green Sukuk are also traded on the market as hybrid investment instruments. (TheCityUK, 2019, pp.9).

The Islamic financial market is expected to reach \$ 3.8 trillion by 2023. Considering the 1.8 billion Muslims that make up a quarter of the world's population, Islamic finance, which constitutes 6% of the banking sector, is deemed to be an essential potential (TheCityUK, 2019: 9). According to the Islamic Finance Country Index 2019, which demonstrates the effectiveness of the Islamic finance markets worldwide, the top five countries with the most developed markets are Indonesia, Malaysia, Iran, Saudi Arabia, and Sudan; Turkey ranks 13th (DDCAP Group, 2019, pp.71).

In western countries, the UK is the country where Islamic banking is most developed; in addition to 5 sharia compatible banks, 72 Sukuk have been traded on the London Stock Exchange until today. (TheCityUK, 2019: 8). The growing transaction volume of the market and the fact that different organizations started to operate in various parts of the world have also increased the need for international regulations.

2.1. Regulating Organizations in the Islamic Banking System

Although many Islamic banks opened in various countries following the emergence of the first Islamic banks in the 70s, the sector has not

reached the target size. In general, the lack of standardization in the industry, uncertainty about how Islamic banks should be regulated, and financing problems arising from the lack of interest-free borrowing in the interbank market are the main reasons for this condition (O'Sullivan, 1996). As mentioned above, Islamic banks operate within the limits of prohibitions against interest, gambling, over-speculation, and complex derivatives. The bans and the principles based on specific sources such as the Qur'an, Sunnah, Ijma, Fiqh that reduce the possibility of different practices in this field but, different interpretations of various sects, different accounting practices in the states, financial instruments with increasing diversity, and varying needs of information users, causes the emergence of varying accounting and reporting practices. It has been decided to set standards in this sector to solve these problems, ensure the industry's growth, eliminate different interpretations, increase the comparability between these institutions, and guarantee the compliance of their transactions with Islamic rules. In this context, the Islamic Financial Institutions Accounting and Auditing Organization (AAOIFI) was established in the Kingdom of Bahrain in 1991. The organization has published 100 standards in Sharia Standards, Accounting and Auditing and Governance Standards and Ethical Principles (AAOIFI, 2020). Currently, central banks, regulatory authorities, financial institutions, accounting, and auditing firms from more than 45 countries support AAOIFI. The countries where the Accounting Standards are followed thoroughly, partially, or as a guide are summarized in Table 1.

Table 1. The Countries Where the Accounting Standards of AAOIFI are Followed Thoroughly, Partially or as a Guide

Afghanistan	Kyrgyz Republic	Bahrain
Qatar International Financial Center (QIFC)	Lebanon	Oman
Islamic Development Bank	Libya	Pakistan
Iraq	Mauritius	Qatar
Jordan	Yemen	Palestine
Nigeria	Sudan	Syria

Source: <https://aaoifi.com>

Another regulatory body in the field of Islamic Banking is the Islamic Financial Services Board (IFSB). IFSB was officially opened in Kuala Lumpur on November 3, 2002, and started operations on March 10, 2003. The Board serves as a group of international standard-setting, regulatory and supervisory institutions in ensuring the stability and stability of the Islamic financial services industry, which is defined to include banking, capital markets, and insurance. In advancing this mission, IFSB promotes the development of a prudent and transparent Islamic financial services industry by adopting new or existing international standards that comply

with the principles of sharia (IFSB, 2020). Since its foundation, IFSB has published 30 Standards, Guidelines, and Technical Notes for the Islamic financial services industry. As of December 2019, the 184 members of the IFSB comprise 78 regulatory and supervisory authorities, nine international inter-governmental organizations, and 97 market players (financial institutions, professional firms, industry associations, and stock exchanges) operating in 57 jurisdictions. Albaraka Türk Participation Bank, Turkey Finance Participation Bank, Kuwait Turkish Participation Bank, BDDK, SPK, and T. C. The Central Bank are currently among the members of this Board.

Considering the fact that two different organizations setting different standards can cause uniformity difficulties, IFSB and AAOIFI representatives came together in 2018 and have signed a Memorandum of Understanding (MoU) to facilitate international cooperation between the two organizations to jointly undertake technical activities relating to development and revision of Shariah, accounting and governance standards as well as for raising awareness on emerging issues in the Islamic financial services industry (Deloitte, 2018).

In addition to AAOIFI and IFSB standards, some countries such as Malaysia, where interest-free banking has a large share in the market, have set their standards. However, there is a tendency to apply AAOIFI standards in general among interest-free banks that want to increase international transaction volume and inter-bank comparability. Except for Islamic countries, states generally do not make any separate regulations for participation banks. Banks in these countries can optionally make financial reporting in accordance with the standards.

Contrary to the opinions that as standards become mandatory in all interest-free banking transactions, it will increase the trust and comparability, there are also criticisms of the standards like Muhammed, Fahmi, and Ahmed (2015) stated that unless the standards for interest-free banks are within the IFRS framework, it is doubtful to be accepted globally. Different interpretations of different sects towards Qur'anic verses and hadiths may reduce the benefit of standards to provide uniformity. Besides, as explained below, the standards can contradict the sociological and cultural values of the implementing countries and legal laws, or they receive criticism in society. Therefore, including those in Turkey, the regulatory institutions that implement the standard should consider all these good and bad sides to avoid causing a more complex system.

3. Participation Banking in Turkey

Turkey is one of the founding members of the Islamic Development Bank, which is founded in 1974. The basis of participation banks in Turkey

has been laid with the Decree on the Establishment of Special Finance dated 16.12.1983. Albaraka Türk and Faysal Finans started their operations in 1985, and Kuveyt Türk in 1989. After Anadolu Finans, the first domestic financial institution with local capital in 1991, İhlas Finans in 1995 and Asya Finans 1996 became operational. (Tunç, 2013, pp. 177). Later, the Private Finance Corporation's statement was abolished with the law numbered 5411, and the system was named "Participation Banking" as of 12.12.2005.

As of March 2020, there are six participation banks in Turkey:

- Albaraka Türk Participation Bank
- Türkiye Emlak Participation Bank
- Kuveyt Türk Participation Bank
- Türkiye Finans Participation Bank
- Vakıf Participation Bank
- Ziraat Participation Bank

Participation banks in Turkey account for 5.5% of the country's banking sector, and they are the fifth largest Sukuk issuer in the world by the year 2018 (IFSB, 2019, pp. 18).

Participation banks, which have the status of joint-stock companies, operate with the permission of BDDK. Also, Participation Banks Association of Turkey (TKBB) acts as a professional association which aims "... to defend the rights and interests of the participation banks, to carry out practices for the growth of the banking system, to improve the banking profession, to increase competitiveness, to create and implement the necessary decisions to create a competitive environment and prevent unfair competition" (TKBB, 2019). Therefore, like BDDK, the TKBB also has a sanctioning power over the participation banks.

3.1. Current Regulations for Participation Banks in Turkey

Until recent years, in Turkey, there was no special regulation for participation banks. However, as of 2017, special regulations started to emerge in this area. By signing a protocol with AAOIFI on 26.04.2017, TKBB took steps to translate 58 Financial Accounting Standards, initially published in Arabic, into Turkish. While the BDDK is a supporting institution in the project, the translation process was carried out in coordination with Istanbul Sabahattin Zaim University (TKBB, 2017). The translation process was completed on May 11, 2018 (*Katılım Finans Dergisi*, 2018).

On the other hand, in September 2017, a copyright agreement was signed between KGK and AAOIFI to bring the accounting, auditing, ethics, and governance standards regarding the interest-free finance sector to the legislation of Turkey (KGK, 2018).

The 2019 Annual Presidential Annual Program, published in October 2018, was an essential indicator of the acceleration of the regulations to be made regarding participation banking. The program has included the following objectives to be implemented by the end of 2019 (Strateji ve Bütçe Başkanlığı, 2019):

- BDDK will plan legal infrastructure for participation and investment banks to operate based on participation banking methods,
- BDDK will make regulations for the application of a new business model/window system to expand participation banking,
- KGK will translate ethics, governance, accounting, and auditing standards published by AAOIFI.

The actions carried out by KGK, BDDK, and TKBB to achieve the objectives specified in this program are summarized below.

3.1.1. Interest-Free Finance Accounting Standards

In November 2018, the draft text of the conceptual framework and seven Non-Interest Finance Accounting Standards (FFMSs) led public opinion to the KGK's website. The final versions of them were published in the Official Gazettes dated May 21, 2019, September 6, 2019, and November 20, 2019. These published standards are summarized in Table 2. The draft texts of the Interest-Free Finance Accounting Standards in Table 3 have already been shared with the public, and their final form is expected to be published in the Official Gazette soon.

All of these published standards, except for FFMS 35, can be applied voluntarily by the participation banks in the annual accounting periods starting from January 1, 2020, or later. FFMS 35 will be available from January 1, 2021. Banks are allowed to apply all published standards early (KGK, 2019).

Table 2. Interest-Free Finance Accounting Standards in Turkey

Standards Published in the Official Gazette
- Conceptual Framework for Financial Reporting of Interest-Free Financial Institutions
- Interest-Free Finance Accounting Guide 1: First Time Application of Interest-Free Finance Accounting Standards by Interest-Free Financial Institutions
- FFMS 1: General Presentation and Disclosure in Financial Statements
- FFMS 3: Mudârebe Finance
- FFMS 4: Musharaka Finance
- FFMS 7: Salam and Parallel Salam
- FFMS 8: Ijarah and Ijarah Muntahia Bittamleek
- FFMS 9: Zakât
- FFMS 10: Istisna'a ve Parallel Istisna'a
- FFMS 14: Investment Funds
- FFMS 16: Foreign Currency Transactions and Foreign Operations

-
- FFMS 18: Interest-Free Financial Services Offered by Conventional Financial Institutions
 - FFMS 21: Disclosure on Transfer of Assets
 - FFMS 22: Segment Reporting
 - FFMS 23: Consolidation
 - FFMS 24: Investments in Associates
 - FFMS 26: Investment in real Estate
 - FFMS 27: Investment Accounts
 - FFMS 28: Murabaha and Other Deferred Payment Sales
 - FFMS 30: Impairment, Credit Losses, and Onerous Commitments
 - FFMS 31: Investment Agency (Al-Wakala Bi Al-Istithmar)
 - FFMS 33: Investments in Sukuk, Shares and Similar Instruments
 - FFMS 34: Financial Reporting for Sukuk-holders
 - FFMS 35: Risk Reserves
-

Source: www.kgk.gov.tr

Table 3. Draft FFMSs as of March 2020

-
- Draft FFMSs Open to Public Opinion
-
- FFMS 12: General Presentation and Disclosure in the Financial Statements of Takaful Companies
 - FFMS 13 Disclosure of Bases for Determining and Allocating Surplus or Deficit in Takaful Companies
 - FFMS 15: Provisions and Reserves in Takaful Companies
 - FFMS 19: Contributions in Takaful Companies
-

Source: www.kgk.gov.tr

Unlike the original texts, the "Islamic standard" expression was not included in the translated standards. Instead, the term "interest-free finance standards" was deemed appropriate. Besides, the texts of the Official Gazette's standards are not literal translations of the original versions, unlike IFRS in our country. The translations do not include Islamic references, religious highlights, and relevant fiqh provisions in their original texts.

Some of the standards include methods and tools currently used by the participation banks in Turkey but are accounted for with different names and methods (Exceptions, Murabaha, Selem). Also, several standards include concepts such as Zakat, which are not recorded in the financial statements. In addition, different from previous periods, participation banks will be required to prepare the following tables as well as income statement and balance sheet (FFMS - Conceptual Framework, 5/2/2):

- Cash flow statements,
- Shareholders' equity changes tables,
- Resources and uses tables of Zakat and charity fund,
- Sources and uses tables of the Karz Fund,
- Equity change tables of off-balance sheet investment account holders

- Excess fund changes tables of policyholders in terms of Takaful enterprises.

As stated above, in implementing the standards, KGK has not yet imposed any obligation, and the decision is left to participation banks.

3.1.2. Regulations of BDDK for Participation Banks

In addition to the practices carried out by KGK mentioned above, as of 2018, BDDK has also made regulations for participation banks, sometimes directly and sometimes through TKBB.

First of all, BDDK decided to establish a Central Advisory Board within the TKBB to determine the professional principles and standards regarding participation banking. Based on this decision, TKBB has issued "A Communiqué on the Formation, Duties, Working Procedures and Principles of the Advisory Board" with the rule dated 02.04.2018 and numbered 253. According to this Communiqué, the Advisory Board within the body of TKBB consists of five members appointed by the BDDK's board of directors for five years (TKBB,2018). Three of the members should have a Ph.D. in Islamic sciences, the Religious Affairs Presidency should propose one of them among the members of the Higher Board of Religious Affairs, and one of them should be in undergraduate or postgraduate diploma in business, economics, finance, banking, law and equivalent and have at least seven years of executive experience in participation banking (art. 4/3). Following the publication of the communiqué, the first board was established in May 2018 (TKBB, 2018).

The duties of the Advisory Board stated in the Communiqué are (art.6);

- Determining the professional principles and standards that the participation banks must comply with,
- Making decisions to eliminate the differences in implementation among participation banks,
- Providing opinions to public institutions and organizations, professional institutions and other organizations within the scope of interest-free finance activities,
- Organizing programs for the promotion of participation banking professional principles and standards or for training purposes, publishing and participating in programs organized for these purposes,
- In the event of a conflict between participation banks and their customers, deciding whether the decisions taken by participation banks within the scope of the dispute should be applied, changed, or canceled in matters that fall within the scope of professional principles and standards.

Considering the Communiqué, the Advisory Board cannot just be expressed as a mechanism that provides an opinion on the general functioning of the participation banks. Because, in the communiqué, a new type of regulation, the regulatory of which is the Advisory Board, called "professional principles and standards," is mentioned. Therefore, the board will not only provide opinions but also implement new regulations. The Advisory Board has not published any professional principles and standards as of July 2020 but has published ten decisions on the issues discussed. At the end of all the published decisions, the "Allah knows the truth." statement is located.

Although it is not clear yet the mentioned profession principles and standards, the Communiqué on Compliance with Islamic Banking Principles and Standards published by BDDK on 14.09.2019 has brought a new dimension to this issue (BDDK, 2019). In this Communiqué, a new structure called the advisory committee is mentioned in addition to the Advisory Board (art.3). The advisory committee, which operates under the board of participation banks, consists of at least three members. At least two-thirds of the advisory committee members must have at least three years of professional experience in interest-free finance and have a master's degree or doctorate in interest-free finance or at least a bachelor's degree in theology or equivalent (art.5). These independent committees to be established in banks will meet at least twice a month, and its primary duties are listed in Article 7:

- Deciding exclusively to the bank on interest-free banking principles and standards and their implementation.
- Examining in-bank regulations within the framework of compliance with interest-free finance principles and standards.
- Evaluating and approving standard agreements and their annexes regarding the bank's products and services in terms of interest-free banking principles and standards.
- Submitting periodic reports containing the decisions taken to the Advisory Board.
- Providing opinions to the bank and its subsidiaries subject to consolidation, to individuals and organizations providing services in the fields of law, audit, and other related fields, on the principles and standards of interest-free banking.
- Giving information about the advisory committee's activities in the period and evaluate the compliance of bank activities with interest-free banking principles and standards to be included in the bank's annual report.

The advisory committee does not take an active role in ensuring that participation banks operate in compliance with interest-free banking principles. However, it acts as a consulting unit, as the name suggests. It is stated in the Communiqué that separate personnel or unit should be assigned for the interest-free banking compliance activities that will be carried out by the bank, which includes controls to ensure compliance of all transactions, reports, and relations with external stakeholders with interest-free banking principles and standards and advisory committee decisions (art.9). This unit or staff has to report to the audit committee at least once every three months and submit the policies and procedures proposed for compliance with interest-free banking principles and standards to the board of directors' approval after receiving the advisory committee's opinion (art.9). From this point of view, there are two separate structures established in banks in implementing interest-free banking compliance activities. While the advisory committee has the task of making decisions, providing opinions, and communicating with the Advisory Board, it is seen that the task related to the implementation of compliance activities belongs to a separate staff or unit.

With the Communiqué above, new duties and responsibilities are also imposed on the participation banks' internal audit units. Accordingly, the participation banking audit activities, the scope of which is stated as "to evaluate the adequacy and effectiveness of interest-free banking compliance activities, to check the compliance of bank activities and transactions with interest-free banking principles and standards, and advisory committee decisions," will be performed by the internal audit unit. (art.10)

Following the communiqué, the personnel who will take part in interest-free banking compliance and auditing activities and the advisory committee secretariat must have either worked in participation banks for a minimum of three years or have received a certified education in interest-free finance or a master's or doctorate in interest-free finance (art. 11).

Although there is no certification program created by authorized institutions in this field in our country, it has been determined that there are nine graduate programs related to the area of Islamic Finance.

To summarize, with the two different communiqués published by BDDK, two separate structures, namely the advisory committee and the Advisory Board, were established, one within TKBB and one within banks. Also, a new unit is set for interest-free banking compliance activities within the banks, and the internal auditors are assigned to evaluate the adequacy and effectiveness of the compliance activities.

3.1.3. Interest-Free Financial Auditing Standards

Shortly after the first part of the FFMS was published in the Official Gazette, the draft texts of the Interest-free Financial Auditing Standards (FFDSs) were shared with the public. On December 4, 2019, six auditing standards and The Code of Ethics in Table 4 were published in the official gazette.

The Code of Ethics can be applied voluntarily, from the date of its publication. However, “FFDS 6: Fiqh Audit” may be applied voluntarily in audits carried out on or after January 1, 2021, and other standards may be applied voluntarily in audits of annual accounting periods beginning on or after January 1, 2020.

Table 4. Interest-free Financial Auditing Standards

FFDS published in the Official Gazette on December 4, 2019
- Ethical Rules for Auditors Conducting Independent Audit of Interest-Free Financial Institutions
- FFDS 1: Objectives and Principles of Auditing
- FFDS 2: The Auditor’s Report
- FFDS 3: Terms of Audit Engagement
- FFDS 4: Testing for Compliance with Shari’a Rules and Principles by an External Auditor
- FFDS 5: The Auditor’s Responsibility to Consider Fraud and Error in an Audit of Financial Statements
- FFDS 6: Fiqh Audit

In the introduction section of ethical rules, it is stated that ethical rules in independent auditing are based on human reasoning, but these ethical rules are basically (in addition to all previous bases) the principles and rules of Islamic belief and Fiqh.¹

The ethical rules prepared in this context are as follows;

- Reliability,
- Legitimacy,
- Neutrality,
- Professional Competence and Care,
- Behaving According to Principles of Faith,
- Professional Behavior and Technical Standards

¹ The text on "Ethical Rules for Auditors Conducting Independent Auditing of Interest-Free Financial Institutions" was condemned by the bar association of 43 provinces on December 23, 2019, as it violated Article 2 of the Constitution, which includes the principle of secularism, and also article 24, which further explains the principle of secularism.

"Fiqh Audit," which is mentioned in almost every standard, is a new practice for the independent audit in Turkey. As understood from FFDS 4 and FFDS 6, the fiqh audit, which is an assurance audit, is either the assessment of the declaration of conformity prepared by the banks (fiqh verification audit) or the declaration regarding the compliance of financial agreement, contract, and transactions with the valid fiqh principles and rules (direct fiqh audit). The direct fiqh audit will be done in the form of direct reporting by the auditor about the compliance with the criteria. (FFDS 6, art.8)

It is stated in FFDS 1 that the reasonable assurance of independent auditors means that "...the financial statements do not contain any material misstatement and are convinced that the transactions examined during the audit compliance with the fiqh principles and rules determined by the financial institution's advisory committee." According to FFDS 2 in the opinion paragraph of the auditor's report, an opinion regarding whether the financial statements of the Interest-Free Financial Institution are following the principles and rules of fiqh (determined by the Advisory Board of the Financial Institution) and the Interest-Free Financial Accounting Standards published by the authority will be stated. Hence, if auditors carry out an audit in compliance with these standards, they have to check not only the compliance of the financial statements with the FFMS but also the professional principles and standards to be prepared by the Advisory Board within the scope of the statutory audit.

The mentioned statutory audit obligation brings important question marks for the auditors. Because of this audit to provide reasonable assurance, the auditor must know the fiqh principles and rules, FFMS's, and Advisory Board's professional principles and standards. Considering professional competence, which is one of the fundamental auditing standards, it is a question mark on how many people have this qualification in Turkey and how to identify those who have it.

When the audit standards and communiqués are analyzed, it is seen that the audit process has not been clarified yet, there are significant uncertainties, and it has attracted reactions from various segments in public. With the implementation of the standards, these issues need to be resolved to achieve functionality and achieve their goals.

RESULT

The IAS, IFRS, and ISA constitute essential frameworks for the financial reporting systems' reliability and efficiency for many years. The fact that the standards are prepared in a manner that includes all sectors in all countries sometimes causes them to be insufficient to reflect different accounting practices in some sectors. Islamic banking, which is one of the sectors dealing with this problem, has chosen to set new standards of their

own. AAOIFI in the early 90s and IFSB in the early 2000s issued various standards to meet this need and made several attempts to be accepted by banks in the interest-free finance sector all over the world. According to the policy-makers, the interest-free banking sector needs these standards to ensure the growth of the sector, to eliminate different interpretations, to increase the comparability between these institutions and to guarantee the compliance of their transactions with Islamic rules, to increase trust in existing banks, and to bring savings of conservative Muslims into the system.

Although participation banks in Turkey have operated since the 80s, there were no particular regulations for them until recently. The transformation process started with the translation of Interest-Free Finance Accounting Standards (FFMSs) and Interest-Free Finance Auditing Standards (FFDSs) into Turkish in 2017. Besides the standards, many new regulations were made regarding the interest-free banking sector. BDDK decided to establish an Advisory Board within the body of TKBB in 2018, after which TKBB issued a communiqué contains the structure and working principles of the Board. In 2019, the BDDK published a communiqué on the advisory committees to be established within the participation banks. Also, 22 Islamic accounting standards were translated into Turkish, and seven Islamic auditing standards were published in the Official Gazette in 2019 and 2020.

There is not yet an obligation for participation banks in terms of implementing FFMS or conducting audits following FFDS. However, it is an obligation to comply with the professional principles and standards to be published by the Advisory Board and to set up an advisory committee within the participation banks.

The standards are supposed to increase the comparability among interest-free banks in both the national and global markets. Voluntarily implementation of these standards will facilitate the transition process and will create assurance for international investors. The establishment of advisory committees and advisory boards will ensure that banks have guidance when they need religious interpretation and consultation. However, all these alignments realized bring along numerous questions, problems, and uncertainties.

As a result of the standards and communiqués mentioned, there will be a shift in Turkey's concept of participation banking. Unlike "Islamic Banking," the term "participation banks," only used in Turkey, does not refer to a covered or uncovered ideological, political, or religious content, allows for reconciliation with all segments of society (Kalaycı, 2013, pp. 53). However, the emphasis on Islamic religion and fiqh rules in these standards and communiqués may weaken this feature of the banks in

Turkey. Although it is not an obligation to apply the standards for participation banks who want to remain religiously neutral, Advisory Board and advisory committee practices with predominant Islamic references are a must for all participation banks. In addition, these standards and regulations are designed assuming that both participation banks and those who audit these banks are all Muslims. These problems weaken the likelihood of ensuring uniformity in a secular country like Turkey, where the participation banks and audit firms have many global partners. Besides, since there are not enough academic studies on the effectiveness of standards or boards mentioned, there is high uncertainty about the outputs of the regulations that require such preliminary preparation.

The existing differences in tax and accounting practices in Turkey cause businesses to make many additional records and prepare different financial statements. The emergence of a third regulation will cause banks to make different records, prepare different tables, and create more confusion.

The translated auditing standards contain quite a lot of uncertainty, especially for auditors. With the implementation of these, participation bank independent auditors will be required to comply with the Interest-Free Financial Auditing Standards (FFDS) in addition to the International Standards on Auditing. In the audits to be carried out within the scope of FFDSs, there is a need for a new type of audit called fiqh auditing, which controls compliance with Islamic professional principles and standards. In order for the auditors to perform this audit, they must have sufficient knowledge about the subject. However, the issues of delivering relevant training and measuring knowledge are still unclear. Also, the statement in FFDS that the ISAs can only be applied if they comply with the Islamic standards causes significant confusion that an audit may not be made following the ISA if the two sets of standards conflict.

New responsibilities have arisen for internal auditors as well as independent auditors. In addition to their duties according to COSO and BASEL, the internal audit departments in the participation banks have gained new missions such as "evaluating the adequacy and effectiveness of interest-free banking compliance activities and checking the compliance of the bank's activities and transactions with interest-free banking principles and standards, and advisory committee decisions." Different training, exams, and certification processes will undoubtedly be needed to fulfill these responsibilities.

When implemented, the standards that will lead to different accounting and auditing practices will also lead to different research questions for scientists. In this context, it will be appropriate to research the effectiveness of standards and other regulations in future studies.

References

- Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). (2020). History. <https://aaoifi.com/our-history/?lang=en>
- Akın, C. (1986). Faizsiz Bankacılık ve Kalkınma, İstanbul: Kayıhan Yayınları.
- Bankacılık Düzenleme ve Denetleme Kurumu (BDDK). (2019). Faizsiz Bankacılık İlke ve Standartlarına Uyuma İlişkin Tebliğ.
- Cambridge Institute of Islamic Finance (2019). Global Islamic Finance Report 2019, <http://www.gifr.net/publications/gifr2019/ifci.pdf>
- DDCAP Group. (2019). Global Islamic Finance Report. <http://www.gifr.net/publications/gifr2019/ifci.pdf>
- Deloitte. (2018). IFSB and AAOIFI sign Memorandum of Understanding. <https://www.iasplus.com/en/news/2018/10/ifsb-aaoifi-mou>
- Faizsiz Finans Muhasebe Standartları (FFMS). [https://kgk.gov.tr/DynamicContentDetail/9201/Faizsiz-Finans-Muhasebe-Standartlar%C4%B1-\(FFMS\)](https://kgk.gov.tr/DynamicContentDetail/9201/Faizsiz-Finans-Muhasebe-Standartlar%C4%B1-(FFMS))
- Islamic Financial Services Board (IFSB). (2020). Background. <https://www.ifsb.org/background.php>
- Islamic Financial Services Board (IFSB). (2019). Islamic Finance Services Industry Stability Report 2019, www.ifsb.org
- Işık, N. (2018). Growth, Islamic Banking, and Schumpeterian Vision: An Empirical Evidence from the Gulf Arab States. *International Journal of Islamic Economics and Finance Studies*, 4(1), 40 – 55.
- Kalaycı, İ. (2013). Katılım Bankacılığı: Mali Kesimde Nasıl Bir Seçenek?, *Uluslararası Yönetim İktisat ve İşletme Dergisi*, 9(19), 51 – 74.
- Karim, R. A. A. (2001). International Accounting Harmonization, Banking Regulation, and Islamic Banks. *The International Journal of Accounting*, 36, 169 – 193.
- Katılım Finans (2018). AAOIFI'nin Faizsiz Finans Standartları Türkçe'ye Kazandırıldı, <https://katilimfinansdergisi.com.tr/>
- Kamu Gözetimi Muhasebe ve Denetim Standartları Kurumu (KGK). (2018). Faizsiz Finans Muhasebe Standartları Taslak Metinleri Kamuoyu Görüşüne Açılmıştır. [https://kgk.gov.tr/ContentAssignmentDetail/1513/Faizsiz-Finans-Muhasebe-Standartlar%C4%B1-Taslak-Metinleri-Kamuoyu-Go%CC%88ru%CC%88s%CC%A7u%CC%88ne-Ac%CC%A7%C4%B1lm%C4%B1s%CC%A7t%C4%B1r.\(05/11/2018\)](https://kgk.gov.tr/ContentAssignmentDetail/1513/Faizsiz-Finans-Muhasebe-Standartlar%C4%B1-Taslak-Metinleri-Kamuoyu-Go%CC%88ru%CC%88s%CC%A7u%CC%88ne-Ac%CC%A7%C4%B1lm%C4%B1s%CC%A7t%C4%B1r.(05/11/2018))

- Kamu Gözetimi Muhasebe ve Denetim Standartları Kurumu (KGK). (2019). Faizsiz Finans Denetim Standartları Taslak Metinleri, <https://www.kgk.gov.tr/>
- Mohammed, N. F., Fahmi, F. M. ve Ahmed, A. E. (2015). The Influence of AAOIFI Accounting Standards in Reporting Islamic Financial Institutions in Malaysia, *Procedia Economics and Finance*, 31, 418 – 424.
- Moore, P. (1997). *Islamic Finance*. London: Euromoney Publications.
- O’Sullivan, D. (1996). A Sector with Everything Still to Play for. *Middle East Economic Digest*, 40(28), 7-9.
- Pomeranz, F. (1997). The Accounting and Auditing Organization for Islamic Financial Institutions: An Important Regulatory Debut. *Journal of International Accounting, Auditing, and Taxation*, 6(1), 120 – 130.
- SME Finance Forum (2018). *Islamic Finance Development Report 2018*. <https://ceif.iba.edu.pk/pdf/Reuters-Islamic-finance-development-report2018.pdf>
- Strateji ve Bütçe Başkanlığı (2019). 2019 yılı Cumhurbaşkanlığı Yıllık Programı, <http://www.sbb.gov.tr/>
- TheCityUK (2019). *Global Trends in Finance and The UK Market 2019*, <https://www.thecityuk.com/assets/2019/Report-PDFs/7357b6cb9c/Global-trends-in-Islamic-finance-and-the-UK-market-2019.pdf>
- Türkiye Katılım Bankaları Birliği (TKBB). 2017. AAOIFI Faizsiz Finans Standartları Türkçe'ye Kazandırılıyor. <https://www.tkbb.org.tr/haber-detay/aoifi-faizsiz-finans-standartlari--turkceye-kazandiriliyor->
- Türkiye Katılım Bankaları Birliği (TKBB). (2018). Danışma Kurulunun Oluşumu, Görev, Çalışma Usul ve Esasları Hakkında Tebliğ, <https://tkbbdanismakurulu.org.tr/>
- Türkiye Katılım Bankaları Birliği (TKBB).(2019). Kuruluş Amacı. <https://www.tkbb.org.tr/tarihce>
- Tunç, H. (2013). *Katılım Bankacılığı - Felsefesi, Teorisi ve Türkiye Uygulaması*. İstanbul: Nesil Yayınları.
- Wilson, R. (1997). *Islamic Finance*. London: FT Financial Publishing.

CHAPTER III

BASICS OF CONJOINT ANALYSIS

Asst. Prof. Dr. Leyla İŞBİLEN YÜCEL

İstanbul University, İstanbul, Turkey
e-mail: isbilen@istanbul.edu.tr, Orcid ID: 0000-0001-8643-7702

1. Introduction

Humans make lots of choices in daily life that range which place to visit, sports to do, sneakers to wear, faculty to educate, dress to wear, computer to buy, etc. Especially industrialists, investors and purchasing specialists want to know which product is the ideal one among so many products? Lets define all these people as decision makers, they must choose among variety of alternatives. What we mean with alternatives is the features that define the product with their different levels. These levels are called trade-offs so decision makers must choose between them.

It is very important topic to know, to understand the consumers decision making among trade offs for manufacturers, policy makers, researchers, etc. If a manufacturer knows about customers needs and preferences, he can produce products that the consumers will love and buy. Conjoint analysis enables these features to be revealed before starting production. So resources are directed to the right production. With an efficient production, resources are not wasted and the consumers meet their preferred products in the market. The right products matches the ideal preferences of the consumers.

Conjoint analysis is not only used in market research, but also used in such areas as human resources, healthcare, economics, etc. (Steiner, Meißner, p:5). It is also used in social facts if they can be measured. For example it can be used to determine the ideal working conditions such as at the office or remote work, full time or part time, in homeland or abroad, etc.

Academics, researchers and practitioners are confronted with questions such as which conjoint analysis approach to use (Steiner, Meißner, p:3). Because there are many conjoint analysis approaches and compositional preference methods. So, which is the appropriate method? Which one gives valid results and how can we trust that it is the most reliable method?

2. Utility Models

Utility models illustrate the relationship between attribute levels and respondents' utility. There are three utility models; ideal point model, vector model and part worth model (Steiner, Meißner, p:6).

2.1 Ideal Point Model

In Figure 1, Point B shows the optimal level of utility. This point maximizes respondents' utility. For example in a very cold day when you get home, the house should not be too hot or not hot enough.

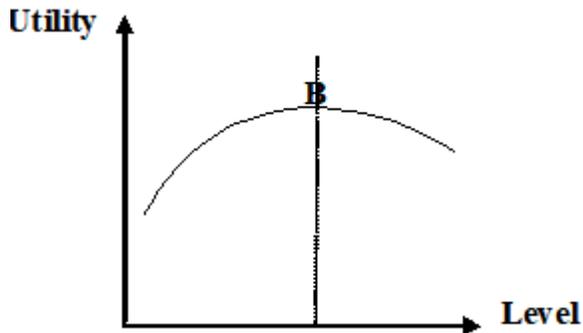


Fig. 1 Optimal level of utility

Source: Steiner, Meißner, A User's Guide to the Galaxy of Conjoint Analysis and Compositional Preference Measurement, p:6.

2.2 Vector Model

Vector model assumes the levels of the level of an attribute increases the respondents' utility. For example a car that uses less fuel increases the utility. There is an inverse proportion. High prices decreases utility. Sometimes there is same directional proportion, suppose when the speed of the computer increases, the utility increases.

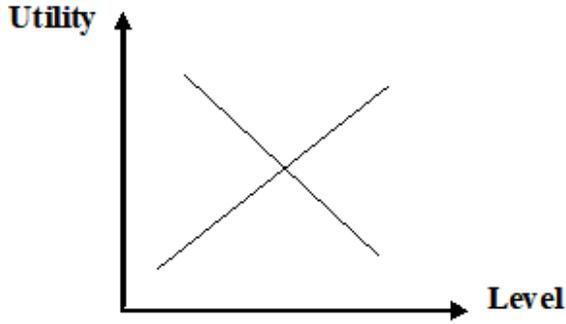


Fig. 2 Vector model of utility

Source: Steiner, Meißner, *A User's Guide to the Galaxy of Conjoint Analysis and Compositional Preference Measurement*, p:6.

2.3 Part Worth Model

This model does not have any apriori assumptions. It is flexible but in this model more number of parameters must be estimated. The parameters can be estimated by classical OLS or logistic regression techniques.

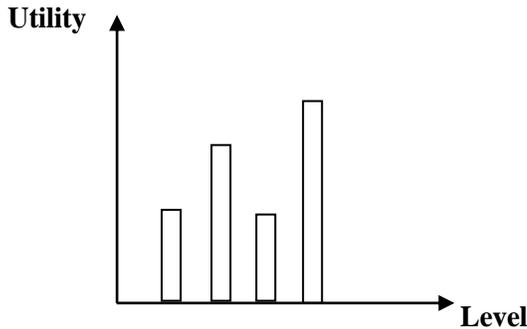


Fig. 3 Part worth model

Source: Steiner, Meißner, *A User's Guide to the Galaxy of Conjoint Analysis and Compositional Preference Measurement*, p:6.

3. Additive Utility Model (Steiner & Meißner, 2018, p:6)

$$U_{im} = \sum_{j=1}^J \sum_{k=1}^K \beta_{ijk} y_{ijkm} \quad (1)$$

U_{im} : total utility of i^{th} respondent from m^{th} combination.

β_{ijk} : i^{th} respondents' part worth utility for j^{th} level of k^{th} attribute

y_{ijk} : binary coding, 1 for if level j presents and 0 otherwise.

J: the number of attribute levels

k: the number of attributes.

Additive utility model is a recompositive model. Because less favorable level of an attribute may be compensated by a more satisfying level of this attribute.

Situations that make conjoint estimates biased:

- If the consumer has a threshold for the levels of an attribute, such as price, the consumer will not be willing to purchase this product regardless of its other features. He may accept this price but it may not be suitable for his budget ie he will not be able to buy the product. In such conditions linear additive model is not suitable (Steiner, 2016)

Importance weights are derived from part worths (Steiner, Meißner, p:6)

$$w_j = \frac{\max \beta_{ij} - \min \beta_{ij}}{\sum_{j=1}^J (\max \beta_{ij} - \min \beta_{ij})} \quad (2)$$

“ $\max \beta_{ij} - \min \beta_{ij}$ ” is the bandwidth of the attribute. It equals; the most favorable level – the least favorable level. Importance weight formula shows that a narrow bandwidth of levels for an attribute will result low importance. This means, it is better use more levels for an attribute but this situation also causes more combinations to sort. This is a contradiction. We want big range for the levels so as to find high importance weight, but on the other hand when we increase the number of levels, the number of combinations increases simultaneously.

Table 1 Compositional, decompositional and hybrid preference measurement approaches

<i>Compositional approaches</i>	<i>Hybrid approaches</i>	<i>Traditional approaches</i>
Self explicated approaches <ul style="list-style-type: none"> • Direct rating • Weighted self explicated 	Traditional hybrid conjoint analysis	Traditional conjoint analysis (full profile approaches vs. trade-off matrices; simultaneous

<ul style="list-style-type: none"> • approach • Unweighted self explicated approach • Conjunctive compensatory self explicated approach 		presentation of all product concepts vs. paired comparisons.
Analytic hierarchy process and its adoption for preference measurement	Sawtooth software adaptive conjoint analysis (ACA)	Choice based conjoint analysis (CBC)
Max-Diff scaling/ best-worst scaling	Sawtooth software adaptive choice based conjoint analysis (ACBC)	
Restricted – click – stream analysis		

Source: Steiner, M., Meißner, M., A User's Guide to the Galaxy of Conjoint Analysis and Compositional Preference Measurement, Journal of Research and Management, p:7.

Conjoint analysis is a decompositional preference model. But what is compositional model and decompositional model? Compositional means evaluating the levels of attributes according to their importance and produce an overall utility score for a product. Decompositional model means evaluating various combinations of the levels of attributes and then decomposing in to utilities of the levels of attributes.

Compositional Model

Consider the following sneaker;

- Brand: Vans
- Price: 700 tl
- Material: Genuine leather
- Year of creation: 2020
- Comfort: Full orthopedic

How would you rate this sneaker from zero to ten? Assign each of the 5 attributes so as to find the relative importance of them.

Decompositional Model

Rank the following three combinations of sneakers in terms of overall preference;

Table 2 Combinations of sneakers

	Profile 1	Profile 2	Profile 3
Brand	Kinetix	Nike	Adidas
Price	250 tl	490 tl	520 tl
Material	Polyester	Polyester	Genuine leather
Creation year	2019	2019	2020
Comfort	Semi orthopedic	Semi orthopedic	Full orthopedic
Rank			

Self Explicit Tests

In this method there is no experimental design or complex data analysis. Directly asks the consumers to tell what attributes are important for them to prefer a product. It often used in studies based on questioning customer needs. However, if there is a preferential situation for a product, questions should be asked carefully. It may be summarized with three steps. First step is to evaluate only two features. All possible combinations are asked to respondent and then the most important feature is revealed. Secondly respondent evaluates only one feature at a time in order to show the level of the utility gained by passing from low to high levels of the attribute. Finally respondents evaluate all attributes and determine the level of importance according to their preferences. “In contrast to the direct rating approaches the respondents are first asked to evaluate the attribute levels. Based on these evaluations the bandwidth of each attribute (the most and least preferred levels) can be defined. The respondents are subsequently asked to evaluate the attributes’ importance based on each attributes’ bandwidth (Steiner, Meißner, p:7). Researchers can then select the most important attributes for preference measurement.”(Steiner, Helm, & Hattl-Maack, 2016, p:244)

Table 3 Main steps of self explicated approach by Srinivasan

Inform respondents about all attributes and their levels and identify “totally unacceptable” levels
Determine the “most preferred” and the “least preferred” level for each attribute, excluding the “totally unacceptable” levels
Identify the “critical attribute” and set its importance to 100 and elicit the importance ratings (0-100) for other attributes using the critical attribute as an anchor
Rate the desirability ratings of the different acceptable levels within the attribute and for each attribute on the scale with the least preferred (but

acceptable level) = 0 and most preferred level = 100

Calculate the part-worths for acceptable attribute levels

Set the part-worths to fall in the range from 0-100 (To make the part-worths more comparable and readable)

Source: Main steps of self-explicated approach suggested by Srinivasan (1988) (Own presentation based on Srinivasan 1988, pp. 296-297)

In step 5, part worths are calculated as follows (Abu Assab, S., 2011, p:29):

$$PW_{kl} = \frac{\alpha_{kl} x_{kl}}{100} \quad (3)$$

PW_{kl} : Part-worth of level l of attribute k

α_{kl} : Self-explicated desirability rating of level l of attribute k

x_{kl} : Self-explicated importance rating of attribute k

Steps of Conjoint Analysis:

1. Determine the attributes and attribute levels of the product.
2. Prepare the profiles to be ranked.
3. Choose method.
4. Collect data.
5. Analyze data.
6. Report the results.

Step. 1. Determining the Attributes and Attribute's Levels

Identify the product attributes which are sensible and realistic for the market.

Step. 2. Preparing the Profiles

Lets maintain our sneaker example. These are the attributes and levels of the attributes:

Attribute 1: Brand

Levels: Kinetix, Nike and Adidas.

Attribute 2: Price

Levels: 250 tl, 490 tl and 520 tl.

Attribute 3: Material

Levels: Polyester, genuine leather.

Attribute 4: Creation Year

Levels: 2019, 2020.

Attribute 5: Comfort

Levels: Semi orthopedic, full orthopedic.

Before preparing the profiles we should tell about the types of profiles. They are full factorial design and fractional design.

4. Fractional and Full Factorial Design

All possible combinations of the levels of attributes are taken in to account. In our example we have five attributes with different levels of two or three. Attribute 1 has three levels, Attribute 2 has three levels, Attribute 3 has two levels, Attribute 4 has two levels, Attribute 5 has two levels. As a result this design has $3*3*2*2*2= 72$ possible combinations so 72 profile can be produced.

Fractional Design

A subset of all possible combinations is used. All the levels are equally taken in to account by applying orthogonal design plan. Here is an example for fractional design:

Assume that there are 6 profiles (subset of 72 possible profiles). Atakan and Cesur are responders and they ranked these 6 sneaker profiles according to their preferences:

Table 4 Responders' preferences

Brand	Price	Material	Creation year	Comfort	Atakans' rank	Cesurs' rank
Kinetix	250	Polyester	2019	Semi orthopedic	6	1
Adidas	490	Genuine leather	2020	Full orthopedic	1	4
Nike	520	Polyester	2019	Full orthopedic	5	3
Kinetix	520	Polyester	2020	Semi orthopedic	2	5
Adidas	250	Genuine leather	2020	Full orthopedic	4	6

Nike	490	Genuine leather	2019	Semi orthopedic	3	2
------	-----	-----------------	------	-----------------	---	---

General average of the ranks is 3,5. We find it with $n(n+1)/2$ formula. As n is the number of profiles;

$$\frac{n(n+1)}{2} = \frac{6*7}{2} = 21$$

$$average = \frac{21}{6} = 3,5$$

Lets find the relative importances of the responders.

Table 5 Relative importances of the responders

	Atakan				Cesur			
	Mean for all profiles	Deviation from average rank	Range attribute	Percentage importance	Mean for all profiles	Deviation from average rank	Range attribute	Percentage importance
Kinetix	4	0,5	1,5	%17	3	-0,5	2,5	%27
Nike	2,5	-1			5	1,5		
Adidas	4	0,5			2,5	1		
250 tl	5	1,5	3	%34	3,5	0	1	%11
490 tl	2	-1,5			3,4	-0,5		
520 tl	3,5	0			3,4	0,5		
Polyester	4,33	0,83	1,66	%19	-0,5	-0,5	1	%11
Genuine leather	2,67	-0,83			0,5	0,5		
2019	4,67	1,17	2,34	%26	-1,5	-1,5	3	%33

2020	2,33	-1,17			1,5	1,5		
Semi orthop edic	3,67	0,17	0,34	%4	0,83	-0,83	1,66	%18
Full orthop edic	3,33	-0,17			0,83	0,83		
			$\Sigma=8,$ 84	$\Sigma=100$			$\Sigma=9,$ 16	$\Sigma=100$

Before explaining the percentage of importance values of the respondents, we had better explain the numbers seen on the table. The numbers on Table 3 were obtained from the data given on Table 2. First lets handle Atakan's part. "Mean for level across all profiles" means; the average of Atakan's rank for the profiles. For example "4" is calculated in this way:

Ranks for Kinetix are 6 and 2. We added them and divided by two:

$$\frac{6+2}{2} = 4$$

Ranks for Nike are 1 and 4. We added them and divided by two:

$$\frac{1+4}{2} = 2,5$$

Ranks for Adidas are 5 and 3. We added them and divided by two:

$$\frac{5+3}{2} = 4$$

Ranks for 250 tl are 6 and 4. We added them and divided by two:

$$\frac{6+4}{2} = 5$$

"Deviation from average rank" means, deviating mean for level across all profiles from the general average which was $\frac{21}{6} = 3,5$. So, lets see how they were calculated:

$$4 - 3,5 = 0,5$$

$$2,5 - 3,5 = -1$$

$$4 - 3,5 = 0,5$$

$$5 - 3,5 = 1,5 + 2 - 3,5 = -1,5$$

$$3,5 - 3,5 = 0$$

$$4,33 - 3,5 = 0,83$$

$$2,67 - 3,5 = -0,83$$

$$4,67 - 3,5 = 1,17$$

$$2,33 - 3,5 = -1,17$$

$$3,67 - 3,5 = 0,17$$

$$3,33 - 3,5 = -0,17$$

“Range on attribute” means, the range of mean for level across all profiles. For example the mean for level across all profiles for brand are 4, 2.5 and 4. So the range is 1,5 (=4-2,5).

The mean for level across all profiles for price are 5, 2 and 3,5. So the range is 3(=5-2).

The mean for level across all profiles for material are 4,33 and 2,67. So the range is (=5-2).

The total of ranges on attributes is 8,84 for Atakan. Now we can calculate percentage importance by dividing ranges on attributes by 8,84. The percentage importance of brand is;

$$\frac{1,5}{8,84} = \% 17$$

The percentage importance of price is;

$$\frac{3}{8,84} = \% 34$$

The percentage importance of material is;

$$\frac{1,66}{8,84} = \% 19$$

The percentage importance of creation year is;

$$\frac{2,34}{8,84} = \% 26$$

The percentage importance of comfort is;

$$\frac{0,34}{8,84} = \%4$$

If we sum up these results, the first effective attribute for Atakan is the price of the sneaker with the ratio of %34. Secondly the year of creation with the ratio of %26, thirdly the material of the sneaker with the ratio of %%19, then, the brand is effective with the ratio of %17 and lastly comfort is effective with the ratio of %4.

Now lets do the same calculations for Cesur's preferences "Mean for level across all profiles" means; the average of Atakan's rank for the profiles. For example "3" is calculated in this way:

Ranks for Kinetix are 1 and 5. We added them and divided by two:

$$\frac{1+5}{2} = 3$$

Ranks for Nike are 4 and 6. We added them and divided by two:

$$\frac{4+6}{2} = 5$$

Ranks for Adidas are 3 and 2. We added them and divided by two:

$$\frac{3+2}{2} = 2,5$$

Ranks for 250 tl are 1 and 6. We added them and divided by two:

$$\frac{1+6}{2} = 3,5$$

"Deviation from average rank" means, deviating mean for level across all profiles from the general average which was $\frac{21}{6} = 3,5$. So, lets see how they were calculated:

$$3 - 3,5 = -0,5$$

$$5 - 3,5 = 1,5$$

$$2,5 - 3,5 = -1$$

$$3,5 - 3,5 = 0$$

$$3 - 3,5 = -0,5$$

$$4 - 3,5 = 0,5$$

$$3 - 3,5 = -0,5$$

$$4 - 3,5 = 0,5$$

$$2 - 3,5 = -1,5$$

$$5 - 3,5 = 1,5$$

$$2,67 - 3,5 = -0,83$$

$$4,33 - 3,5 = 0,83$$

The mean for level across all profiles for brand are 3, 5 and 2,5. So the range is 2,5 (=5-2,5).

The mean for level across all profiles for price are 3.5, 3 and 4. So the range is 1 (=4-3).

The mean for level across all profiles for material are 3 and 4. So the range is 1 (=4-3).

The total of ranges on attributes is 9,16 for Cesur. Now we can calculate percentage importance by dividing ranges on attributes by 9,16. The percentage importance of brand is;

$$\frac{2,5}{9,16} = \%27$$

The percentage importance of price is;

$$\frac{1}{9,16} = \%11$$

The percentage importance of material is;

$$\frac{1}{9,16} = \%11$$

The percentage importance of creation year is;

$$\frac{3}{9,16} = \%33$$

The percentage importance of comfort is;

$$\frac{1,66}{9,16} = \% 18$$

If we sum up these results, the first effective attribute for Cesur is the year of creation of the sneaker with the ratio of %33. Secondly, brand is effective with the ratio of %27, thirdly the comfort is effective with the ratio of %18, lastly the price and the material of the sneaker are equally effective with the ratio of %11.

5. Explaining How to Apply Conjoint Analysis With Some Examples

Conjoint analysis is a survey technique that asks respondents to evaluate the products. After obtaining data through the survey, the product evaluations are composed to derive estimates on the utilities of the products attribute levels which are called part worths.(Steiner, Meißner, p:3).

In conjoint analysis, the number of product combinations increase with the number of attributes and their levels (Steiner, Meißner, p:5). Suppose there are three attributes each has two levels, then the respondents have to evaluate 8 ($=2*2*2$) combinations. Sorting 8 combinations is not difficult. But suppose that there are five attributes each has 4 levels, then the respondents have to evaluate 1024 ($=4*4*4*4*4$) combinations. It's impossible to sort them. Therefore in such cases when there are more than three attributes each has at least two or three levels, experimental design reaches our rescue. To limit the number of combinations (profiles) generally orthogonal design is used. In orthogonal design, the levels of the attributes are vertical ie uncorrelated.

Example 1: Suppose that the product is a table. How can we qualify a table, with which features? We may list the attributes (features) as follows:

Attribute 1: material (wood, glass, polyester)

Attribute 2: price (100 tl – 200 tl, 201 tl – 300 tl, 301 tl and more)

Attribute 3: shape or design (circular, square, ellipse, rectangle)

Attribute 4: height of the feet of the table (40 cm – 60 cm, 61 cm – 80 cm, 81 cm and more)

The aim of the conjoint analysis is to measure how decision makers choose various alternatives among the levels of the attributes. For example Atakan prefers polyester, 100 tl – 200 tl, rectangle shaped, 40 cm – 60 cm height of feet. Cesur prefers wood, 301 tl and more, circular,

81 cm and more height of feet. In this example, there are 48 ($=3*2*4*2$) combinations of tables that can be created from these levels of attributes. Oscar's and Cesur's preferences are only the two of them.

Example 2: Assume that we are trying to find the best composition (combination) of these attributes in working life. In conjoint analysis our first aim is to evaluate judgements of people but not to delve the relationships among them. We have two attributes for this example, they are working hours and working environment. Assume that each attribute has three values. First attribute's values are; full time work, part time work and flexible time work. The second attribute's values are; Office work, mix (both Office and remote), remote work. According to this plan, each working conditions are the combinations of these two sets of values and at the total there are $3*3=9$ combinations.

For easy understanding we will ask Hakan to rate these working combinations from zero to one hundred. Zero means "I strongly disagree with this combination" and one hundred means "Yes, this is the perfect combination for me".

Assume that the ratings given by Hakan are shown in the table:

Table 6 Ratings of Hakan's working conditions combinations

		Working Environment		
		Office	Mix (Office and remote)	Remote
Working hours	Full time	70	80	90
	Part time	80	90	90
	Flexible time	100	100	100

It can be seen clearly from the table Hakan prefers flexible working hours and remote work. He rejects working full time and the Office environment.

Now lets evaluate the attribute trade-offs by using dummy variable regression analysis in order to decompose Hakan's evaluations in to partworth functions for working hours and the working environment.

We may write the model as;

$$Y_i = U_1(X_{1i}) + U_2(X_{2i}) + \varepsilon_i \quad , \quad (4)$$

$$i = 1, 2, \dots, 9$$

X_{1i} : level of working hours for the i^{th} combination

X_{2i} : level of working environment for the i^{th} combination

Y_i : rate of preference for the i^{th} combination

U_1 : partworth function for X_1

U_2 : partworth function for X_2

We may define dummy variables as;

$$D1 = \begin{cases} 1 & \text{if } X1 \text{ is full time} \\ 0 & \text{otherwise} \end{cases}$$

$$D2 = \begin{cases} 1 & \text{if } X1 \text{ is part time} \\ 0 & \text{otherwise} \end{cases}$$

$$D3 = \begin{cases} 1 & \text{if } X1 \text{ is flexible time} \\ 0 & \text{otherwise} \end{cases}$$

$$D4 = \begin{cases} 1 & \text{if } X2 \text{ is office} \\ 0 & \text{otherwise} \end{cases}$$

$$D5 = \begin{cases} 1 & \text{if } X2 \text{ is mix model} \\ 0 & \text{otherwise} \end{cases}$$

$$D6 = \begin{cases} 1 & \text{if } X2 \text{ is remote work} \\ 0 & \text{otherwise} \end{cases}$$

Attributes which have 3 values requires 2 dummies. But in this example we use 3 dummies for 3 values. Because we want to show you the regression analysis will exclude unnecessary dummies. Eventually we will have 4 dummies for two attributes.

Table 7 Conjoint analysis designed with dummies

Working hours X_1	Working environment X_2	Rate of preference	D_1	D_2	D_3	D_4	D_5	D_6
Full time	Office	70	1	0	0	1	0	0
Full time	Mix	80	1	0	0	0	1	0
Full time	Remote	90	1	0	0	0	0	1
Part time	Office	80	0	1	0	1	0	0
Part time	Mix	90	0	1	0	0	1	0
Part time	Remote	90	0	1	0	0	0	1
Flexible time	Office	100	0	0	1	1	0	0

Flexible time	Mix	100	0	0	1	0	1	0
Flexible time	Remote	100	0	0	1	0	0	1

Table 8 Dummy variable regression analysis results

Regression Statistics	
Multiple R	0,935
R square	0,875
Adjusted R square	0,750
Std. deviation of error	5,27
Observations	9

The fitted model of Oscar's preferences is;

$$Y = 74,444 + 6,67 D_2 + 20 D_3 + 6,67 D_5 + 10 D_6$$

D_1 and D_2 are excluded. Because in three level attribute system two dummies were enough to design the system but we used three dummies to show this detail.

Table 9 Anova

ANOVA					
	Degrees of freedom	Sum of squares	Mean squares	F	Significance
Regression	4	777,78	194,44	7	0,043
Residual	4	111,111	27,78		
Total	8	888,889			
	Coefficient	Std.error	t-stat	P value	
Constant	74,444	3,93	18,95	0	
D_2	6,67	4,3	1,55	0,19	
D_3	20	4,3	4,65	0,01	
D_5	6,67	4,3	1,55	0,19	

D ₆	10	4,3	2,32	0,08
----------------	----	-----	------	------

Partworth Functions:

$$U_1(X_1) = 6,67D_2 + 20D_3$$

$$U_2(X_2) = 6,67D_5 + 10D_6$$

Recall that dummies were like that;

$$D_2 = \begin{cases} 1 & \text{if } X_1 \text{ is part time} \\ 0 & \text{otherwise} \end{cases}$$

$$D_3 = \begin{cases} 1 & \text{if } X_1 \text{ is flexible time} \\ 0 & \text{otherwise} \end{cases}$$

$$D_5 = \begin{cases} 1 & \text{if } X_2 \text{ is mix model} \\ 0 & \text{otherwise} \end{cases}$$

$$D_6 = \begin{cases} 1 & \text{if } X_2 \text{ is remote work} \\ 0 & \text{otherwise} \end{cases}$$

Table 10 Partworth for the working conditions example

Working hours	Parworth	Working environment	Partworth
Full time	0	Office	0
Part time	6,67	Mix	6,67
Flexible time	20	Remote	10

As it can be seen from the table, Oscar gets large loss if he prefers part time work to flexible time work (=20-6,67). But he gets small loss if he prefers mix model to remote work (=10 - 6,67).

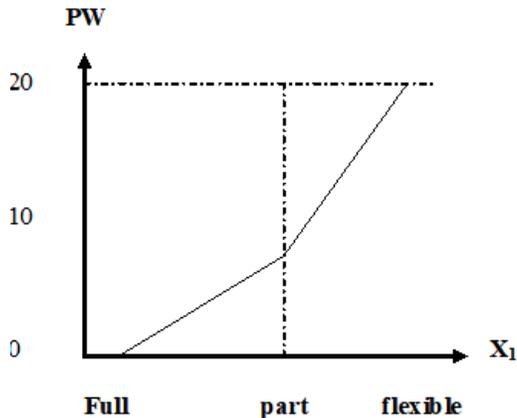


Fig. 4 Plots of PW Functions for X_1

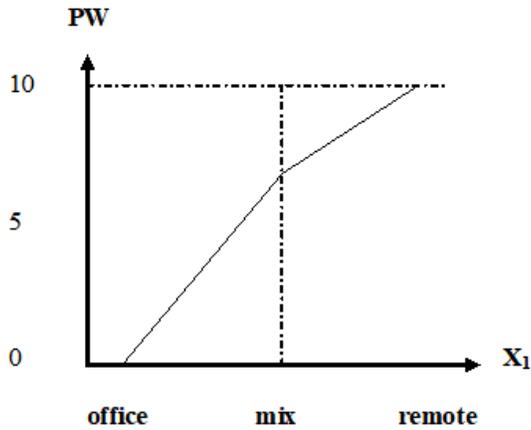


Fig. 5 Plots of PW Functions for X_2

Trade-offs

PW functions are used for measuring the trade-offs between the two attributes. According to our example, if Oscar prefers remote work to mix model, his utility will increase by 3,33 units ($=10-6,67$). Also when we talk about working hours, the same thing is valid because Oscar will increase his utility by 13,33 units ($20-6,67$) if he prefers flexible hours top part time.

Prediction

We can use estimated function to predict the utility scores.

$$74,444 + \frac{(6,67 + 20)}{2} + \frac{(6,67 + 10)}{2} = 96,114$$

This utility score is found by interpolation technique. One can easily find any utility score for any type of combinations. The score of 96,114 is valid for working combination which can be described as midpoint of “part time and flexible time” and midpoint of “mix model and remote work”.

Relative Importance of Attributes

Products have various attributes and the attributes have various levels. Overall utility of a product can be decomposed in to utilities and these utilities are called partworths. The partworths are associated with the levels of the attributes. The relative importance of an attribute is found by dividing the PW to the sum of all PW's.

The relative importance (RIMP) for working hours are;

$$\frac{6,67}{6,67 + 6,67} = \%50$$

$$\frac{20}{20 + 10} = \%66,66$$

RIMP for working environments are;

$$\frac{6,67}{6,67 + 6,67} = \%50$$

$$\frac{10}{10 + 20} = \%33,33$$

REFERENCES

- Bauer, R., Menrad, K. & Decker, T. (2015). Adaptive Hybrid Methods for Choice-Based Conjoint Analysis: A Comparative Study. *International Journal of Marketing Studies*; Vol. 7, No. 1, ISSN 1918-719X E-ISSN 1918-7203.
- Hermelbracht, A. & Koeper, B. (2006). ProSeBiCA: development of new library services by means of conjoint analysis. www.emeraldinsight.com/0737-8831.htm
- Raghavarao, D., Wiley, J. B. & Chitturi, P. (2011). Choice-Based Conjoint Analysis Models and Designs, 978-1-4200-9997-3.
- Steiner, M., Helm, R., & H'ttl-Maack, V. (2016). A customer-based approach for selecting attributes and levels for preference measurement and new product development. *International Journal of Product Development*, 21(4), 233–266. <https://doi.org/10.1504/IJPD.2016.080308>
- Steiner, M., & Meißner, M. (2018). *A User's Guide to the Galaxy of Conjoint Analysis and Compositional Preference Measurement*. 05.06.2020 tarihide www.sawtoothsoftware.com adresinden erişildi.
- Srinivasan, V. (1988). A Conjunctive Compensatory Approach to the Self Explication of Multiattributed Preferences, <https://doi.org/10.1111/j.1540-5915.1988.tb00268.x>
- Srinivasan, V. & Green, P. E. (1978). Conjoint Analysis in Consumer Research: Issues and Outlook. *Journal of Consumer Research*, Vol. 5., 103-123.

CHAPTER IV

FORECASTING AIRLINE PASSENGER AND FREIGHT FLOW: A COMPARISON OF HIERARCHICAL TIME SERIES APPROACHES

Dr. M. Burak ERTURAN

Akdeniz University, Antalya, Turkey

e- mail: burak.erturan@gmail.com, Orcid ID: 0000-0002-8964-1001

1. Introduction

Air transportation industry has been growing all over the world along with growing international trade, transport and travel demand. Growth of the air transportation industry makes it one of the leading industries for countries as well as global economy. Most of the air transport firms are leading firms of their countries. That factors increase the importance of analyzing, researching and forecasting of the topic. In addition, air transportation is perishable in its nature (Fildes, Wei, & Ismail, 2011). Once the aircraft takes off, empty spaces are an opportunity cost to the airline, which cannot be stockpiled for a later time (Sun, Lu, Tsui, & Wang, 2016). Therefore estimating the future demand is a critical research area for air transportation industry.

The air transportation forecasting models in literature could be divided into two: causal (econometric) models and time series models. Grosche, Rothlauf & Heinzl (2007), Abed, Ba-Fail, & Jasimuddin (2001), Sellner & Nagl (2010), Fernandes & Pacheco (2010) are some examples of the causal models. While causal models focus on relationships of the variable with other variables, time series models focus on past values of the interested variable. Time series modeling uses past values of a variable to predict the future values. Especially when causal relations are less clear, time series analysis might be an effective methodology. In literature, time series models are used for forecasting airline passenger and/or freight forecasting purposes. Samagaio & Wolters (2010), Chin & Tay (2001), Tsui, Balli, Gilbey, & Gow (2014), Bermudez, Segura & Vercher (2007), Alekseev & Seixas (2009) are some examples.

In some cases, different from standard univariate time series, time series of the interest might be hierarchically organized. These time series, which can be aggregated at several different levels in groups, are called hierarchical time series (Hyndman, Ahmed, Athanasopoulos & Shang, 2011). Modeling hierarchical time series is, modeling all series in the hierarchy simultaneously without breaking the aggregation consistency. To be able to model the hierarchical time series, one needs an approach for aggregation consistency of the hierarchy. In literature,, researchers developed and used different approaches to model and forecast hierarchical

time series data. Top-down, bottom-up, middle-out and optimum combination/reconciliation models are the most used models for hierarchical time series. Also, there are three main top-down models. Hierarchical time series models are used in different areas of applications. Some examples are, tourism (Hyndman et al.; 2011, Athanasopoulos, Ahmed, & Hyndman, 2009), inflation (Capistran, Constandse, & Ramos-Francia, 2010), spare parts (Moon, Hicks, & Simpson, 2012), oilseeds and pulses (Mitra, Paul, & Pal, 2017), electricity consumption (Silva, Souza, Oliveira, Lourenco, & Calili, 2018), mortality (Li, Li, Lu, & Panagiotelis, 2019), and exports (Mahkya, Ulama, & Suhartono, 2017).

Both airline passenger and freight flow data could be disaggregated into two as: domestic and international. Since domestic and international flights have different characteristics in terms of both passenger and freight transportation, modeling and forecasting of airline flow data by means of hierarchical time series approaches could be a more suitable attempt. The purpose of this study is applying hierarchical time series models to Turkey's airline flow data, and comparing the results of different hierarchical time series (hts) approaches. Hts approaches are applied to both airline passenger flow and freight flow data. Both data are disaggregated into two time series as domestic and international. ARIMA modeling is used as base model and one step further forecasting is done for monthly data. Forecasting target is chosen as twelve months of year 2019. Forecasting results of four ARIMA based hts approaches and a standard ARIMA model without consideration of hierarchical consistency are compared.

2. Model and data

2.1 Hierarchical time series approaches

Time series in a hierarchical structure with aggregation consistency are called hierarchical time series. A representation of one level hierarchical time series with two disaggregated series in level 1 is in Figure 1.

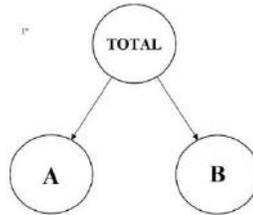


Figure 1: A representation of one level hierarchical time series with two disaggregated time series.

At time t , the value of the total time series is the sum of two disaggregated time series, such that, $Y_t = Y_{A,t} + Y_{B,t}$. Y_t is the total time series and $Y_{A,t}, Y_{B,t}$ are the disaggregated time series data at time t . The

aggregation consistency of the time series could also be represented in matrix form as shown in eqns. 1-2.

$$\begin{bmatrix} Y_t \\ Y_{A,t} \\ Y_{B,t} \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} Y_{A,t} \\ Y_{B,t} \end{bmatrix} \quad (1)$$

$$y_t = S \cdot y_{K,t} \quad (2)$$

y_t is a vector of all observations in the hierarchy at time t , S is the summing matrix and $y_{K,t}$ is the vector of all observations in the bottom level. The most important restriction in hierarchical time series modeling is that final forecasts of all series should provide hierarchical aggregation consistency of the series. Most of the time, individual forecasts of the series do not preserve aggregation consistency of the hierarchy. Therefore, there need to be an approach to set aggregation consistency in the forecasts. Researchers have developed and used some approaches to be able to model and forecast hierarchical time series. Four main hierarchical time series approaches are bottom-up, top-down, middle-out and optimum combination/reconciliation approaches. In addition, there are three main top-down approaches: top-down gross-sohl a, top-down gross-sohl f and top down with forecasted proportions.

2.1.1 Bottom up approach

In bottom-up approach, first step is modeling and forecasting the hierarchically lowest level time series individually. After obtaining the bottom level forecasts, upper level forecasts are found using the summing matrix S . Therefore upper level time series are not forecasted individually, but the forecasts are obtained by simply summing of the lower level forecasts. Bottom up approach could be represented with:

$$\hat{y}_t = S \cdot \hat{y}_{K,t} \quad (3)$$

where, \hat{y}_t is the upper level forecast, $\hat{y}_{K,t}$ is lower level forecast and S is the summing matrix.

2.1.2 Top down approach

In top down modelling, first step is to obtain the hierarchically highest level forecast. After finding the highest level time series forecast individually, lower level forecasts are found by disaggregating the upper forecast using some rule of proportions through the hierarchically lowest level time series. There are three main top-down approaches in the literature with respect to disaggregation methods of the upper level time series. Most used top down approaches are top down gross-sohl a (TDGSA), top down gross-sohl f (TDGSF) and top down with forecast proportions (TDFP).

- TDGSA approach is based on the work of Gross & Sohl (1990). In TDGSA model, proportions of the lower level forecasts are obtained by taking the average of the historical proportions of the lower level series. The model, first calculates the historical proportions for all past values of the series, then takes the average of them. The average values are then used for disaggregating the higher level forecast to find the lower level time series forecasts.
- TDGSF model (Gross & Sohl, 1990), on the other hand, first obtains the average values of past values of the lower level time series and then using these averages calculates the proportions of the lower level time series. In final step higher level forecast is disaggregated according to obtained proportions.
- TDFP approach (Athanasopoulos et al., 2009), unlike the two former approaches, does not use historical values directly. Instead of that, for each lower level series, a univariate time series modeling process is done and then the proportions for lower level time series are found using these forecasts.

In a general framework, top down approach could be written as:

$$\hat{y}_t = S \cdot \hat{y}_{K,t} \cdot p_j \quad (4)$$

where, p_j is the proportions of the series, \hat{y}_t is the upper level forecast, $\hat{y}_{K,t}$ is lower level forecast and S is the summing matrix.

2.1.3 Middle out approach

Middle out approach is the combination of the top down and bottom up approaches. First a middle level is chosen and forecasts of this middle level series are found. Then, bottom up approach is used for upper levels and top down approach is used for lower levels. Therefore, to be able to use middle-out approach, at least two level of hierarchical time series should be exist.

2.1.4 Optimal combination/reconciliation approach

Optimal combination/reconciliation approach is presented in the study of Hyndman et al. (2011), uses all available information to get optimal forecasts for all higher and lower levels. The procedure starts with obtaining independent forecasts for all series in all levels higher and lower. These first independent forecasts' aggregates are not coherent with the aggregation hierarchy. This problem is solved by changing the forecasts such that new forecasts are as close as possible with independent forecasts and at the same time, consistent with the hierarchical aggregation rules. Optimal combination/reconciliation process uses linear regression and a weighted least square model to find optimal forecasts. Optimal reconciliation approach is represented with:

$$\hat{y}_t = S(S'S)^{-1}S' \hat{y}_t \quad (5)$$

Detailed information about optimal combination/reconciliation model could be found in Hyndman et al. (2011).

2.2 ARIMA as base forecasting model

Hierarchical time series approaches are models to solve hierarchical consistency problem of the time series forecasts of univariate time series models. Therefore, to be able to use hts models, a base forecasting method should exist. Using ARIMA as base forecasting model is a common practice in hierarchical time series literature. First proposed by Box & Jenkins (1970), autoregressive integrated moving averages (ARIMA) model is based on ARMA model, in which autoregressive (AR) and moving averages (MA) models are used together. ARMA model assumes a time series data is dependent to lagged values of the data and also lagged error values of the time series. ARMA model cannot be applied to non-stationary time series. Different from ARMA, ARIMA model transforms a non-stationary time series into a stationary one by differencing process. The degree of differencing to transform the time series into a stationary one, is shown with d .

In ARIMA modeling process, the non-stationary time series is converted to a stationary one by successive differencing processes. Then, ARMA model is used for this stationary time series. For a d degrees differenced stationary time series, w_t , of a non-stationary time series, x_t , where $\nabla^d x_t = w_t$, p degrees of autoregressive and q degrees of moving averages ARIMA (p,d,q) model can be stated as: $w_t = \varphi_1 w_{t-1} + \varphi_2 w_{t-2} + \dots + \varphi_p w_{t-p} + a_t + \theta_1 a_{t-1} + \theta_2 a_{t-2} + \dots + \theta_q a_{t-q}$, where, a_t is error term for time t , $\varphi_1, \varphi_2, \dots, \varphi_p$ are coefficients of lagged values and $\theta_1, \theta_2, \dots, \theta_q$ are coefficients of lagged error values.

2.3 Data

Data set consists of three-time series for each airline passenger and freight flow data, such that one of level 0 and two of level 1. Level 0, the aggregate time series are monthly airline passenger flow and monthly airline freight volume of Turkey. Level 1 time series consist of monthly domestic and international passenger number, and also, monthly domestic and international freight volume of airlines respectively. All the data are collected from official website of Republic of Turkey Ministry of Transport and Infrastructure, General Directorate of State Airports Authority website, <https://dhmi.gov.tr/>.

Time series data starts from January 2008 and ends with December 2019. Forecasting target is the twelve months of year 2019. Descriptive

statistics of the time series data excluding forecasting target of year 2019 is in Table 1.

Table 1: Descriptive statistics of data used

	PASSENGER (person)			FREIGHT (tonnes)		
	Domestic	International	Total	Domestic	International	Total
No of Data Points	144	144	144	144	144	144
Min	2406412	1550580	4120154	28536	53281	83982
Max	10817995	14150587	23247156	102416	348557	444767
Median	6719926	5513425	12182087	59227	164756	224757
Mean	6486730	5996639	12483369	59744	169108	228852
Std. Dev	2289444,98	2770766,59	4689244,66	17683,75	64551,06	80281,51
Skewness	-0,0480	0,5634	0,2362	0,3734	0,4283	0,3395
Kurtosis	-1,1844	-0,1741	-0,6196	-0,2996	-0,2252	-0,3807

3. Results

In this study, hierarchical time series models are applied to Turkey's airline passenger and freight transportation data. Monthly passenger and freight volume time series data is disaggregated into two bottom level time series as domestic and international. In level 0 of the hierarchical structures there are total passenger flow and total freight volume. In level 1, there are two-time series, domestic and international passenger flow and domestic and international freight volume respectively.

All hierarchical time series modeling and forecasting processes are done with R statistical software (version 3.5.1). Hts package presented in (Hyndman, Athanasopoulos, & Shang, 2014) is used for hierarchical modeling. Also ARIMA modeling is done automatically with auto.Arima method described in Hyndman and Khandakar (2008), and takes the seasonal models into account.

Five hierarchical time series approaches are used in the study; namely, bottom up, top down gross – sohl method a, top down gross – sohl method f, top down with forecasted proportions and optimal combination/reconciliation methods. Since hierarchical structure has only two levels, middle out approach cannot be used. Also, ARIMA is used as base time series model. In addition to five hts approaches, individual ARIMA forecasts without considering hierarchical consistency is also compared to hts models. In fact, lower level forecasts of bottom-up approach and higher level forecasts of top-down approaches are individual

ARIMA models of the series. Model comparisons are done for one step further forecasts. There are 12 forecasting target data, which are monthly airline flow data of 2019 from January to December.

Table 2: Absolute percentage error values of the passenger flow forecasting results (in percentage)

	BU			TDGSA			TDGSF		
	Dom	Int	Total	Dom	Int	Total	Dom	Int	Total
Jan 19	2,94	1,49	1,21	12,70	19,57	0,12	14,11	21,78	0,12
Feb 19	3,09	0,70	1,56	8,86	17,99	1,95	10,30	20,13	1,95
Mar 19	6,29	1,51	2,98	3,82	13,79	3,65	5,32	15,83	3,65
Apr 19	13,18	6,15	3,73	10,21	0,27	5,35	8,52	2,04	5,35
May 19	4,10	1,82	0,86	23,37	10,90	4,64	21,48	9,33	4,64
Jun 19	12,69	11,36	11,94	9,56	24,79	9,66	7,85	23,44	9,66
Jul 19	7,80	5,01	0,20	33,16	20,13	1,55	30,99	18,64	1,55
Aug 19	1,15	2,99	1,37	38,12	22,04	1,50	35,70	20,49	1,50
Sep 19	2,40	2,86	0,68	31,54	18,00	2,52	29,04	16,23	2,52
Oct 19	6,44	1,44	3,63	20,41	17,10	0,68	18,02	15,23	0,68
Nov 19	7,68	11,58	1,02	0,97	8,65	4,44	1,08	11,15	4,44
Dec 19	3,54	6,43	4,86	5,58	12,28	8,62	3,45	14,83	8,62
Average	5,94	4,44	2,84	16,53	15,46	3,72	15,49	15,76	3,72
	TDFP			COMB			ARIMA (Not Hierarchical)		
	Dom	Int	Total	Dom	Int	Total	Dom	Int	Total
Jan 19	1,58	2,79	0,12	2,47	2,56	0,51	2,94	1,49	0,12
Feb 19	3,48	0,32	1,95	3,23	0,40	1,77	3,09	0,70	1,95
Mar 19	6,97	0,88	3,65	6,54	1,02	3,33	6,29	1,51	3,65
Apr 19	14,95	4,68	5,35	13,89	5,12	4,60	13,18	6,15	5,35
May 19	8,00	1,86	4,64	6,01	0,30	2,89	4,10	1,82	4,64
Jun 19	10,43	9,06	9,66	11,49	10,11	10,72	12,69	11,36	9,66
Jul 19	9,25	3,74	1,55	8,58	4,32	0,92	7,80	5,01	1,55
Aug 19	4,09	0,17	1,50	2,88	1,55	0,18	1,15	2,99	1,50
Sep 19	0,61	4,74	2,52	1,34	3,83	1,69	2,40	2,86	2,52
Oct 19	3,57	1,58	0,68	4,83	0,17	2,02	6,44	1,44	0,68
Nov 19	4,55	15,36	4,44	6,23	13,94	2,88	7,68	11,58	4,44
Dec 19	7,26	10,25	8,62	5,13	9,00	6,89	3,54	6,43	8,62
Average	6,23	4,62	3,72	6,05	4,36	3,20	5,94	4,44	3,72

Table 3: Absolute percentage error values of the freight flow forecasting results (in percentage)

	BU			TDGSA			TDGSF		
	Dom	Int	Total	Dom	Int	Total	Dom	Int	Total
Jan 19	1,83	0,95	1,16	14,61	5,57	0,76	12,09	4,81	0,76
Feb 19	0,73	5,03	4,08	28,12	3,92	3,18	25,30	3,12	3,18
Mar 19	9,43	2,98	4,34	24,97	11,83	4,08	22,21	11,10	4,08
Apr 19	5,60	5,85	5,80	36,71	3,27	5,16	33,62	2,44	5,16
May 19	18,91	1,25	2,24	61,68	10,07	2,36	57,97	9,29	2,36
Jun 19	3,87	5,29	4,99	21,76	13,45	6,04	18,82	12,67	6,04
Jul 19	1,76	8,56	6,39	17,93	16,21	9,04	14,98	15,43	9,04
Aug 19	1,86	4,46	3,09	19,12	11,98	5,26	16,01	11,12	5,26
Sep 19	3,90	0,39	1,09	36,43	8,69	0,32	32,71	7,76	0,32
Oct 19	4,96	0,72	1,51	44,31	11,57	1,20	40,21	10,64	1,20
Nov 19	14,27	2,81	0,50	38,19	10,51	1,08	34,10	9,53	1,08
Dec 19	2,11	5,57	4,18	56,14	6,90	4,49	51,43	5,86	4,49
Average	5,77	3,65	3,28	33,33	9,50	3,58	29,95	8,65	3,58
	TDFP			COMB			ARIMA (Not Hierarchical)		
	Dom	Int	Total	Dom	Int	Total	Dom	Int	Total
Jan 19	0,11	0,97	0,76	0,47	0,06	0,16	1,83	0,95	0,76
Feb 19	0,14	4,12	3,18	0,04	4,62	3,61	0,73	5,03	3,18
Mar 19	9,18	2,72	4,08	9,22	2,86	4,20	9,43	2,98	4,08
Apr 19	4,97	5,21	5,16	5,10	5,56	5,47	5,60	5,85	5,16
May 19	19,04	1,14	2,36	19,02	1,20	2,30	18,91	1,25	2,36
Jun 19	4,94	6,33	6,04	4,72	5,75	5,54	3,87	5,29	6,04
Jul 19	1,12	11,14	9,04	0,35	9,78	7,80	1,76	8,56	9,04
Aug 19	0,41	6,59	5,26	0,23	5,46	4,23	1,86	4,46	5,26
Sep 19	3,11	0,38	0,32	3,27	0,04	0,69	3,90	0,39	0,32
Oct 19	4,67	0,42	1,20	4,70	0,59	1,35	4,96	0,72	1,20
Nov 19	14,77	2,21	1,08	14,76	2,55	0,80	14,27	2,81	1,08
Dec 19	1,82	5,88	4,49	1,83	5,70	4,34	2,11	5,57	4,49
Average	5,36	3,92	3,58	5,31	3,68	3,37	5,77	3,65	3,58

Table 2 and Table 3 show absolute percentage error (APE) and mean absolute percentage error (MAPE) values of forecasts. Bottom-up (BU), TDGSA, TDGSF, TDFP and optimal combination/reconciliation (COMB)

forecast results are tabulated for domestic (Dom), international (Int) and total time series.

From Table 2 and Table 3, it can be seen that bottom-up approach gives best results for both total series of airline passenger and freight volume forecasts. For disaggregated time series, bottom-up approach and optimum combination/reconciliation method are superior to other methods. In passenger flow forecasting, bottom-up approach gives best results for domestic airline passengers. On the other hand, international transportation flow of passengers is forecasted best with the optimum combination/reconciliation method. Additionally, in airline freight volume forecasting, domestic freight volume is forecasted better with optimum combination/reconciliation model, whereas, international freight volume forecasts of bottom up model are better. Both two of the top-down gross-sohl methods (TDGSA, TDGSF) have distinctly low performances in both passenger flow and freight volume forecasting. On the other hand, third top-down model, TDFP, gives relatively better results than other top down models. An average forecasting performance of hts models for two levels of forecasts are at Table 4.

It could be seen from Table 4, in passenger flow forecasting, bottom up approach gives better results in both lower and higher level forecasts. On the other hand, in freight volume forecasting, bottom-up approach is better for upper level and optimal combination/reconciliation model is better for lower level forecasts.

Table 4: Mean absolute percentage error values of forecasting results of hierarchical levels

	Passenger Flow		Freight Flow	
	Level 0	Level 1	Level 0	Level 1
BU	2,84	5,19	3,28	4,71
TDGSA	3,72	15,99	3,58	21,42
TDGSF	3,72	15,62	3,58	19,30
TDFP	3,72	5,42	3,58	4,64
COMB	3,20	5,21	3,37	4,49

Conclusions

Hierarchical time series forecasting is simultaneous modeling and forecasting of multiple time series with a hierarchical aggregation consistency. A base time series forecasting model and a hierarchical time series approach to maintain hierarchical aggregation consistency is needed for modeling and forecasting hierarchical time series. In the proposed

study, five different hierarchical forecasting approaches are used for comparing the forecasting results of Turkey's airline passenger and freight flow. Each time series of passenger and freight flow is disaggregated into two lower level series as domestic and international. Time series data are monthly airline passenger and freight flow and the forecasting target is twelve months of 2019. Base model used for univariate All forecasts are one step further forecasts of time series. All modeling and forecasting processes are done with R statistical software, using hts package.

Obtained results show that bottom-up approach with ARIMA base model shows very good performances for all series lower and higher level. On the other hand, optimal combination/reconciliation approach is also successful in forecasting, especially in lower level forecast of freight volume forecasts. In addition, TDFP approach shows good results and are separated from other top-down models with good forecasting performance. Other top-down models of gross-sohl a and gross-sohl b shows distinctly worse forecasting results.

An important aspect of the results is that the aggregated series are better forecasted with bottom-up model in general. That is, forecasting domestic and international passenger and freight flow with ARIMA and summing up the resulted forecasts to get total time series forecasts gives better results than forecasting aggregated time series directly using ARIMA. Therefore, disaggregated time series of passenger and freight volume, domestic and international time series could be said to have different characteristics, so that, modeling and forecasting these disaggregated time series first and obtaining total times series forecasts using disaggregated forecasts is a successful approach. On the other hand, top-down models are not much successful unless using TDFP model and taking the individual forecasts of the disaggregated time series into account. Optimum combination/reconciliation approach, which is expected to show best performance, is also successful but not better than bottom-up model.

Airline passenger and freight flow data series is suitable for modeling and forecasting with hierarchical time series approaches. Proposed study shows that disaggregation of the total volume of airline passenger and freight, and using hierarchical time series approaches gives better results than forecasting total time series individually. In this study, airline passenger and freight flow disaggregated into domestic and international means. In fact, these time series could be disaggregated to some other sub-time series. Disaggregation by destination, or freight and passenger type or disaggregation by airports might be some examples. Therefore, the subject of the proposed study is open for further research. In addition, applying and comparing hierarchical time series approaches is possible to get more insight of these methods.

References

- Abed, S. Y., Ba-Fail, A. O., & Jasimuddin, S. M. (2001). An econometric analysis of international air travel demand in Saudi Arabia. *Journal of Air Transport Management*, 7(3), 143–148. doi:10.1016/S0969-6997(00)00043-0
- Alekseev, K. P. G., & Seixas, J. M. (2009). A multivariate neural forecasting modeling for air transport – Preprocessed by decomposition: A Brazilian application. *Journal of Air Transport Management*, 15, 212-216. doi:10.1016/j.jairtraman.2008.08.008
- Athanasopoulos, G., Ahmed, R. A., & Hyndman, R. J. (2009). Hierarchical forecasts for Australian domestic tourism. *International Journal of Forecasting*, 25, 146–166. doi:10.1016/j.ijforecast.2008.07.004
- Bermudez, J. D., Segura, J.V., & Vercher, E. (2007). Holt-Winters Forecasting: an alternative formulation applied to UK air passenger data. *Journal of Applied Statistics*, 34, 1075–1090. doi:10.1080/02664760701592125
- Box, G., & Jenkins, G. (1970). *Time series analysis: Forecasting and control*. San Francisco: Holden-Day.
- Capistran, C., Constandse, C., & Ramos-Francia, M. (2010). Multi-horizon inflation forecasts using disaggregated data. *Economic Modelling*, 27, 666–677. doi:10.1016/j.econmod.2010.01.006
- Chin, A. T. H., & Tay, J. H. (2001). Developments in air transport: implications on investment decisions, profitability and survival of Asian airlines. *Journal of Air Transport Management*, 7, 319–330. doi:10.1016/S0969-6997(01)00026-6
- Fernandes, E., & Pacheco, R. R. (2010). The causal relationship between GDP and domestic air passenger traffic in Brazil. *Transportation Planning and Technology*, 33, 569–581. doi:10.1080/03081060.2010.512217
- Grosche, T., Rothlauf, F., & Heinzl, A. (2007). Gravity models for airline passenger volume estimation. *Journal of Air Transport Management*, 13(4), 175-183. doi:10.1016/j.jairtraman.2007.02.001
- Gross, C. W., & Sohl, J. E. (1990). Disaggregation methods to expedite product line forecasting. *Journal of Forecasting*, 9, 233–254. doi:10.1002/for.3980090304
- Hyndman, R. J., & Khandakar, Y. (2008). Automatic time series forecasting: The forecast package for R. *Journal of Statistical Software*, 27(1), 1-22. doi:10.18637/jss.v027.i03

- Hyndman, R. J., Ahmed, R. A., Athanasopoulos, G., & Shang, H. L. (2011). Optimal combination forecasts for hierarchical time series. *Computational Statistics and Data Analysis*, 55(9), 2579–2589. doi:10.1016/j.csda.2011.03.006
- Hyndman, R.J., Athanasopoulos, G., & Shang, H.L., (2014). hts: An R Package for Forecasting Hierarchical or Grouped Time Series. Retrieved from: <https://cran.r-project.org/web/packages/hts/vignettes/hts.pdf>.
- Li, H., Li, H., Lu, Y., & Panagiotelis, A. (2019). A forecast reconciliation approach to cause-of-death mortality modeling. *Insurance: Mathematics and Economics*, 86, 122–133. doi:10.1016/j.insmatheco.2019.02.011
- Mahkya, D. A., Ulama, B. S., & Suhartono (2017). Hierarchical time series bottom-up approach for forecast the export value in Central Java. *Journal of Physics: Conference Series*, 893(1), 1-8. doi:10.1088/1742-6596/893/1/012033
- Mitra, D., Paul, R.K., & Pal, S. (2017). Hierarchical Time-series Models for Forecasting Oilseeds and Pulses Production in India. *Economic Affairs*, 62(1), 103-111. doi:10.5958/2230-7311.2017.00045.9
- Moon, S., Hicks, C., & Simpson, A. (2012). The development of a hierarchical forecasting method for predicting spare parts demand in the South Korean Navy - A case study. *International Journal of Production Economics*, 140, 794–802. doi:10.1016/j.ijpe.2012.02.012
- Samagaio, A., & Wolters, M. (2010). Comparative analysis of government forecasts for the Lisbon Airport. *Journal of Air Transport Management*, 16, 213–217. doi:10.1016/j.jairtraman.2009.09.002
- Sellner, R., & Nagl, P. (2010). Air accessibility and growth – The economic effects of a capacity expansion at Vienna International Airport. *Journal of Air Transport Management*, 16, 325-329. doi:10.1016/j.jairtraman.2010.04.003
- Silva, F. L. C., Souza, R. C., Oliveira, F. L. C., Lourenco, P. M., & Calili, R. F. (2018). A bottom-up methodology for long term electricity consumption forecasting of an industrial sector - Application to pulp and paper sector in Brazil. *Energy*, 144, 1107-1118. doi:10.1016/j.energy.2017.12.078
- Tsui, W. H. K., Balli, H. O., Gilbey, A., & Gow, H. (2014). Forecasting of Hong Kong airport's passenger throughput. *Tourism Management*, 42, 62–76. doi:10.1016/J.TOURMAN.2013.10.008

CHAPTER V

A SENTIMENT ANALYSIS OF TWITTER DATA FOR PREDICTING STOCK MARKET PRICE

Assoc. Prof. Dr. Yüksel Akay UNVAN

Ankara Yıldırım Beyazıt University, Ankara, Turkey,
e-mail: aunvan@ybu.edu.tr, Orcid ID:0000-0002-0983-1455

1. Introduction:

With the development of social licensing, people can now communicate with thousands of people. Therefore, the use of social media is increasing day by day. Social media users can freely express their opinions and ideas on such platforms without any restrictions. These platforms are designed to share different content, focusing on user requests, each used for a different purpose and need. Many more types of content, such as text, video, and polls, can be shared. There are many companies and institutions in social media where shares are made regardless of time and place. These institutions are easier to reach the target audience by using social media correctly. For this reason, the importance of ideas and opinions expressed on social media is gaining importance as time passes.

Today, there are dozens of social media websites and applications serving different needs and purposes. When the most used social networks in the world are searched; Facebook, Twitter, Instagram, Swarm, Youtube, and Snapchat stand out. Among these social networks, Facebook and Twitter stand out with their large masses of users all over the world. That is, Facebook and Twitter have a large audience and millions of data created by these users because they were developed earlier than other social networks. With the increase in the data obtained from the users of these social networks with each passing day, there is a need to analyze and use the obtained data correctly. (Karabulut and Küçüksille, 2018).

Twitter is one of the social media platforms where thoughts and ideas are shared most intensively. It is a social network that allows users to tweet with a limit of 140 characters at startup. It was doubled on November 7, 2017, excluding languages other than Chinese, Japanese, and Korean. Messages sent are called tivit (tweet). Twitter has 300 million active users per month in 2016 (Anastasia and Budi, 2016). It is obvious that this number will increase as time goes on. Twitter was used by the users to share such thoughts and ideas.

2. Literature Review:

Some companies and organizations also actively use social media to benefit more from their work. Many researchers, using a variety of

methods to make an event, product, stock market, etc. to make predictions using tweets on Twitter has done research. (Jain and Katkar, 2015).

Emotion analysis, also known as idea mining, is a method that calculates and identifies the thoughts the user has expressed about a particular product or any subject. (Anjaria and Guddeti, 2014). Emotions are expressed in text or on images on social media.

With the development of social media, people's feelings and thoughts can now be effective in favor of or against a government or a company. (Jain and Katkar, 2015). In recent years, emotion analysis has been one of the most important research areas in speech recognition (Tyagi and Chandra, 2015).

Liu (2015) defined emotion analysis as a study that analyzes people's thoughts, interpretations, emotions and opinions in texts that they transmit in writing to institutions.

In general, although emotion analysis and idea mining have the same meaning, some researchers have said that they are partly different. Idea mining analyzes and reveals people's thoughts, and emotion analysis analyzes a text to reveal the emotional expressions there (Can and Alatas, 2017).

Behavioral economics tells us that emotions can profoundly affect individual behavior and decision-making. Does this also apply to societies at large, i.e. can societies experience mood states that affect their collective decision making? By extension is the public mood correlated or even predictive of economic indicators? Bollen and his friends investigated whether measurements of collective mood states derived from large-scale Twitter feeds are correlated to the value of the Dow Jones Industrial Average (DJIA) over time (Bollen et al., 2011). They used a fuzzy neural network to predict. The results showed that the moods in the tweets were highly compatible with the Dow Jones Industrial Index.

Chen and Lazer investigated the relationship between twitter feed content and the stock market movement. Specifically, they wanted to see if the sensitivity information extracted from these feeds could be used to predict future changes in prices and how well it could be used (Chen and Lazer, 2011).

Bing and his friends (2014) reviewed the tweets and proposed a method to mine Twitter by using a data mining algorithm. As a result of their study, they discovered that it was possible for the stock closing price of some companies to be predicted with an average accuracy as high as 76.12%.

Zhang (2013) examined the effects of various machine learning techniques on providing positive or negative sensitivity to the tweet corpus. In addition, he implemented extracted twitter sensitivity to perform two

tasks. First, he was looking for a correlation between twitter sentiment and stock prices. Second, he found which words in tweets were related to changes in stock prices by analyzing price changes and tweets. Moreover, he did this using tweets using Twitter's search API and then processing it for analysis.

Dickinson and his colleagues wanted to estimate a sensitivity value for stock-related tweets on Twitter and demonstrated that there was a relationship between that sentiment and the movement of a company's stock price in a real-time flow environment. Their values were then evaluated for the correlation between stock prices and Twitter sentiment for each company (Dickinson and Hu, 2015).

Agarwal and colleagues conducted sensitivity analysis in Twitter texts. They created models to classify tweets in a positive, negative and neutral way. They build models for two classification tasks: a binary task of classifying sentiment into positive and negative classes and a 3-way task of classifying sentiment into positive, negative and neutral classes. They experimented with three types of models: unigram model, feature-based model and tree seed model. Moreover, they aimed to make predictions about the emotional attitudes of users or a particular group against an event by conducting some studies and analysis on events and labels. They conducted research on artificial intelligence, idea mining and understanding of emotional situations on the texts on Twitter (Agarwal et al., 2011).

Wang and his colleagues developed a system for real-time analysis of public sentiment for presidential candidates announced on Twitter, a microblogging service for presidential candidates in the 2012 US election. Twitter has become a central site where people express their views on political parties and candidates. It provides an unparalleled opportunity to measure the relationship between expressed public opinion and election events by following up on events or news on Twitter instantly. In addition, sensitivity analysis can help to explore how these events affect the public (Wang et al., 2012).

Li and his colleagues studied the detection of an event or a campaign on Twitter in their work. They aimed to realize this event or campaign in a spatial and temporal manner and to develop a twitter-specific "Event Perception and Analysis" system. In this study, they presented the general architecture of the system related to the system they developed, applications that search and sort tweets and obtain the users' location information from the tweet texts (Li et al., 2012)

Twitter is an important and influential social media platform, but much research into its uses remains centred around isolated cases – e.g. of events in political communication, crisis communication, or popular culture, often

coordinated by shared hashtags (brief keywords, prefixed with the symbol '#'). In particular, a lack of standard metrics for comparing communicative patterns across cases prevents researchers from developing a more comprehensive perspective on the diverse, sometimes crucial roles which hashtags play in Twitter-based communication. They address this problem by outlining a catalogue of widely applicable, standardised metrics for analysing Twitter-based communication, with particular focus on hashtagged exchanges. They also point to potential uses for such metrics, presenting an indication of what broader comparisons of diverse cases can achieve (Bruns and Stieglitz, 2013).

3. Application:

Data is not only numerical but also visual, auditory and textual. Social Media Users' writings are also data. The so-called text mining is the analysis of the text. Articles contain valuable information about that author. In other words, they summarize the author's character, also tell the researcher about the other topics related to the subject. It reflects characteristic features such as which words the author chooses, which words he uses after which words. Text mining studies on Twitter, which contain large amounts of text, are frequently conducted in different applications. Analyses on Twitter text data are important in marketing activities, stock market forecasts etc. and are used by companies.

In the application part of this study, the tweets between the dates of 10.06.2019 and 16.06.2019 are obtained and filtered by using the keywords representing two popular firms which are Turkish Airlines and Garanti Bank. Finally, the relation between the tweet content and stock price changes are examined in daily basis. The main features and stages of the application is given in different sections below.

3.1. Methodology of Application:

Firstly, the working methodology of the application is explained in the chart below.

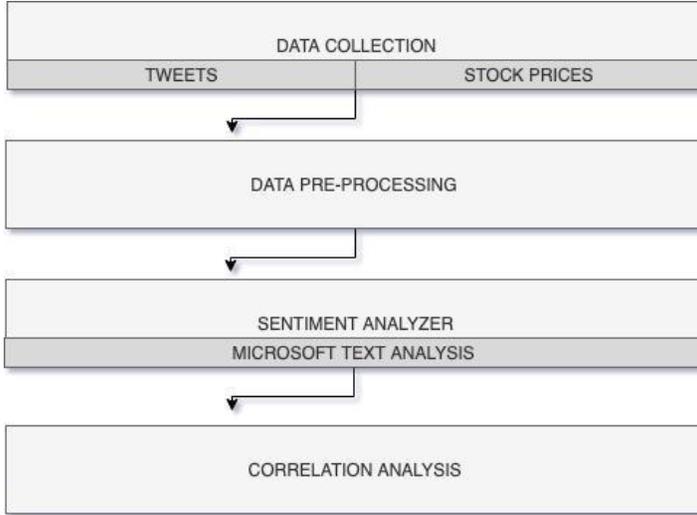


Fig. 1 Flow Chart of the proposed analysis

3.2. Pre-Processing:

3.2.1. Programming Language Used In The Application:

Python is a very suitable language for data analysis. In this study, Python is used as a programming language. The Python is very active developer community includes many libraries that extend the language and make it easy to use a variety of services. One of these libraries is Tweepy. Tweepy, an open source application, is hosted on GitHub and allows Python to communicate with the Twitter platform and use the Twitter API.

3.2.2. Data Collection:

In order to collect the application data, a total of 7.758 tweets were obtained from the Twitter API using Tweepy between 10.06.2019 and 16.06.2019. Then, Twitter was filtered by using the keywords such as “#thyao” for Turkish Airlines and “#garan” for Garanti Bank. The keywords were determined by selecting the two most popular companies among the listed companies in order to obtain the required data.

3.3. Data Processing:

3.3.1. Identifying Bot Users:

Botometer (formerly BotOrNot) checks the activity of a Twitter account and gives it a score based on how likely the account is to be a bot. Higher scores are more bot-like. Using botometer, bot users are estimated and removed from the tweet list. Thus more real human thought is added to the data set.

3.3.2. Regex Special Character Matching Removal:

In Python, Regex matching is performed to match URLs and is replaced with the term URL. Usually tweets consist of hashtags (#) and @ addressing other users. They are also modified as appropriate. For example, #THYAO is replaced with THYAO. After these steps, tweets are ready for Sentiment Analysis.

3.4. Stock Prices Collecting:

In order to collect the stock price data, share opening and closing values of related companies are obtained from “www.borsaistanbul.com” website. The end of day value is calculated by subtracting the opening value from the closing value.

3.5. Sentiment Analysis:

The sentiment analysis of this application was performed through Microsoft Text Analysis API. The API returns a string list that shows the major conversation points in the input text. It evaluates unstructured text and returns a list of key expressions for each JSON document. This feature is useful for quickly identifying key points in a document collection. For example, when the input text is "THYAO hisseleri yükseliş eğiliminde." , API return "THYAO" (shares) and "yükseliş eğiliminde" as the main conversation points. In addition, this api can be used for organizations, people, attractions and so on. It detects all named entities in the text. Asset link text clarifies individual assets by associating them with additional information on the web. The sentiment analysis used returns a numeric score between 0 and 1. A score close to 1 indicates that the approach is positive and a close to 0 indicates that it is negative. The approach score is generated using classification techniques. The classifier's input properties include n-grams, properties generated from speech section tags, and word insertions. In this study, the tweets are classified as positive and negative.

3.5.1. Sample Tweet Analysis with Microsoft API:

Tweet: “ #THYAO hisse durumu gayet iyi. Ama yine de dikkatli olun derim. #BIST”

Table 1 Microsoft Text Analytics.

Language	Sentiment	Assets	Named Asset Recognition
Turkish (Trust: %100)	0.85	THYAO [Organization]	#THYAO hisse durumu gayet iyi. Ama yine de dikkatli olun derim. #BIST

Table 2 Sample tweets sentiment labeling by the model

90400 ün altına düşme düşersen öleceğim. Karanlığa düşeceğim.	0.47
Uzun vade için ilk hedefimiz okey oldu #thyao	0.62
#thyao Sermaye artırım tarihi 19 unda 21 inde hesaplarda olacak. Elinde olanlara hayırlı olsun.	0.80
#thyao için EMA 200'ün bir ölçü olduğunu düşünmüyorum abi.	0.63
#THYAO yolcusu kalmasın...	0.81
Aldım sattım kozayı karla verdim ipeke bekliyormis eeeeee birakin bu isleri adamakilli alın thyao trkcm ununun gitsin bak zaman su gibi geçiyor yazık etmeyin kendinize alın sağlam mali ununun gitsin neyse rabbim emeklerini bosuna vermesin	0.39
Şahsen güzel bir borsa günüydü #thyao	0.73
#thyao kafa karıştan görüntü demiştim yükseliş geldi 5,20-30 civarı direnci	0.61

3.6. Correlation Analysis:

The correlation analysis is a statistical method used to test the linear relationship between two variables or the relationship of one variable with two or more variables and to measure the degree of this relationship, if any. The aim of correlation analysis; is to see in which direction the dependent variable (Y) changes when the argument (X) changes. As a result of correlation analysis, whether there is a linear relationship and the degree of this relationship, if any, is calculated with the correlation coefficient.

The correlation coefficient is indicated by “r ve and takes values between -1 and +1.

A positive relationship indicates that if the values of the X variable increase, the values of the Y variable increase, or if the values of the X variable fall, the values of the Y variable tend to fall (Figure 2. a.). A negative correlation (negative relationship) means that if the values of one of the variables increase, the values of the other variable decrease (Figure 2. b.).

The correlation coefficient "0" indicates that there is no linear relationship between the variables (Figure 2. c.). The correlation does not mean cause-effect relationship.

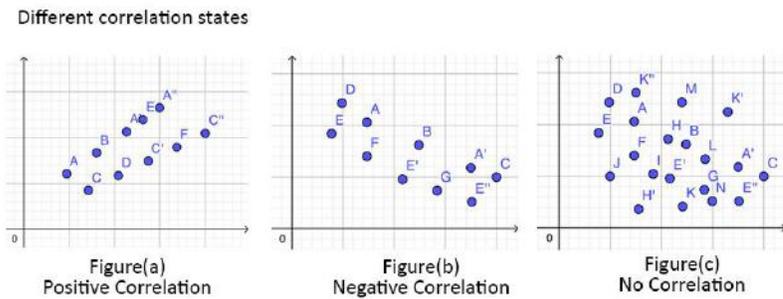


Fig. 2 The Correlation States

Table 3 The Interpretation of Pearson Correlation Coefficient

R	Relationship
0,00-0,25	Very Poor
0,26-0,49	Weak
0,50-0,69	Medium
0,70-0,89	High
0,90-1,00	Very High

The data were recorded to excel table on a daily basis within a 5 day (weekend excluded) period. The Sentiment Analysis values of all tweets recorded within 1 day were added to the number of tweets and 1 day sentiment analysis value was found. Afterwards, the value of the opening share was removed from the closing share value and the daily value to be used in the correlation analysis was determined. The correlation analysis was performed after forming the binary data set.

3.6.1. Correlation analysis for THYAO shares:

Table 4 The Results for Turkish Airlines

Daily Stock Price Change	Result of Sentiment Analysis
0.32	0.5527
-0.38	0.5329
0.07	0.5541
-0.25	0.5265
-0.03	0.5406



Fig. 3 The Correlation Graph for Turkish Airlines

The Pearson correlation coefficient is $r = 0.8661$, $p\text{-value} = 0.0576$. That is, the relationship is found as high.

3.6.2. Correlation analysis for GARAN shares:

Table 5 The Results for GARANTI BANK

Daily Stock Price Change	Result of Sentiment Analysis
0.5344	-0.06
0.5369	-0.12
0.5606	-0.01
0.5349	-0.2
0.5244	-0.11

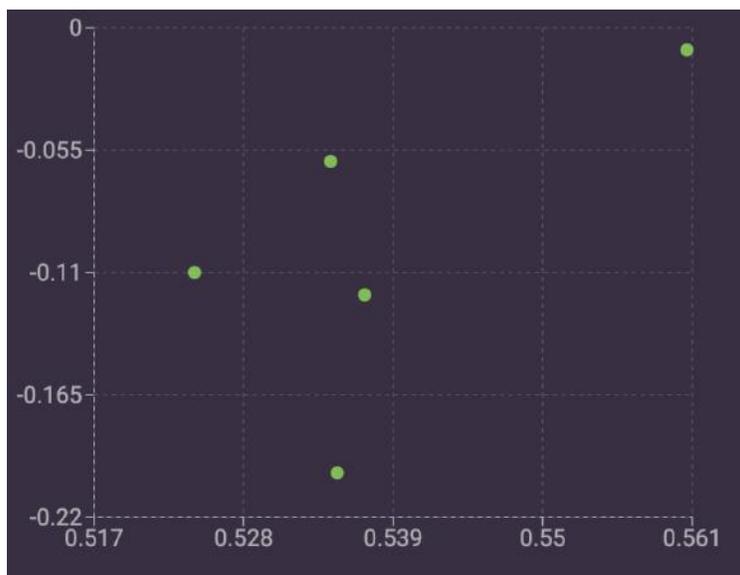


Fig. 4 The Correlation Graph for Turkish Airlines

Pearson correlation coefficient is $r = 0.6186$, $p\text{-value} = 0.2659$.

That is, the relationship is found as medium.

4. Conclusion:

This article shows that there is a moderate positive relationship between a company's rise / fall in stock prices and emotions or thoughts expressed through twitter. The tweets are divided into two categories such as positive and negative. Initially, we claimed that positive feelings about a company on twitter or the public would reflect on the stock. Our speculation is supported by the results obtained. The research seems to have a promising future.

References:

- Agarwal, A., Xie, B., Vovsha, I., Rambow, O., and Passonneau, R., Sentiment analysis of twitter data, In Proceedings of the workshop on languages in social media Association for Computational Linguistics (2011, June), pp. 30-38.
- Anastasia, S. and Budi, I., Twitter sentiment analysis of online transportation service provider, Proceedings of the International Conference on Advanced Computer Science and Information Systems (ICACSIS) (2016), pp.359-365.
- Anjaria M. and Guddeti R. M., Influence factor based opinion mining of Twitter data using supervised learning, Proceedings of the 6th International Conference on Communication Systems and Networks (COMSNETS) (2014), pp.1-8.
- Bing, L., Keith C., and Carol O., Public sentiment analysis in Twitter data for prediction of a company's stock price movements, e-Business Engineering (ICEBE), IEEE 11th International Conference on IEEE (2014).
- Bollen, J., Mao, H., and Zeng, X., Twitter mood predicts the stock market. Journal of Computational Science, Vol.2, No.1 (2011), pp.1-8.
- Bruns, A. and Stieglitz, S., Towards more systematic Twitter analysis: metrics for tweeting activities, International Journal of Social Research Methodology, Vol.16, No.2 (2013), pp. 91-108.
- Can, U. and Alatas, B., Duygu analizi ve fikir madenciliği algoritmalarının incelenmesi. International Journal of Pure and Applied Sciences (2017), pp. 75-111.
- Chen, R. and Lazer, M. Sentiment Analysis of Twitter Feeds for the Prediction of Stock Market Movement, Stanford University (2011), pp. 15.
- Dickinson, B. and Hu, W., Sentiment Analysis of Investor Opinions on Twitter, Social Networking, Vol.4 (2015), pp. 62-71, <http://dx.doi.org/10.4236/sn.2015.43008>.
- Jain A. P. and Katkar Mr. V. D., Sentiment analysis of Twitter data using data mining, International Conference on Information Processing (ICIP) Vishwakarma Institute of Technology (2015), pp. 807-810.
- Karabulut, Y. and Küçüksille, E., Twitter Profesyonel İzleme ve Analiz Aracı. Journal of Technical Sciences, Vol.8, No.2 (2018), pp.17-24.
- Li, R., Lei, K. H., Khadiwala, R., and Chang, K. C. C., Tedas: A twitter-based event detection and analysis system, In Data engineering (ICDE),

IEEE 28th international conference on Data Engineering (2012, April), pp. 1273-1276.

Tyagi A. and Chandra N., A proposed approach with analysis of speech signals for sentiment detection, Proceedings of the 5th International Conference on Communication Systems and Network Technologies (2015), pp. 339-344.

Wang, H., Can, D., Kazemzadeh, A., Bar, F., and Narayanan, S., A system for real-time twitter sentiment analysis of 2012 us presidential election cycle, In Proceedings of the ACL 2012 System Demonstrations (2012, July), Association for Computational Linguistics, pp. 115-120.

Zhang, L., Sentiment Analysis on Twitter with Stock Price and Significant Keyword Correlation, University of Texas Libraries (2013), pp. 130.

CHAPTER VI

MOST WOMEN AT (EQUALITARIAN) WORK: WHAT IS THE SECRET OF NORDIC SUCCESS? LESSONS FOR DEVELOPING WORLD¹

Asst. Prof. Dr. H. Işıl ALKAN

Ondokuz Mayıs University, Samsun, Turkey
e-mail: isilalkan@omu.edu.tr, Orcid ID:0000-0002-1437-1967

1.Introduction

Ensuring gender equality and ending discrimination has become one of the main factors that accelerate sustainable development today. Hence, increasing participation in economy, which is one of the methods of empowering women, has become one of the main goals of both developed and developing countries in recent years. For these reasons, female employment rates tends to increase all over the world in the last decades. However, the increase trend has not been the same in all regions, it has been higher in developed countries. European countries have been the countries where the increase has been seen more. Especially, Nordic countries within the European geography have come to fore as they succeeded to increase the female labor force participation rates from 40% to 80% between 1970 and 2010 as to EUROSTAT. Moreover, the progress was not only quantitative, but also qualitative.

The purpose of this chapter is to reveal the main reasons concerning Nordic success in terms of economic participation and gender equality. In this framework, firstly the global view of female employment and gender equality is examined. Afterwards, the notion of welfare states and welfare states practices in the Nordic world is investigated. The following section consists current legislations and policies increasing women's labour force participation and ensuring gender equality in Nordic region. The study is concluded with results and discussions section involving policy proposals.

2. Global view of female employment and gender equality

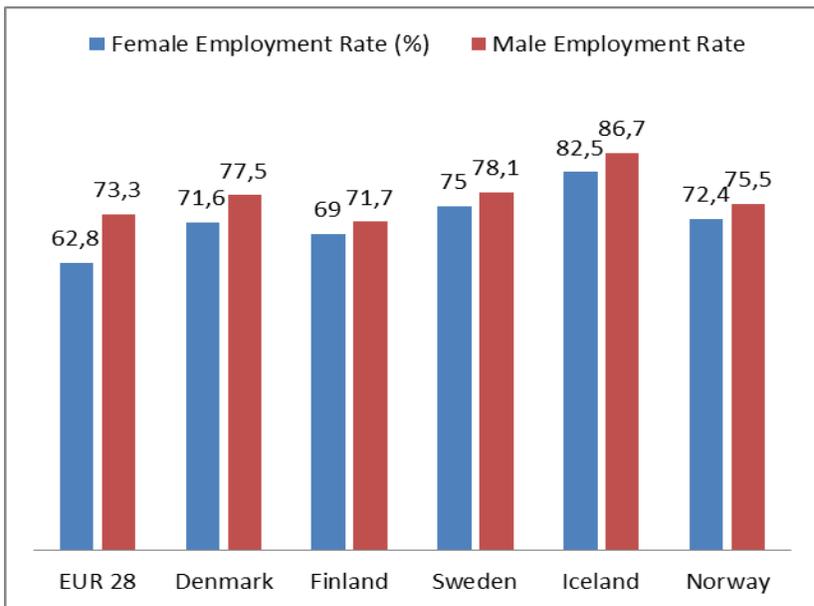
Women comprise nearly half of the world's population and have a significant potential for global labour force. However, women are less likely to participate to labour markets worldwide. Key Indicators of Labour Market (KILM) verifies that developed countries succeed more in terms of female employment as they present higher female employment rates in comparison with developing countries. Especially in developed nations,

¹ This chapter is the revised and expanded version of the abstract conference paper "Most Women At (Equalitarian) Work: What Is The Secret Of Nordic Success? Lessons For Developing World" that was presented in 3rd International Annual Meeting of Sosyoekonomi Society, 2017.

women are more likely to be unemployed; rarely employed as wage and salaried workers and they often work as contributing family workers who are deprived of monetary income. Moreover, gender gaps are higher in all fields in the developing world (UN, 2015, p. 87-88). However, with the perception of the significance of female labour regarding growth and development, many countries have begun to attach importance to female employment and gender equality issue in the last decades.

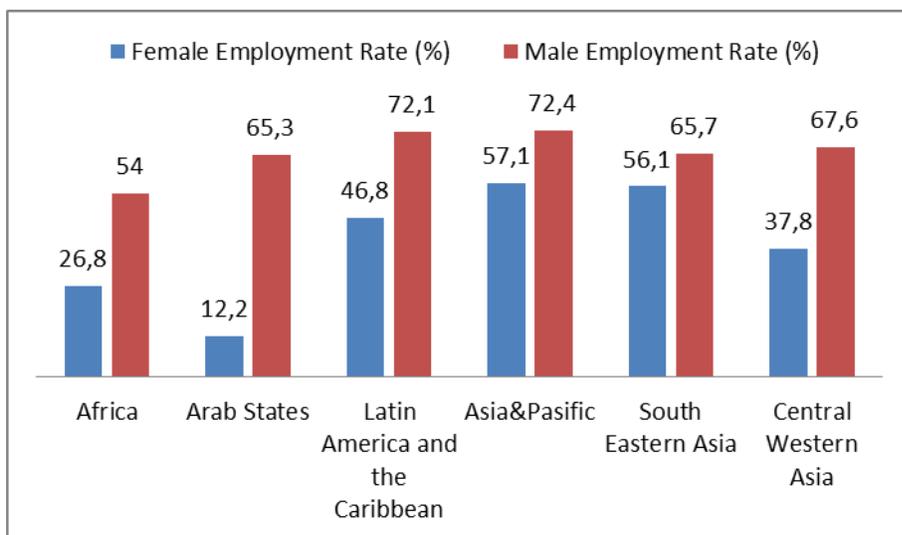
Nordic countries are legendary regarding gender equality and higher female participation to economy in the world. Sweden, Denmark and Finland are European Union (EU) members of where as Norway and Iceland are non-members, hence, Sweden, Denmark and Finland are the countries elevating the average of EU concerning female employment. According to EUROSTAT, the average female employment rate is 63% for EU (28 countries) while the rate is between 69% and 75% for Sweden, Denmark and Finland as of 2015 (Graph 1). As is observed from the graph, lesser gap is prevalent between male and female employment rates in the Nordic world than the European Union average.

Graph 1-Employment rates in Europe by sex and citizenship (EUROSTAT,2019)



On the other hand, the developing world draws a more unequal picture in terms of economic participation. In many developing countries, female employment rates are notably below than the European average and the employment rates of males and females diverge largely.

Graph 2-Employment rates in the developing regions by sex in 2017
(KILM,2019)



According to the issue of gender gap, the picture does not change extremely. As is known, the global gender gap index investigates the gap between men and women in four main categories such as economic participation and opportunity, educational attainment, health and survival and political empowerment. Nordic states are again at the top as to global gender gap index while many developed countries are at the back rows. Concerning gender equality, Iceland is the champion, Norway is the secondary, Sweden is the tertiary, Finland is the fourth and Denmark is the thirteenth as of 2018. In other words, the mentioned countries are enviable among 149 countries where as Brazil is in 95th rank, India is in 108th rank, and Turkey is in 130th rank (WEF, 2018, p. 10-11).

At this juncture, a question comes to our minds: What are the determinants of Nordic success in terms of gender equality? Let's seek the answer of this question by examining each country.

3.Welfare states and the Nordic world

In case of an investigation regarding the women's participation to labour markets and gender equality, it is essential to examine social policies and politics in related countries. In this framework, the concept of welfare states is briefly observed in Nordic countries initially in this study. One of the most significant contribution to the welfare state concept is the study of Gosta Esping Andersen. In his book; *Three Worlds of Welfare Capitalism*, he defines three types of welfare states as liberal welfare states, conservative-corporatist welfare states and social democratic welfare states. The main features of liberal welfare state model, are means-

tested assistance and modest universal transfers or modest social insurance. Targetted beneficiaries are the low income groups, generally working class and state dependents. United States, Canada and Australia are the main exemplaries. The second regime model is strongly conservative and corporatist. Rights are distributed by class and status, thus status differentials are outstanding. Church is dominant in this regime type as the corporatist regimes are shaped by church. The preservation of traditional family is strongly projected. Non-working wives are excluded from social insurance and family services like day care are absent to a great extent. Austria, France, Germany and Italy are seen as typical models of this welfare state type. The third model, social democratic welfare states model is based upon the principles of universalism. The model is called as social democratic due to strongly presence of social democracy behind social reforms. The Scandinavian countries are considered as samples of this model while they are not free of liberal elements. In this model, state and market duality is rejected, instead, the equality of highest standarts for all segments of society is targeted. Hence, manual workers can have a chance to benefit from the identical rights of white collar employees. This system provides transfers directly to children, to care-givers of children, aged and helpless. The model gives opportunity to women's presence in labour markets. However, this system is costly as high social service burden is performed. On the other hand, neither of other two models provides considerable employment for women, especially in the second regime women are discouraged from working (Andersen, 1990, p.26-28). On the other hand, Therborn classifies welfare states in four different categories as strong interventionist state, soft compensatory state, full-employment oriented state and lastly small market oriented state (Therborn, 1987, p. 67-68). The classification is based upon both the basis of their degree of intervention in market mechanisms and to degree committed to full employment (Pinch, 1997: 12) Sweden, Norway and partly Finland are the exemplaries of strong interventionist countries (Therborn, 1987, p. 67-68).

3.1.Sweden and Finland

Sweden is the chief country coming to the forefront with her welfare state regime, even, the welfare state model is usually considered as Swedish model in literature. Specific characteristics of the model is “[c]itizenship-based and tax-financed flat-rate benefits, universally available social and health services, and earnings-related schemes that cover the entire working population” (Timonen, 2001, p. 29). The model is not very old as it was performed only after the Second World War (Tepe, 2005, p. 264). On the other hand, Esping Andersen interrogates the criteria for being a welfare state in his book. According to him, no state can be regarded as a welfare state before 1970's for simply measures (Andersen,

1990, p. 20). Hence, for Andersen the real entity of welfare state notion for nations can not be dated back to old times.

Social insurance system endeavoring social services and social assistance is the milestone concerning Swedish welfare state. Pensions, sickness, parental and unemployment insurances are the main constituents of the stated system (Tepe, 2005, p. 264). Historically, one of the significant Swedish social political reforms through the 1930s and 1940s was the legislation on people's pensions. The system was basically a poor-relief system aimed to keep workers, small farmers and farmhands out of poverty. Especially old people without incomes have been the main beneficiaries. In 1948, the pension reform was updated. Another important social reform was the universal child allowances, put in force in 1948. The allowances concerning the reform was paid directly to mothers, not fathers. Unmarried or divorced mothers could also benefit from the allowances. The new policies provided women's independency and strengthen the women's position in labour markets (Lundberg and Amark, 2001, p.162-163) . After 1950, the new Swedish welfare state was formed by the new system consisting income security for all insurances. The male breadwinner model prevalent in the country during 1930's and 1940's was left and dual breadwinner model came into force. In this regard, it is significant to underline that Sweden was the first country establishing the dual breadwinner model in both two continents; Europe and America. The state played a crucial role for easy transition from male breadwinner model to dual breadwinner model by adopting various social policies. Public child care services, parental leave, individual taxation, lessened working hours were the main determinants encouraging female participation to labour markets in Sweden (Mosesdottir, 2000, p. 197).

Minor reforms were added to the principle of income security in all insurances after 1950. Beginning from 1960's, public child care become widespread in all Nordic countries. The two-breadwinner model promoted paid female employment. By the help of equalitarian welfare state legislations, gender equality has been well founded during 1950 and 1960's in the Scandinavian world. Hence, struggle against poverty was accomplished, high-standard of living was predominant and income distribution was equal in Sweden and both in other Nordic countries between 1950 and 1980 (Lundberg and Amark, 2001, p.164-170) .

Finland is one of the welfare leaders in the world. Finnish welfare state have resemblance Sweden model structurally, however, in Finnish model policies have been less inclusive. For instance, the share of public sector employment in total employment is lesser in Finland and active labour market policies are fewer, besides, unemployment rates are higher in the country (Timonen, 2003, p. 4-6).

Finland has entered the period of welfare state after the Second World War to a great extent because the social thinking in the country changed mainly after this period. A family allowance scheme was put into force in 1948. The scheme was considered an important socio-politic reform in the country covering all families having children. The allowances were paid to the mothers and many women received money for the first time as of 1950 in the country. National pension reform was the other significant reform going in effect in 1956. The stated reform especially provided advantage for rural population and smallholders as the it was providing regular income transfer to the rural people. Thus, many elderly women began to have some amount of money regularly for the first time in 1956-1957 in Finland (Niemela & Salminen, 2006, p.11). The period of 1960's presented the welfare state notion in Finland more clearly. Finland was obliged to adopt universal social security systems due to rapid industrilization, the wave of European integration and changing politics and the welfare system indurated between 1960's and 1980's in the country (Kosonen, 2002, p. 1-2). During this term, women increased their participation to labour markets with the help of various legislations. One of significant arrangements were The Child Day Care Act, legislated as of 1973 in the country, charging all municipalities for ensuring child care services. The legislation reduced women's domestic burden, freed women and consequently provided paid employment opportunities outside of the home. As a consequent, women were comprising half of the work force under favour of social policies in the country as of 1986 (Marakowitz, 1988, p. 48).

3.2. Norway, Iceland, Denmark

The founding years of the welfare state dates back to 1880-1935 in Norway. Beginning from 1880's social policies concerning labourers in factories and industry have been enacted in the country. Measures were taken for the protection of employment and work environment. However, the golden age of the welfare state is between 1935 and 1978 for the Norwegian history. Especially after the World War, demand for labour in the society existed and laws concerning social policies has enacted between 1950's and 1970's. The Disability and Rehabilitation Act of 1960/61 and the Widow and Mother Benefit of 1964 were the samples. Especially beginning from 1970's comprehensive reforms regarding female participation to labour markets was put into force; national childcare acts in 1975 (Sörensen & Bergqvist, 2002, p.9) and the maternity leave arrangement in 1980's were the samples. Thus, the number of employed mothers increased and paid work outside the homes became prevalent for females in the same period. Families presenting dual breadwinner model were the majority and the gendered division of labour ended during the 1980's (Bjornson, 2001, p.197-219). When compared with Sweden, Norway has fallen behind Sweden regarding increases in

female participation in labour markets in 1960's and 1970's. For instance, the rate of female labour force participation was fourteen percent higher in Sweden than Norway in 1960. However, Norway gathered herself up quickly during 1980's and 1990's and at the end of 1990's, the two countries were at the same level regarding female labour force participation (Sörensen & Bergqvist, 2002, p.8-18).

The rise of Icelandic welfare state is connected with the country's independence in 1944. Especially before World War 2, welfare programmes and social insurance focus on male breadwinner and ignoring women. In this framework, the 1946 Social Security Act was very substantial for women as the Act greatly empowered women by child, family, maternity and widows benefits. The chief aims of the benefits were to provide opportunity equality and procure minimum living standards in the country (Jonsson, 2001, p.249-261). The late 1950's and years of 1960's were significant for gender equity in the country as a woman firstly became mayor in Kópavogur and Reykjavík in 1957 and 1959. Besides, the parliament legislated an act in 1961 to bridge the gender pay gap in the country. For emphasizing the importance of women work, thousands of women took a day off in 1975 and in the same year "a maternal leave" law was put into force. The establishment of Gender Equality Council in 1976 was the another important success for women in the country, moreover, gender equality law was put into force in the same year (Jafnréttisstofa, 2012, p.5).

Danish Welfare State dates back to late 1880's actually. A number of reforms; for instance old age pension, laws for protecting children and young person against industrial works, unemployment insurances and land reform were put into force in the late 1880's and 1890's (Kaergard, 2006, p. 4). In the late nineteenth century, women organizations were calling for greater gender equality in Denmark. Equality laws were performed in the early twentieth century and hence Nina Bang became the first female minister of Denmark while women were underrepresented in the world to a great extent (SIRC, 2012, p.4). However, social practices gained momentum after the Second World War in the country. Increased social benefits, lesser working hours, longer holidays, free education and a number of reforms were some of these (Kaergard, 2006, p.4-5). The country focused on gender equality during 1970's. Two important laws concerning gender equality have legislated in this period; the Equal Pay Act in 1976 and the Equal Treatment Act in 1978. Employers had to pay equal wage for male and female workers for the same work in accordance with Equal Pay Act and The Equal Treatment Act provided positive discrimination for women in labour markets (Carbin, 2007, p.4).

4. Current legislations and policies increasing women's labour force participation and ensuring gender equality in Nordic region

The Nordic countries have started to procure a gender equal life so early as it is understood from the sections above. By the help of many legislations, such as acts concerning education, discrimination and equality they succeed to preserve their superiority in many fields of gender equality at the present time. Education Act is one of these in which gender equality is strongly emphasized in Sweden. According to the Act, gender equality is targetted in all levels in Swedish educational system. By the help of the Act, girls have better grades than boys and girls achieved higher levels concerning secondary education nowadays. Two-thirds of university degrees belongs to women, besides, women and men have the same proportion regarding postgraduate and doctoral levels. Moreover, Discrimination Act legislated as of 2008 in the country ensures gender equality in labour markets. The law prohibits discrimination and provides equal opportunities for men and women. Besides, the government targets to give women and men the same power and opportunities. Gender quotas as to political representation of women are being applied by certain political parties. In the latest 2014 election; women took nearly half of (44 percent) of the 349 seats (SE, 2017).

The government of Finland legislated The Act on Equality Between Women and Men (609/86) in 1987. The main purposes of the act are; restraining sex discrimination, boosting the equality between women and men and betterment of women's status in labour market. The Act also aims gender equality in in education, teaching and research. Employers having more than 30 workers are obliged to secure equality in workplace and as well as in training programmes. The prohibition as to discrimination in employment consists hiring, wages and other working conditions, including sexual harassment, supervision and termination of employment. Moreover, with the the amendment of 1995 a quota system was put into force in official committees and councils emphasizing the proportion of representatives of either sex should not be below 40% (FIOH, 2017).

The Gender Equality Act (1978) and The Sexual Orientation Anti-Discrimination Act (2014) in Norway are certain acts targeting equality irrespective of sexual orientation, gender identity and gender expression (SOAA, 2017). Gender Equality (Consolidation) Act (2002), Act on Maternity Equalisation in the Private Labour Market (2006), Consolidation Act on Equal Treatment of Men and Women as Regards Access to Employment (2006) and Consolidation Act on Equal Pay to Men and Women (2008) are the acts in Denmark aiming to prevent discrimination against women and provide equalitarian work conditions for men and women (EP, 2015: 10). Gender Equality Council (1976), The Women's Alliance (1983), Amended Law on Gender Equality (2008) are the

arrangements increasing gender equality and female employment in Iceland (JAFNRÉTTISSTOFA, 2012, p. 6-7).

Moreover, Nordic countries are successful in preserving high female employment rates without reducing fertility, unlike the other European countries. Gupta et. al. (2008, p.66) emphasizes that Nordic countries seem to be able to cope more easily with the aging population issue. Generous parental leaves, extensive child care services and intensity of part-time female employment are the main reasons of this success. The extensive welfare state of Sweden gives around 16 months of paid parental leave in case of a born or adopted child (SE, 2017). Also in Denmark, parents can receive 52 weeks of paid leave per child (EP, 2015, p. 15). The paid parental leave is valid for the period of nine months for Icelandic parents today (ECPEs, 2013, p. 7-8). In Norway, the paid parental leave comprises 59 weeks (NOR, 2015, p. 3). Paternal leave is 158 working days and is usually paid in Finland (MSAH, 2013, p. 16). Moreover, part-time work among women in Nordic countries is widespread. According to EUROSTAT (2017), the percentage of part-time female employment in total female employment is 35,7% for Norway, 34,2% for Sweden, 33,9% for Iceland and 18,4% for Finland. It is revealed that since 2002 Norway is the pioneer country concerning female part-time employment while Sweden, Denmark, Iceland and Finland follows the country respectively. The fraction of involuntary part-time work is lowest in Denmark, Norway and Sweden, highest in Finland and Iceland. Family or personal activities is the most frequently reported reason for part-time work employment in Denmark, Finland, Norway and Sweden. Due to hard effects of financial crisis “other reasons” are high in Iceland (Lanninger & Sundström, 2014, p.14-24).

Nordic states also invest largely for publicly provided child care for preschool children. Home care services and nurseries are well-developed in the stated geography. Despite, various differences between countries in Nordic region, all Nordic countries attach significant importance to child care services. In this regard, Denmark is the pioneer country in terms of public child care provision, especially for 0-2 years old children. The main reason of this fact is the shorter paternal leave schemes in Denmark than the other Nordic countries (Gupta, et. al. 2008, p. 71). According to OECD data, the rate of children between 0-2 years of age benefiting from formal childcare and pre-school services is approximately 65% in Denmark as of 2014. Moreover, the rate of 3-5 aged children benefiting from pre-school education is more than 95%. (notably higher than the EU average) to a great extent for most Nordic countries (OECD, 2017).

Consequently, it is important to emphasize that most Nordic countries have the Ministry for Gender Equality in their countries as they attach great importance to the issue. Sweden is the first country that constituted

Ministry for Gender Equality in 1954 while Denmark constituted in 1999 and Norway constituted in 2006. Iceland and Finland does not have a separate ministry however they have Gender Equality departments (units) in their Social Affairs or Welfare Ministries.

5 Conclusion

The success of Nordic states majorly depends on welfare states model attaching particular importance for gender equality and it must be admitted that the welfare state is a costly model requiring high public expenditure especially for developing world. Nevertheless, many lessons can be derived from Nordic experiences and practices. In this context, policy suggestions which will enhance gender equality and female participation to labour markets are listed below.

Initially, the education level of women has to be increased in developing countries which have significantly lower education levels than the developed ones. As is mentioned in the previous sections, nearly two-thirds of university degrees are awarded to women in some Nordic countries. Many scientific studies emphasize that higher education levels bring along higher employment rates (see; Taşseven et.al. (2016), Spierings et.al. (2008), Cipollone et.al. (2012), Yakubu (2010), Gift (2013), Dayıoğlu and Kırdar (2010), DPT&WB (2009)). So, particular importance should be attached to women's education in developing world as education will bring along awareness of women and ease the articulation of women to labour markets.

Elderly care and child care services have to be increased in developing countries. Most women in the developing world are responsible for elderly and child care, hence, can not participate labour markets as they are restricted. In case of publicly provision of elderly and child care services, women will become independent and will have an opportunity to be in paid employment. Like in Denmark sample, governments can give shorter parental leaves but provide child care services for women. Thus, low levels of fertility will be no longer a problem. On the other hand, provision of part-time work opportunities (which are becoming increasingly common in Europe) can help women to reconcile their work and private and family life.

Legislations and acts concerning gender equality and discrimination have to be put into force in developing countries. Gender quotas in employment should be implemented as they are the only way to combat sexism in the workplace. Moreover, women's participation in politics should be enhanced by quotas. Discrimination acts protecting women against all types of discrimination are essential solutions as the discrimination is widespread in all sectors and in all countries in the world.

Subsequent to the mentioned legislation implications, inspections should be conducted strictly.

Today, many developing countries do not have even a gender equality unit in their related ministries, however we see that Sweden succeeded this fact in the 1950's. Thus, constitution of ministries or at least efficient official units giving special interest and effort to gender equality should be of great importance in the developing world. By this way, gender inequalities in these countries can be reduced and women may have an opportunity to lead a more equalitarian life.

References

Andersen-Esping G., (1990). *The Three Worlds of Welfare Capitalism*. New Jersey: Princeton University Press.

Bjornson, O., (2001). *The Social Democrats and the Norwegian Welfare State: Some Perspectives*. *Scandinavian Journal of History*, Volume 26, Issue 3, pp.197-223.

Carbin, M. (2007). *Issue Histories Denmark: Series of Timelines of Policy Debates*. European Commission Sixth Framework Programme Integrated Project, Vienna.

Cipollone, A., Patacchini, E., Vallanti, G., (2012). *Women's Labour Market Performance in Europe, Trends and Shaping Factors*. CEPS Special Report No: 66, Brussels.

Dayıoğlu, M., Kırdar, M.G., (2010). *Determinants of and Trends in Labor Force Participation of Women in Turkey*. SPO&WB Working Paper No:5, Ankara.

DPT-WB, (2009). *Female Labor Force Participation in Turkey: Trends, Determinants and Policy Framework*. T.R. Prime Ministry State Planning Organization & World Bank Report No: 48508-TR.

ECPEs, (2013). *The Parental Leave System in Iceland*. European Commission Programme for Employment and Social Solidarity (2007-2013) Project.

EP, (2010). *The Policy on Gender Equality in Iceland*. European Parliament Policy Department, Brussels.

EP, (2015). *The Policy on Gender Equality in Denmark-Updated*. European Parliament Policy Department, Brussels.

EUROSTAT, (2019). Date Accessed: 16/03/2019

<http://ec.europa.eu/eurostat/data/database>

FIOH, (2017). Overview of Gender Equality Issues in Finland. Date Accessed: 20/04/2017

<https://www.gender-equality.webinfo.lt/results/finland.htm>

Gift, M., (2013). Determinants of Female Labour Force Participation in Zimbabwe: 1980 to 2012. Masters thesis, University of Zimbabwe.

Gökbunar, R., Özdemir, H., Uğur, A., (2008). Social Welfare Spending in the Welfare State During The Latest Globalization Upsurge. The Journal of Doğuş University, 9 (2) 2008, pp. 158-173 (in Turkish).

Gupta, N., Smith, N., Verner, M. (2008). The Impact of Nordic Countries' Family Friendly Policies on Employment, Wages and Children. Review of Economics of the Household, 6(1), pp.65-89.

KaergarD, N., (2006). The Foundation for the Danish Welfare State: Ethnic, Religious and Linguistic Harmony. XIV International Economic History Congress, Helsinki.

KILM, 2019. Date Accessed: 16/03/2019

https://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afLoop=709043404938152&_afWindowMode=0&_afWindowId=null#!%40%40%3F_afWindowId%3Dnull%26_afLoop%3D709043404938152%26_afWindowMode%3D0%26_adf.ctrl-state%3D17bety84oi_131

Jafnréttisstofa, (2012). Gender Equality in Iceland. The Center for Gender Equality Iceland, Updated January 2012.

Jonsson, G., (2001). The Icelandic Welfare State in the Twentieth Century. Scandinavian Journal of History, 26:3, pp.249-267.

KILM, (2017). Key Indicators of Labour Market. ILO: 9th Edition.

Kosonen, P. (2002). The Finnish Model and the Welfare States in Crisis, The Nordic Welfare State as an Idea and as Reality. Renvall Institute Publications, Helsinki.

Lanninger A.W., Sundström M. (2014). Part-time Work in the Nordic Region. Norden, ISBN 978-92-893-2685-8, Rosendahls-Schultz Grafisk, Denmark.

- Lundberg, U. & Åmark, K., (2001). Social Rights and Social Security: The Swedish Welfare State, 1900–2000. *Scandinavian Journal of History*, Vol. 26, pp. 157-176.
- Marakowitz, E., (1988). Women's Associations in Finland: Links between the Welfare State & Feminism. *Canadian Women Studies*, 9(2), pp. 48-50.
- Mosesdottir, L. (2000). Pathways Towards the Dual Breadwinner Model: The Role of the Swedish, German and the American States. *International Review of Sociology—Revue Internationale de Sociologie*, Vol. 10, No. 2., pp.189-205.
- MSAH, (2013). Child and Family Policy in Finland. Ministry of Social Affairs and Health, Helsinki.
- Niemela, H., Salminen, K., (2006). Social Security in Finland. ETK, TELA, KELA and Ministry of Social Affairs and Health, Helsinki.
- NOR, (2015). (Date Accessed: 25/04/2017)
http://www.leavenetwork.org/fileadmin/Leavenetwork/Country_notes/2015/norway.pm.pdf
- NORWAY, (2017). (Date Accessed: 20/04/2017)
http://www.gender.no/Legislation/National_legislation
- OECD, (2017). (Date Accessed: 26/04/2017)
https://www.oecd.org/els/soc/PF3_2_Enrolment_childcare_preschool.pdf
- Pinch, S., (1997). *Worlds of Welfare, Understanding the Changing Geographies of Social Welfare Provision*. London: Routledge.
- SIRC, (2012). *The Changing Face of Motherhood in Western Europe: Denmark*. The Social Issues Research Centre 2012, Oxford.
- Spierings, N., Smits, J., Verloo, M., (2008). *Micro and Macro-level Determinants of Women's Employment in Six MENA Countries*. NICE Working Paper 08-104, Netherlands.
- SOAA, (2017). (Date Accessed: 20/04/2017)
<http://app.uio.no/ub/ujur/oversatte-lover/data/lov-20130621-058-eng.pdf>

- Sörensen, K., Bergqvist, C. (2002). Gender and the Social Democratic Welfare Regime, Work Life in Transition. Work Life in Transition, ISBN 91-7045-633-X, Sweden.
- SE, (2017). Facts About Sweden, Gender Equality. (Date Accessed: 20/04/2017)
- <https://sweden.se/wp-content/uploads/2015/11/Gender-equality-low-res.pdf>
- Taşseven, Ö., Altaş, D., Ün, T., (2016). The Determinants of Female Labor Force Participation for OECD Countries. Uluslararası Ekonomik Araştırmalar Dergisi, Mayıs 2016, Cilt 2, Sayı 2. pp: 27-38.
- Tepe, F.F.,(2005). An Introduction to the Swedish Welfare State. İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi, Yıl:4 Sayı:7 Bahar 2005/1 s.261-274
- Therborn, G., (1987). Welfare State and Capitalist Markets. Acta Sociologica, Vol.30/3-4., pp. 237- 254.
- Timonen, V., (2001). Earning Welfare Citizenship: Welfare State Reform in Finland and Sweden. In Peter Taylor Goodby (Ed.), Welfare States Under Pressure, Sage Publications.
- Timonen, V. (2003). Restructuring The Welfare State, Globalization and Social Policy Reform in Finland and Sweden. Edward Elgar Publishing, UK.
- UN, (2015). The World's Women 2015. Trends and Statistics. United Nations, New York, 2015.
- WEF, (2018). The Global Gender Gap Report. World Economic Forum, Geneva, Switzerland.
- Yakubu, Y.A., (2010). Factors Influencing Female Labor Force Participation in South Africa in 2008. The African Statistical Journal, Volume 11, November 2010, pp: 85-104.

“AFFORDABLE HOUSING” APPROACH AND ECONOMIC POLICIES

Asst. Prof. Dr. Neslihan ÇELİK

Marmara University, İstanbul, Turkey

e-mail: neslihan.celik@marmara.edu.tr, Orcid ID: 0000-0002-2329-1782

Introduction

Housing that offers a living space for people and is also a financial asset and an element of wealth is not a consumer good that is equally accessible by all income segments. It can be difficult for low-income and poor households to meet their housing needs with adequate, healthy, safe and decent housing due to high housing prices and rents compared to their disposable earnings.

The fact that housing is relatively expensive and that the households have started to allocate more and more of their income for housing costs have increased the importance of housing policies in most countries, and today's economic policies involve satisfaction of the housing needs of low-income groups with adequate and affordable housing.

According to their respective socio-economic conditions, urban development perspectives and experiences, national economies develop and implement models to facilitate and ensure low-income groups' access to housing. This study generally discussed the affordable housing approach and application examples and economic policy instruments from selected countries and territories around the world within the framework of this approach.

1.Real Estate Market and Housing

Real estate (Harvey,1981: 14-15), which can be expressed as land and constructions located on the land, indicates immovable that do not have physical mobility features, unlike other consumer goods. The Turkish Civil Code (Article 704) defines the subject of real property as land, independent and permanent rights registered on a separate page in the land registry, independent sections registered in the property ownership register.

Real estate has become an attractive financial asset, and the useful features of its physical presence, and has grown to be a part of wealth. Among the advantages that cause real estate assets to be included in the investment portfolio, features, such as the potential to generate returns, protect against unexpected inflation, provide alternative diversity against stocks and bonds, and provide regular cash inflows can be counted (Garay, 2016).

Real estate varieties can be classified as

- Housing,
- Commercial property: offices, service buildings, industrial buildings, hotels, sports and entertainment facilities, etc.
- Land: plot, vineyard, garden, field, etc. (Klimczak, 2010).

Real estate is not only a consumer good but also contributes to the production of goods and services with varieties, such as agricultural lands, industrial buildings, offices, and shops. Immovable properties are commodities of the real estate market, including buyers and sellers, and this market comprises all real estate transactions (Harvey, 1981.p.15).

In this market where supply and demand changes happen, and resource allocation takes place, demand is affected by factors, such as the price of the good, income, taste and preferences, prices of substitutes, market size, expectations, taxation, transfer costs of assets and loan costs (Harvey, 1981).

In the real estate market, supply is a concept that represents the supply offered to the market at varying prices and is influenced by factors, such as price, labor and capital costs, construction costs, and land costs.

Among the factors influencing housing demand, which is one of the principal components of the real estate market

- price, current income,
- expected revenue,
- proximity to work,
- proximity to social and environmental opportunities,
- cost of transportation (such as monetary and waste of time),
- residential properties (size, the floor it is located, etc.),
- age of the building,
- interest rates and other loan conditions,
- the maintenance cost of housing,
- the expected price increase,
- demographic factors
- the non-residential wealth of households,
- social characteristics of households (education level, etc.),
- savings deposit interest rates,
- capital gain tax,

- and property taxes can be counted (Pirounakis, 2013).

Factors affecting housing supply can generally be expressed as (Pirounakis, 2013).

- expected price at completion,
- rate of return,
- national or regional zoning legislation, regulations, etc.,
- land use,
- construction cost (labor and materials; current borrowing cost; insurance, etc.),
- cost of land,
- construction technology,
- taxes,
- long-term real interest rates

2. Housing Policies

Housing is a complex good with its asset, investment, and consumption dimensions (O’Sullivan, & Gibb, 2003:1-3). It is one of the most expensive consumption and investment goods for households (Tu, 2003). Many factors, such as location, structural features, income levels of buyers/users, and socioeconomic expectations, influence housing buying decisions.

While housing is a commodity used through purchasing or rental in terms of demand, it is an asset that provides returns through sale or renting in terms of supply. The housing market involves residential and rental properties (Monroy et al., 2020).

Housing is a living space that affects people’s social and economic comfort and provides shelter, security, and privacy. The relatively expensive housing prices worldwide and the difficulty of meeting the need for adequate but affordable housing have brought up housing policies to the agenda in most countries. In this sense, economic tools have also been applied to meet the need for housing, which directly affects people’s comfort of life, and monetary and fiscal policy instruments have been introduced.

Housing policy is briefly governments’ interventions in the housing sector with different instruments, such as social housing, supports, market controls, tax incentives, and demand-side and supply-side interventions.

MacLennan (1982: as cited in (O’Sullivan, & Gibb, 2003) refers to housing policy objectives generally as

- eliminating market failures by taxation, subsidies or regulations,
- replacing unstable market conditions with the distribution mechanisms applied, and
- utilizing housing to achieve goals, such as income redistribution and regional growth.

In a joint study of the OECD with the Coalition for Urban Transitions (Monroy et al., 2020);

- development of financial incentives to promote compact and inclusive cities, (through methods, such as rearrangement of property taxes for more efficient land use by producing higher-density housing),
- disclosure of the potential of the rental housing market, (by developing arrangements for a balanced tenant-landlord relationship, supporting social rental housing, etc.),
- developing institutional capacity and establishing consistent policies (through methods, such as developing mechanisms that ensure inter-municipal cooperation for supply-side and demand-side housing policies, strengthening national systems that determine taxable properties and property values) are recommended to national governments to provide adequate and affordable housing that will also encourage compact urban development.

As of 2017, total housing expenditures, including rent or mortgage payments, maintenance, and utility costs, constitute the highest household expenditure item in OECD countries with 22.3% of final household consumption expenditures (Monroy et al., 2020).

The relatively expensive housing, the average spending of 15-20% of income in Europe, has brought housing policies to the agenda of most European countries in the last century.. In this context, traditionally in housing policies;

- access to adequate housing for low-income households,
- affordability, which includes limiting the burden of housing costs of low-income households,
- and increasing the quality of new buildings and supporting maintenance and repair to afford adequate housing for low-income families has come to the fore (European Parliament -EP, 1996).

Many countries help households to live in houses that are safe and human in dignity without a heavy financial burden. This assistance can be on the demand-side or supply-side. Demand-side policies aim to increase the household's financial capacity with subsidies to ensure that households can live in adequate housing. Some examples are the housing allowance,

rental allowance, project-based assistance, which are also used in Canada, Europe, and the USA. In supply-side policies, low-income earners are provided by subsidizing construction, maintenance, repair, or building operating costs. In this strategy, subsidies are provided to structures and buildings, and they may belong to private property, public institutions, profit, or non-profit property owners. This approach has applications, such as social housing, public housing, non-profit housing (Galster, 1997). In other words, housing policies can be designed as supply-side through social housing construction or subsidizing producers in general, and as demand-side in the form of assistance and funds that support the household's renting, purchasing, repair, and maintenance. Supply-side instruments, such as tax incentives, government guarantees for loans, capital assistance for projects, facilitation of access to land, regulations, planning, and demand-side tools such as tax exemptions, tax credits, rent grants (Asian Development Bank, 2009: 3-4), mortgaged-low-interest housing loans instruments are included.

Demand-side policies may generate inflationary pressure in situations where the amount of housing is insufficient, such as in the short term, when the housing stock does not increase. Due to reasons related to country conditions and economic conjuncture, in most cases, countries generally apply two models at once or consecutively. Factors, such as sectoral revival, contributing to employment, and positive externality for other relevant sectors affect the way and duration of implementation of supply and demand-side policies. Though the focus of housing policies is to meet the need for housing, housing policies have a symbiotic relationship with economic parameters.

2.1. “Affordable Housing” ,“ Adequate Housing” Approach and Applications

Affordable housing can be defined as housing for which households allocate at most 30% of their income for all expenses related to housing (Mullin & Lonergan Associates, 2015).

Another definition refers to adequate housing (Milligan et al., 2007:90), which allows households with low and moderate-income to become homeowners or tenants.

In short, affordable housing refers to adequate housing where the cost required to purchase or lease can be met, that is, accessible housing.

On the other hand, adequate housing is a house that is not exposed to diseases and dangers, is liveable, has the features and legal rights to afford essential services, such as water, lighting, and sanitary installations (Habitat III, 2016).

The affordability of the housing, in other words, the cost and purchasing conditions that can be paid, may vary from one country to another. For example, in Germany, when the cost of housing is considered based on household income, the affordability of housing is close to the OECD average. The median mortgage load (principal repayment and interest payments) is 19% of disposable income (OECD average 18%), while the rent load is 20% (OECD average 21%) (OECD, 2018).

In the EU, housing affordability is calculated using a housing cost overburden rate. According to the Eurostat (2020) definition, “the housing cost overburden rate is percentage of the population living in a household where total housing costs represent more than 40% of the total disposable household income”

Concepts, such as affordable housing, social housing, public housing, non-profit housing, are now critical components of housing policies for low and middle-income households in the world today. Habitat III (2016) invites member countries to provide adequate, safe, and affordable housing with the New Urban Agenda within the scope of The Sustainable Development Goals and recommends providing;

- integrated housing policies with investments in areas, such as urban plans, land use, transportation, environmental sustainability,
- inclusive housing that includes elements, such as fair housing policies for special needs groups
- affordable housing that can be improved through policies that facilitate homeownership, subsidies that allow low-income households to rent and have an adequate home, and mechanisms that limit ownership speculation
- adequate housing that protects against dangers, diseases, factors, such as the natural environment, livability, access to essential services, and legal rights and improving informal slum settlements (HABITAT III, 2016:4) global housing policy objectives.

The housing policy tools investigated by the OECD through the Questionnaire on Affordable and Social Housing in 2016 and 2019 applied to 46 countries are briefly classified as follows (OECD, 2019):

- *Support for homeownership and homeowners:*
 - ✓ Subsidies for those who are generally under a certain income level and who will buy a house for the first time covering all or part of the value of the property to facilitate homeownership with assistance, such as one-off grants,
 - ✓ Government-subsidized mortgage and mortgage guarantee for buyers when buying a residential dwelling
 - ✓ Mortgage relief with measures such subsidy of the mortgage payment, postponement of payments, refinancing mortgages,

and mortgage-to-rent schemes to prevent foreclosure of homes owned by financially distressed homeowners..

- ✓ For first time home buyers, tax relief for expenses such as land transfer taxes, legal fees, etc. or mortgage tax relief
- ✓ Financing support for the regeneration of the residential dwelling with tax reduction, tax credits, grant-style measures for the renovation (regeneration) of the residential house.
- *Support for householders and tenants:*
 - ✓ Housing allowances through methods, such as rent payments, mortgage payments, interest payments, utility fees, and insurance payments
 - ✓ Subsidies to develop new affordable housing with models, such as grants, tax reductions, shared ownership, rent to buy.
- *Support for the rental market:*
 - ✓ Support for social rental housing development through methods such as support for construction, renovation, and financing
 - ✓ Tax relief for rental costs
 - ✓ Publicly provided rent guarantees and deposits
 - ✓ Rent controls in the rental market by methods, such as restrictions on the first rent or rent increases.
 - ✓ Regulations concerning the minimum quality standards that can meet the essential needs of rented houses, including security, health, and livability.
 - ✓ Arrangements for short-term holiday rentals

Among the countries surveyed, the most common housing policy models support homeowners and buyers; housing allowances, and social housing. According to the survey, 34 states provide tax assistance to homeowners when purchasing housing, usually by methods, such as one-off tax relief, mortgage payments, or tax relief for mortgage interest payments. Twenty-nine countries offer subsidized mortgage or mortgage guarantee to households. Twenty-four states provide subsidies to facilitate homeownership, usually with grants or loans to first-time home buyers, and 18 countries give mortgage assistance to financially distressed homeowners. Forty-one countries declared that they provide financial support for the renovation of the residence. Among the countries surveyed for support for tenants, the most common tool is the subsidized rental housing. Governments either directly supply social housing or support social housing providers through grants, loans, and tax credits. According to the survey, 14 countries provide tax benefits to homeowners for rental housing or tenants in some countries for rental costs, and 11 countries offer rent guarantees. Twenty-one countries stated that minimum quality

standards are a legal requirement for rental housing. Nineteen countries have noted the existence of arrangements for short-term holiday rentals. According to the survey, 24 countries apply rent controls (OECD, 2019).

The table below gives the ratio of government expenditures to GDP in selected countries for housing assistance. According to the table, public expenditure on housing aid in the UK is 1.06% of the GDP.

Table 1: Total Housing Allowances Spending by Governments as Percent of GDP in Selected Countries

	% of GDP	Year
United Kingdom	1,06%	2018
Finland	0,89%	2018
Germany	0,73%	2017
France	0,72%	2018
Denmark	0,72%	2017
Netherlands	0,52%	2018
New Zealand	0,51%	2018
Sweden	0,29%	2018
Australia	0,23%	2018
Greece	0,21%	2018
Iceland	0,21%	2018
Austria	0,20%	2017
Czech Republic	0,18%	2018
Israel	0,15%	2018
United States	0,12%	2018
Norway	0,08%	2018
Estonia	0,07%	2018
Lithuania	0,05%	2018
Latvia	0,05%	2018
Poland	0,04%	2017
Luxembourg	0,02%	2018
Costa Rica	0,001%	2018

Source: OECD (2020). “Public policies towards affordable housing”
<http://www.oecd.org/social/affordable-housing-database/housing-policies/> (Access date:01.08.2020)

Table 2 gives the share of social rental housing in the total housing stock in selected countries. Social rental housing constitutes about 38% of the total housing stock in the Netherlands. This ratio is around 21% in Denmark and 20% in Austria.

Table 2. Share of Social Rental Housing in Total Housing in Selected Countries

	% total housing stock	Year
Netherlands	37,7	2018
Denmark	21,2	2018
Austria	20,0	2018
United Kingdom (England)	16,9	2018
France	14,0	2018
Ireland	12,7	2016
Iceland	11,1	2018
Finland	10,5	2017
Poland	7,6	2017
Slovenia	6,4	2015
Korea	6,4	2015
Malta	5,5	2013
Australia	4,4	2017
Norway	4,3	2018
Canada	4,1	2011
Spain	4,0	2017
New Zealand	3,7	2018
United States	3,3	2017
Japan	3,1	2018
Germany	2,9	2017
Portugal	2,0	2011
Luxembourg	1,6	2013
South Africa	12,6	2016

Source: OECD (2020). “Public policies towards affordable housing”
<http://www.oecd.org/social/affordable-housing-database/housing-policies/> (Access date:01.08.2020)

Targets predicted in housing policies and the economic tools chosen may vary according to the socio-economic climate and structure of the countries, experiences. In the context of affordable housing approach, it will be beneficial to consider the current housing policies for low-income people with its general outlines in selected samples.

2.1.1 Housing Policies and Affordable Housing for Low-Income Group in the USA

In the USA, the federal government has provided housing allowance for low-income people since the 1930s. It has supported the mortgage market and promoted the construction of low-rent public housing for low-income households through local authorities. Over time, the federal government stopped providing construction-based rent subsidies, and then, private developers and property owners began to play a bigger role. Today, some federal housing programs include rental housing benefits, support for state and local governments, support for becoming a homeowner, and support for homeowners. Most of these programs are managed by HUD (Department of Housing and Urban Development), and the available housing support programs include models such as public housing, vouchers, project-based rental assistance, housing for elderly people, housing for the disabled, low-income housing tax credit (LIHTC), homeless assistance programs, and mortgage interest reduction. A significant part of federal housing allowance programs provide affordable housing for low-income families, and affordability refers to housing cost that does not exceed 30% of family income (Congressional Research Service -CRS, 2019a).

Public housing refers to affordable houses and apartments for rent designed for low-income group, disabled and the elderly. HUD manages the public housing program which involves houses with different shapes and sizes from detached houses to multi-storey buildings. Local public housing agencies (PHAs) decide on the eligibility of those who will benefit from public housing according to the level of annual gross income, old age, disability, U.S. citizenship, eligible immigration status, and other local factors (Find Affordable Rental Housing, 2020)

Local public housing agencies use HUD's income criteria. Accordingly, low-income families are those whose income is not above 80% of the median family income in the area. Families whose income is up to 50% of the median family income in the area are defined as very low-income families. Families whose income is up to 30% of the median family income in the area are expressed as extremely low-income families (PD&R,2016).

Public housing involves low-rent units owned by local public housing agencies and subsidized by the federal government (CRS, 2019a). HUD pays local housing units for the costs of operating, operating and developing these residences, which have lower rents than the market. Public housing is project-based, and low-income families pay 30% of their income for rent (Eggers,2020).

The housing choice vouchers system is a tenant-based rental assistance method managed by local public housing agencies and funded by the

federal government. Voucher holding families (low-income families meeting the program criteria) rent the houses of the landlords who fulfill the program requirements and want to participate in the program, and the vouchers pay the difference between the rent and the family's contribution to the rent (CRS, 2019a). The share of the tenant household in the rent is based on their monthly income. The household pays rent by 30% of its monthly adjusted income or 10% of its gross income. The remaining amount is subsidized by a housing choice voucher (Cooper & Sloane,2016)

Housing tax credit which is another housing allowance program for low-income groups is based on the tax reform law of 1986 and it has emerged to encourage the development and improvement of affordable rental housing. Tax credits are given by housing finance authorities (HFAs) to housing developers who agree to build, develop or improve affordable housing for low-income groups and these loans provide a deduction from income tax for 10 years (CRS, 2019 b).

Low-income housing tax credit is one of the main tools for expanding the supply of affordable rental housing. In the period of 1987-2015, this program realized 45,905 projects and 2,97 million housing units. In this program, investors receive federal income tax credit as an incentive to develop affordable rental housing. The program includes two different tax credits, namely 9% tax credit and 4% tax credit, and tax credits are allocated to states by the Internal Revenue Service (IRS) (Scally,.Gold, DuBois, 2018).

LIHTC is a federal program that funds housing development and rehabilitation for low-income families (United States General Accounting Office -GAO, 1997), where taxpayers agree to provide low-income groups with housing for at least 30 years and receive credits for ten years in return (Internal Revenue Service -IRS, 2015). Annual credit requested by the taxpayer is equal to the multiplication of credit percentage by the qualified basis of the project, and the qualified basis refers to the amount of money spent on the construction or rehabilitation of housing developed for low-income group. (Tax Policy Center,2020).

Another program for affordable housing is that the Federal Housing Administration (FHA) in HUD insures private lenders against potential mortgage losses. FHA credit is designed for low- and middle-income debtors, and the FHA insures the credit provided by approved creditors. FHA-insured mortgage system requires lower collateral and lower credit points compared to traditional loans. FHA-insured loans are used in processes such as buying a house, improving houses, or models such as reverse mortgages that elderly people aged 62 and over continue to live in their homes. Borrowers pay their premiums to the FHA (Federal Housing Administration (FHA) Loan, 2020)

Furthermore, The United States Department of Agriculture (USDA)(2019) provides low-interest, fixed-rate loans to households and individuals or give guarantees to private credit institutions for buying affordable houses, or building, repairing, or renovating houses in rural areas.

In the U.S., as of the second quarter of 2020, the national median single-family home price was USD 291,300, and a household with a median family income level at USD 82,471 spent 14.8% of its income on mortgage payments (The National Association of Realtors -NAR, 2020). In the United States, which annually allocates an average of 40 billion dollars for housing policy spending and 6 billion dollars for low-income housing tax credit (Collinson,R., Ellen, I.G and Ludwig,J., 2015), HUD subsidized 4,540,000 households at a cost of more than 38 billion dollars under various programs as of 2017 (Eggers,2020).

2.1.2. Housing Policies and Affordable Housing for Low-Income Group in the EU

Housing prices increase faster than income, and lack of housing also increases in most EU countries. 44% of the houses were built before 1980 and need renovation. In major European cities such as London and Paris, 80% of people have difficulty in finding affordable housing (European Commission -EC, 2018a)

Costs of housing in Europe have increasingly become a significant spending item for households. The effects of the housing problem on different income groups vary. In 2015, 11.3% of the population were living in households that allocated at least 40% of their disposable income to housing spending (EC, 2018b).Rising housing costs and the difficulty of acquiring affordable housing for low-income group are effective factors in determining current housing policies.

It can be said that the general trend in housing policies in Europe in the last century was towards (EP, 1996) ;

- regulations on minimum housing standards
- rent controls (decreased in north-west Europe after 1960)
- providing social housing for rent, especially in the period of 1950-80 (excluding Mediterranean countries and Belgium)
- increased emphasis on housing quality and individual subsidies.

Today, developing affordable housing and ensuring its sustainability has become a key component of housing policy in the EU. With this approach, the policies used by member states can be generally classified as follows (EC, 2019);

- policies that support the purchase of affordable housing
- policies that support affordable rental housing
- policies to increase housing supply by investing in the construction of social housing
- housing allowances and subsidies to low-income households or groups such as the elderly, homeless, immigrants.

Affordable housing in the European Union is understood in association with social housing, affordable rental housing and affordable home ownership concepts and comes up for the low-income segment of the population (EC, 2019).

The affordable housing approach focuses on the supply of public housing, social housing, municipal housing, affordable rental housing, and ownership of affordable housing (EC, 2018b).

To develop affordable and adequate housing and make it sustainable, instruments such as tax incentives, credits, grants, guarantees, capital investments, regulations are used. The majority of the EU-28 has mortgage criteria such as loan-to-value ratio, debt-to-income ratio, and borrower's debt payment capacity. The instruments used include tax incentives, financial measures to increase the energy efficiency of buildings in housing affordable by subsidies, tax exemptions for investors who finance renovation or construction of housing, and a certain percentage of the value of the purchased property given by government below-market interest and without paying interest for the first 5 years (EC, 2019).

The Netherlands, Sweden and former EU member UK have the largest social rental sectors in the European Union, and their governments spend more than 3 percent of their respective GDP on housing policy. Other countries have smaller social rental sectors. Public spending on housing policy in Austria, Denmark, France and Germany is in the range of 1-2 percent of GDP. In Ireland, Italy, Belgium, Finland and Luxembourg, the government's spending in the context of housing policies is usually limited to about 1% of GDP. Government spending on housing policy in Portugal, Spain and Greece is less than 1% of GDP (EP, 1996).

In the EU, social housing is perceived as part of an affordable housing approach. There is no single model for social housing. The content of the model varies according to the usage life of the houses, service providers, users and financing methods. However, there are common tendencies such as the aim of increasing the supply of affordable housing, public interest, targets determined according to socio-economic conditions (EP, 2013).

Social housing refers to housing that is directly or indirectly supported by means of tax reductions, subsidies, provision of public services at a

price below cost, and social benefits. State-subsidized social rental housing is the most common form (EP, 2013).

In the EU, it is seen that social rental houses are mainly owned by municipal companies, municipalities or non-profit housing associations. For example, in the UK, municipal housing is used in the meaning of social housing. While social houses are owned by housing associations in Denmark, social houses are owned by municipalities in the Czech Republic. In Germany, state-subsidized landlords provide social housing (Scanlon, Arrigoitia, and Christine, 2015).

Social rent and affordable rent levels are available in social housing in the UK, a former EU member. Social rental houses are owned and managed by local authorities, and the amount of rent is determined according to the national rent regime. Affordable houses are not subject to the national rent regime, but to rent controls, and should not exceed 80% of the rent level in the local market (Department for Communities and Local Government,2014).

Rents in social housing mainly include income-based/social rents (as in Lisbon) or cost-based rents including maintenance and renovation (Vienna, etc.) (EC,2018a).

Although the financing models of social housing differ from country to country, the most frequently used methods include instruments such as a supply of affordable lands by local authorities, tax incentives, credits, grants, subsidized interests, and public guarantees.

The table below shows the characteristics of social housing policy in selected countries such as financing models, rent varieties.

Table 3. Social Housing Policies in Selected Countries

Country	Type of providers	Type of public support to financial social housing	Sale of social rental dwellings	Social housing rents and social allowance
Finland	Independent public body/public owned company, Other private non-profit	Interest rates subsidies and public guarantees from ARA	Sale to sitting tenants allowed	Cost based rent + housing allowances
France	Independent public body/public owned company, Cooperative,	Grants from state and/or local authorities; Public loans from	Sale to sitting tenants allowed	Cost based rent/ Fixed rent ceiling(s) + housing allowances

	Other private non-profit	CDC through Livret A		
Germany	Private for -profit	Interest rates subsidies by federal state and/or the Lander	Sale to sitting tenants allowed	Incomebased rent (in part of Germany)/ Fixed rent ceiling(s) + housing allowances
United Kingdom *	Local authority, Independent public body/public owned company, Cooperative, Other private non-profit, Private forprofit	Grants from government	Right to Buy	Valuebased Rent, housing allowances

Source: CECODHAS (2007 and 2012) data as cited in EP (2013). *Social Housing In the EU*, IP / A / EMPL / NT / 2012-07

2.1.3. Housing Policies for Low-Income Group in Turkey and TOKİ

The Mass Housing Law (1984) in Turkey is a framework law that defines the basic principles governing the solution of the housing problem and aims to provide the public support needed to meet the housing requirements. The Housing Development Administration (TOKİ), whose duties are described and became effective by this law, has created an interesting experience in terms of the policies of providing affordable and adequate housing for low-income households.

TOKİ aims to provide families of the low and middle-income group, who cannot own housing in the current market conditions, with adequate social housing through public housing projects produced on the land in their ownership. The administration carries on its activities with the aim of making the non-homeowner households homeowners on the basis of low down-payment, low installments and long terms, as if they pay rents. In the projects, care is taken to ensure that the houses offer integrated living spaces with social facilities. Sales prices of houses are determined according to the monthly payment capacities of target groups without seeking profit (TOKİ, 2019).

Those who are in the lowest 20%-40% income bracket are allowed to benefit from TOKİ projects realized for the low-income group and the poor. 65 - 87 m² houses are offered to the low-income group with 12% down-payment and 15-year installments starting at the delivery, and 87-146 m² houses are offered to the low- and middle-income group with 10%-

25% down-payment and 8-10-year installments. Besides, disadvantaged groups are given priority in the administration's social housing projects (TOKI, 2019).

Between 1984 and 2002, TOKI completed 43,145 houses and provided loan support to 940,000 houses. The administration delivered 500,000 houses between 2002 and 2011, and the number of social housing produced as of 2018 reached approximately 717,000 (TOKI, 2018).

Furthermore, the Social Assistance Programs of the Ministry of Family, Labor and Social Services (2020) provide the needy households who live in old, neglected and unhealthy houses with housing aids for maintenance & repair of their houses, construction of prefabricated houses, construction of reinforced concrete houses, etc. These housing assistance can be in the form of goods and service assistance or cash assistance. The housing allowances include rent allowance provided by the Ministry of Environment and Urbanization (2020) to the beneficiaries for those who reside in risky areas and/or risky structures in urban transformation application areas.

Conclusion

Housing has been a center of interest not only for its ability to meet the housing need as a consumer product but also as a financial asset and a part of wealth. Since housing that affects people's social and economic well-being and provides shelter, security and privacy is relatively expensive, housing policies have become a current issue in most countries.

Today's economic policies are interested in the satisfaction of the need for shelter with adequate and affordable housing for low-income group. Many countries help households to stay in safe, adequate and healthy housing without undertaking a heavy financial burden. Demand-side and / or supply-side programs are implemented to provide affordable housing to low-income households that they can buy or rent. In this context, according to the unique economic conditions of the countries, different instruments are employed for increasing the financial capacity of low-income households in order to meet their housing needs. On the other hand, different aids and programs are available for the construction of affordable housing and maintenance, repair and renovation of the existing ones.

According to their socio-economic conditions, urban development perspectives and historical background; countries implement many methods of affordable housing policy for the low-income group (low-income and moderate-income people in some countries), such as housing allowance, rental housing assistance, rent subsidies, social housing, subsidies, facilitating access to land, tax incentives, tax relief, state

guarantee for loans, project-based capital assistance, government-subsidized mortgage.

Besides, national economies are still in search of developing and implementing more effective and inclusive models integrated with sustainable urban development plans to help reducing the problems caused by the inequality in income distribution, meet the housing needs of the low-income group with adequate and liveable houses, and contribute to economic development.

References

- Asian Development Bank (2009). *Low-Income Housing Policies: Lessons from International Experience*, ADB Papers and Briefs, Observations and Suggestions, 17 February.
- Collinson, R., Ellen, I.G and Ludwig, J. (2015), *Low-Income Housing Policy*. *NBER Working Paper* No. 21071 April 2015
- Congressional Research Service (CRS) Report (2019a), *Overview of Federal Housing Assistance Programs and Policy*, RL34591, Updated March 27.
- Congressional Research Service (CRS) Report (2019b), *An Introduction to the Low-Income Housing Tax Credit*, RS22389, Updated February
- Cooper, E. & Sloane, L. (2016). *Section 8 Made Simple — Special Edition: Using the Housing Choice Voucher Program to End Chronic Homelessness*, The Technical Assistance Collaborative.
- Cecodhas (2007 and 2012). as cited in EP (2013). *Social Housing In the EU*, IP / A / EMPL / NT / 2012-07
- Department for Communities and Local Government (2014). *English Housing Survey, Social Rented Sector Report, 2014-15*
- European Commission (EC) (2018a). *Policy Guidelines for Affordable Housing in European Cities*, Urban Agenda for the EU, Edited/co-ordinated by: Susanne Bauer.
- European Commission (EC) (2018b). *Housing Partnership Final Action Plan*, Urban Agenda for the EU, December.
- European Commission (EC) (2019). *Housing affordability and sustainability in the EU*, *European Construction Sector Observatory*, Analytical Report, November.
- European Parliament (EP) (1996), *Housing Policies in the EU Member States*, Directorate General for Research Working Document Social Affairs Series, W 14

- European Parliament (EP) (2013). *Social Housing In the EU*. IP/A/EMPL/NT/2012-07, January.
- Eurostat (2020). *Housing Cost Overburden Rate, Dataset Detail*, Code: tespml40
- Federal Housing Administration (FHA) Loan, (2020). <https://www.investopedia.com/terms/f/fhaloan.asp#citation-13> (Access date:17.08.2020)
- Find Affordable Rental Housing, (2020) <https://www.usa.gov/finding-home#item-37252> (Access date:27.08.2020)
- Galster, G. (1997). Comparing Demand-side and Supply-side Housing, Policies: Sub-market and Spatial Perspectives, *Housing Studies*, Vol. 11, No. 4
- Garay, U (2016). “Real Estate as an Investment”. in Kazemi, H, Black, K.; and D. Chambers (Editors), *Alternative Investments: CAIA Level II*, Chapter 14, Wiley Finance, 3rd Edition, pp. 343-358
- Habitat III (2016). *Policy Paper, 10 – Housing Policies* (Unedited version),29 February.
- Harvey, J. (1981). *The Economics of Real Property*, Macmillan, ISBN-10: 0333318285, ISBN-13: 978-0333318287
- Hoffman, A. (2016), To Preserve Affordable Housing in the United States: A Policy History, Joint Center for Housing Studies Harvard University, Working Paper, March.
- Klimczak, K. (2010), «Determinants of Real Estate Investment», *Economics & Sociology*, Vol. 3, No 2, 2010, pp. 58-66.
- Office of Policy Development and Research (PD&R) (2016). *Methodology for Determining Section 8 Income Limits*, FY2016 Briefing Materials
- Eggers, F (2020). Characteristics of HUD-Assisted Renters and Their Units in 2017, Office of Policy Development and Research (PD&R), Econometrica Inc.SP Group LLC, Washington.
- Internal Revenue Service (IRS) (2015), *Low-Income Housing Credit*, https://www.irs.gov/pub/irs-utl/IRC_42.pdf (Access date:25.07.2020)
- Maclennan, D. (1982). *Housing Economics: An Applied Approach*. Longmans, London and New York as cited in O’Sullivan, T. & Gibb, K.(2003) (ed.). *Housing Economics and Public Policy*, Blackwell Science Ltd. ISBN-10: 0-632-06461-7 ISBN-13: 978-0-632-06461-8.
- Milligan, V., Phibbs, P., Gurrán,N., and Fagan, K.(2007), *Approaches to evaluation of affordable housing initiatives in Australia*, National Research Venture 3: Housing affordability for lower income,

Australian Housing and Urban Research Institute, Research Paper No. 7, ISBN: 1 921201 79 7

Ministry of Family, Labor and Social Services (2020), *Sosyal Yardım Programlarımız*,

<https://ailevecalisma.gov.tr/sygm/programlarimiz/sosyal-yardim-programlarimiz/> (Access date:21.08.2020)

Ministry of Environment and Urbanization (2020),

<https://agri.csb.gov.tr/yilin-ilk-yarisinda-307-milyon-kira-yardimi-yapildi-haber-256569> (Access date:21.08.2020)

Monroy, A.M., Gars, J., Matsumoto, T., Crook, J., Ahrend, R. and Schumann, A. (2020). *Housing policies for sustainable and inclusive cities: How national governments can deliver affordable housing and compact urban development*. OECD& Coalition for Urban Transitions, London and Washington, DC

Mullin & Lonergan Associates (2015). *Housing Needs Assessment*, The Washington State Affordable Housing Advisory Board, January. <http://www.commerce.wa.gov/wp-content/uploads/2016/10/AHAB-Housing-Needs-Assessment.pdf> (Access date:27.07.2020)

O’Sullivan, T. & Gibb, K.(2003). *Housing Economics and Public Policy*, Blackwell Science Ltd. ISBN-10: 0-632-06461-7 ISBN-13: 978-0-632-06461-8.

Turkish Civil Code, Law Number: 4721, Official Gazette Date: 08.12.2001

OECD (2018). *Housing*, Germany Policy Brief, OECD Better Policies Series, June.

OECD (2019). *Policy instruments and level of governance*, Affordable Housing Database - Social Policy Division - Directorate of Employment, Labour and Social Affairs.

OECD (2020). *Public policies towards affordable housing* <http://www.oecd.org/social/affordable-housing-database/housing-policies/> (Access date:01.08.2020)

Pirounakis, N.G (2013). *Real Estate Economics: A Point-to-Point Handbook*, Routledge. ISBN 9780415676359

Scally, C.P., Gold, A., DuBois, N. (2018), *The Low-Income Housing Tax Credit How It Works and Who It Serves*, Urban Institute. Research Report, July.

Scanlon, K., Arrigoitia, F. and, Christine, W (2015).Social housing in Europe. *European Policy Analysis* (17). pp. 1-12.

- Tax Policy Center (2020), *Briefing Book*. A Citizen's Guide to the Fascinating (though often complex) Element of the Federal Tax system, Urban Institute and Brookings Institution.
- The National Association of Realtors (NAR) (2020). *Metro Home Prices Grow in 96% of Metro Areas in Second Quarter of 2020*. <https://www.nar.realtor/newsroom/metro-home-prices-grow-in-96-of-metro-areas-in-second-quarter-of-2020> (Access date: 17.08.2020)
- The Mass Housing Law (1984). Law Number: 2985, Official Gazette Date:: 17/3/1984
- The Housing Development Administration (TOKI) (2018), *Toplu Konut Üretim Raporu*, Güncelleme: 19 Haziran
- The Housing Development Administration (TOKI) (2019), *Kurumsal Tanıtım Dökümanı*, Eylül
- The United States Department of Agriculture (USDA)(2019). Rural Development Summary of Major Programs. RD-19005, October.
- Tu, Y. Segmentation (2003). “Segmentation, Adjustment and Disequilibrium” in O’Sullivan, T. & Gibb, K.(2003) (ed). *Housing Economics and Public Policy*, Blackwell Science Ltd. ISBN-10: 0-632-06461-7 ISBN-13: 978-0-632-06461-8.
- United States General Accounting Office (GAO) (1997). *Tax Credits, Opportunities to Improve Oversight of the Low-Income Housing Program*, GAO/GGD/RCED-97-55, March.

CHAPTER VIII

DOES FOREIGN DIRECT INVESTMENT CONTRIBUTE CO₂ EMISSIONS? REVISITING THE POLLUTION HAVEN HYPOTHESIS FOR TURKEY

Dr. Pınar KARAHAN-DURSUN

Anadolu University, Eskişehir, Turkey

e-mail: pkarahan@anadolu.edu.tr, Orcid ID: 0000-0002-8289-6570

1. Introduction

Foreign direct investment (FDI) is an essential extent of the recent wave of globalization (Nasser and Gomez, 2009: 60). The costs and benefits of FDI inflows have been debating since FDI has increased rapidly almost all over the world during the past two decade (Acharya, 2009: 43). FDI inflows to the host country are widely expected to stimulate economic development through capital accumulation, productivity gains, and introduction new technologies (Nasser and Gomez, 2009: 61; Desbordes and Wei, 2017: 1; Sasmaz and Yayla, 2018). FDI has been considered as an engine of economic activity in developing economies but at the cost of the environment (Kiviyiro ve Arminen, 2014: 595; Shahbaz, 2015: 275).

The effect of FDI on the host country's environment is not an argument reaching a consensus. There are two contrary hypotheses have been proposed in literature regarding the relationship between FDI and environment: The Pollution Haven hypothesis and the Pollution Halo hypothesis. Firstly, according to the Pollution Haven Hypothesis (PHH), multinational firms having strict environmental regulations in their home countries seek to operate their pollution-intensive activities in developing countries where the environmental policies are less stringent (Hoffman et al, 2005: 311). In this context, developing countries having weak environmental regulations, which makes them more desirable for foreign dirty industries, become "pollution-havens" and incur more environmental pollution (Zhang and Zhou, 2016: 944; Solarin et al, 2017: 706). Secondly, the Pollution Halo hypothesis asserts that multinational firms inhibit environmental pollutions of the host countries through the transfer cleaner technology and environment management practices (Kiviyiro and Arminen, 2014: 596; Shahbaz, 2015: 276). Though these clear theoretical arguments, empirical studies on the FDI-environment nexus do not provide conclusive results (Hoffman et al, 2005: 311). Some of them confirm the Pollution Haven hypothesis (Acharya, 2009; Akın, 2014; Baek, 2016; Yılmaz et al, 2017; Sapkota and Bastola, 2017; Solarin et al, 2017; Bakircay and Cetin, 2017; Salahuttin et al, 2018), while some validates the Pollution Halo hypothesis (Hao and Liu, 2015; Zhang and Zhou, 2016; Mert and Boluk, 2016; Sung et al, 2018). The mixed empirical results have also been

reported (Kiviyiro and Arminen, 2014; Omri et al, 2014; Zeren, 2015; Shahbaz, 2015; Baglitaz and Yaprak, 2019). Besides, some studies suggest that the validity of the PHH and the Pollution Halo hypothesis may depend on the income level of the countries (Hoffman et al, 2005; Akin, 2014; Baek, 2016; Sapkota and Bastola, 2017). On the other hand, there have been empirical evidence on the association between FDI and environment is neutral meaning that there is no impact of FDI on environmental quality (Lee, 2013; Shaari et al, 2014; Chandran and Tang, 2013; Sahin, 2018).

The environmental issues of air pollution and global climate change have become the focus of international attention for the past two decades. The global warming not only impact environment but also have directly adverse effects on economy, social life, and politics (Kocak and Sarkgunesi, 2018: 790). In this regard, lowering the level of CO₂ (carbon dioxide) emissions has become a crucial global policy objective in that CO₂ emissions are considered to be primary greenhouse gas responsible for global warming (Pao and Tsai, 2011: 685; Baek, 2016: 23). It is stated that the countries positioning at the Mediterranean basin will be most seriously affected by climate change. Nominately, Turkey currently has been subjecting of global warming through the weakening water resources, the increases in desertification, the decreases in rainfall (MFA). Turkey was 17th among the top greenhouse emitting countries in the world in 2016. According to the data released by Turkstat, CO₂ emissions were responsible for approximately 80% of the total greenhouse gas emissions (GHGs) in Turkey between 2010 and 2018. Besides, approximately 90% of CO₂ emissions were generated by energy sector for this period. The amounts of the total CO₂ emissions reached to 419.2 million tons in 2018, which was 151.5 million tons in 1990, indicating that CO₂ emissions increased %176.7 from 1990 to 2018 (Turkstat, 2020). On the other hand, FDI inflows to Turkey have been rapidly increased over the past two decades. Indeed, Turkey has raised foreign investors' confidence along with the implemented the policies for financial sector' stability after the economic crisis in 2001 and the process of official EU candidate membership in 2004 (Seker et al, 2005: 348; Gocer et al., 2013: 108). The net FDI inflows reached \$13 billion in 2018 while it was less than \$1 billion until 2001. Furthermore, the net FDI inflows reached \$213 billion cumulatively between the years 2001 and 2018 (Karahan-Dursun, 2019: 86). Hence, FDI inflows may affects positively CO₂ emissions by increasing energy consumption in Turkey. In this regard, determining the relationship between FDI inflows and CO₂ emissions may provide to support mitigating environmental pollution. As stated by Seker et al (2015: 348), Turkey also have some responsibilities on the inhibition of GHGs emissions in the process of European Union membership.

The aim of this study is to investigate the impact of FDI inflows on CO₂ emissions in Turkey over the period 1990-2018 by employing Bound test, ARDL model and Kalman Filter approach. The empirical studies on the relationship between FDI and CO₂ in Turkey are limited and inconclusive. More specifically, some of them provide support the PHH (Mutafoglu, 2012; Gokmenoglu and Taspinar, 2015; Seker et al, 2015; Kocak and Sarkgunesi, 2018; Kurt et al, 2019), while some corroborates the Pollution Halo hypothesis (Ozturk and Oz, 2016; Akcay and Karasoy, 2018). On the other hand, the neutrality effect (Yaylali and Dogan, 2015; Polat, 2015; Kizilkaya, 2017) and nonlinearity effect (Yildirim et al, 2017) has also been documented. This study differs from the existence empirical literature on FDI-CO₂ nexus in Turkey in terms of employing Kalman Filter method in order to investigate the effects of FDI on CO₂ emissions dynamically. Accordingly, the current study is expected to contribute to the literature on this topic.

The rest of the study is organized as follows. Section 2 reviews the related literature. Section 3 presents the data and methodology for empirical analysis. The empirical results are provided by Section 4. The next section concludes.

2. Literature review

Empirical studies on FDI-environmental pollution nexus do not suggest conclusive findings that mainly depend on the differences in econometric methodologies and variables used with different country/countries analyzed and period samples. (Hoffman et al, 2005: 311-312; Kiviyiro and Arminen, 2014: 596; Seker, 2015: 350).

Pao and Tsai (2011) test the linkage between FDI, energy consumption, income, and CO₂ emissions for BRIC countries for the period 1980-2007 employing panel co-integration and causality tests. Their results reveal that FDI increases CO₂ emissions in the long-run, and there is strong bidirectional causal relation between FDI and pollution. In line with the result of Pao and Tsai (2011), Yilmaz et al (2017) state that FDI seems to increase CO₂ emission for nine BRICS and MINT countries applying panel co-integration tests over the period 1997-2013. Accordingly, the study supports PHH for this sample. Bakirtas and Cetin (2017) find the evidence supporting the PHH in MIKTA sample for the period 1982-2011 using PVAR model. Isik and Isik (2018) conclude that PHH is corroborated in Azerbaijan, Kyrgyzstan, Kazakhstan, Turkey, Turkmenistan, and Uzbekistan according to the results of panel-data analysis for 1995-2016. Using ARDL and Granger causality for Kuwait over the period 1980-2013, Salahuttin et al (2018) provide the findings that support PHH. Acharya (2009) document that FDI affects positively CO₂ emissions in India for 1980-2003. Solarin et al (2017) confirm the PHH in Ghana from 1980 to

2012 employing ARDL model. Tang and Tan (2015) examine the association between FDI, income, CO₂ emissions, and energy consumption in Vietnam between the years 1976-2009. They conclude that FDI decreases CO₂ emissions, meaning the rejection of the PHH.

The Pollution Halo hypothesis has also been supported by some empirical studies. One of them, Hao and Liu (2015) suggest that FDI affects environmental pollution negatively for 29 China provinces for the period 1995-2011 with dynamic panel data analysis. Fauzel (2017) considers FDI inflows in both manufacturing sectors and non-manufacturing sectors in Mauritius during 1980-2012. The ARDL model results indicate that FDI only in manufacturing sectors induces CO₂ emissions. For Chinese manufacturing industry for the period 2002-2005, Sung et al (2018) obtain the evidence supporting the Pollution Halo hypothesis. Zhang and Zhou (2016) search the effect of FDI on environment for panel data of 29 Chinese provinces over the period 1995-2010. The study postulates that FDI inflows lower CO₂ emission, which supports the Pollution Halo hypothesis in China. Mert and Boluk (2016) verify the Pollution Halo hypothesis in 21 Kyoto Annex countries with panel data analysis.

The relationship between FDI and environmental pollution has also been investigated for the countries depending upon their income levels. Hoffman et al (2005) analyze the FDI-CO₂ nexus for 112 countries for 15-28-year period by applying panel Granger causality method. The author considers these countries as low-, middle-, and high-income countries. The study captures the validity of PHH in case of low-income countries. For 20 developed and developing economies, Solarin and Al Mulali (2018) find that FDI lowers the pollution in the developed countries whereas FDI increases it in the developing countries. In other words, the findings are corroborated the PHH in developing countries while are linked to the Pollution Halo hypothesis in developed countries. Via panel data analysis, Sapkota and Bastola (2017) validate PHH for 14 Latin American economies over the period 1980-2010. Furthermore, the estimation results for two sub-groups also support the PHH for both low- and high-income economies. Akin (2014) employs system-GMM method for 12 high level income countries during the period 1970-2012 and concludes that FDI outflows from these countries affect CO₂ emissions negatively for these sample. Baek (2016) corroborate the validity of PHH for five Asian economies (Indonesia, Philippines, Malaysia, Thailand, Singapore) by applying PMG estimate method from 1980 to 2010. Further, the author considers these countries to divide into high-income and low-income economies and confirms the PHH in case of the low-income countries.

There are the empirical results suggesting the impact of FDI on environment is neutral. Lee (2013) employs panel data analysis for 19

countries of G20 for 1971-2009 and find no direct effect of FDI on environmental degradation. Chandran and Tang (2013) suggest that FDI is found to be insignificant for Indonesia, Malaysia and Thailand over the period 1971-2008. Sahin (2018) utilizes panel data analysis for ten Asian countries for the period 1990-2014 and the results do not capture any causality between FDI and CO₂ emissions in these sample. For 15 developing economies between the years 1992-2012, Shaari et al (2014) fail to find any effect of FDI on CO₂ emissions for the both FMOLS and Granger causality results.

The studies examining the validity of PHH and Pollution Halo hypothesis have also some mixed results. Omri et al (2014) apply dynamic panel data analysis for 54 countries between the years 1990-2011, and suggest the existence of PHH in Latin America and Caribbean, and Middle East, North Africa, and Sub-Saharan region while PHH is non-validation in Europe and North Asia. For 6 Sub-Saharan African countries, Kiviyiro and Arminen (2014) confirm the PHH in Kenya and Zimbabwe while they verify the Pollution Halo hypothesis for Democratic Republic of the Congo and Kenya for the period of 1971-2009. Over the period 1970-2010, Zeren (2015) states that the Pollution Halo hypothesis is confirmed by United States, France, and United Kingdom as PHH is valid for Canada. Using ARDL model for fragile five countries during 1981-2016, Baglitaz and Yaprak (2019) determine the validity of PHH only in Indonesia and Turkey. For Brazil and Singapore from 1970 to 2010, Kostakis et al (2017) apply ARDL, FMOLS, and OLS and reveal the existence of PHH only in Brazil. Shahbaz (2015) considers the income level of 99 countries using panel co-integration and FMOLS method for the years 1975-2012. The empirical results provide the existence of the non-linear relation between FDI and CO₂ emissions in global and middle-income panel. Besides, the Pollution Halo hypothesis is corroborated by high-income countries whereas the PHH is verified by low-income countries¹.

¹Note that energy consumption is found to be another important driver of pollution in the empirical studies presented above. On the other hand, CO₂ emissions-income nexus is controversial. Shaari et al (2014), Shahbaz et al (2015), Fauzel (2017), Sahin (2018), Salahuddin et al (2018), Baglitaz and Yaprak (2019), Isik and Isik (2018), and Solarin and Al-Mulali (2018) obtain the findings that GDP has a significantly positive influence on CO₂ emissions, while Lee (2013), Akın (2014), Sung et al (2018) have the opposite results. On the other hand, Pao and Tsai (2011), Kiviyiro and Arminen (2014), Tang and Tan (2015), Mert and Boluk (2016), Baek (2016), Sapkota and Bastola (2017), Solarin (2017), and Shahbaz et al (2019) validate the EKC hypothesis, which implies the existence of an inverted-U shaped relationship between environmental pollution and income.

In respect to Turkey, Table 1² summaries the empirical studies on FDI-CO₂ emissions nexus. One may say that the studies on FDI-CO₂ nexus is limited and have controversial findings. Table 1 reveals that some empirical studies support PHH (Mutafoglu, 2012; Gokmenoglu and Taspinar, 2015; Seker et al, 2015; Kocak and Sarkgunesi, 2018; Kurt et al, 2019) whereas some of them corroborate the Pollution Halo hypothesis (Ozturk and Oz, 2016; Akcay and Karasoy, 2018). Furthermore, it is obtained the insignificant impact of FDI on environmental pollution namely neutrality effect (Yaylali and Dogan, 2015; Polat, 2015; Kizilkaya, 2017). In fact, the both linear and nonlinear linkage between FDI and CO₂ emission is also captured by Yildirim et al (2017).

Table 1. A summary of empirical studies for Turkey

Author(s)	Period	Method	Variables	Results
Mutafoglu (2012)	1987Q1-2009Q4	Johansen cointegration, Granger causality	CO ₂ , FDI, Y	PHH is valid.
Sahinoz (2014)	1974-2011	Least square	CO ₂ , FDI, Y, MV	PHH is not valid.
Gokmenoglu and Taspinar (2015)	1974-2010	ARDL, Toda-Yamamoto	CO ₂ , FDI, Y, EC	PHH is valid.
Seker et al (2015)	1974-2010	ARDL, Hatemi-J cointegration, Granger causality	CO ₂ , FDI, Y, Y ² , EC	PHH is valid.
Yaylali and Dogan (2015)	1980-2011	ARDL Bound test	CO ₂ , FDI	No co-integrated
Polat (2015)	1980-2013	Gregory-Hansen cointegration,	CO ₂ , FDI, Y, EC	Neutrality

²The studies that also include energy consumption variable in Table 1 indicate that energy consumption increases CO₂ emissions in Turkey. As for the impact of income on pollution, Polat (2015), Sahinoz (2014), Kizilkaya (2017), and Akcay and Karasoy (2018) state that GDP increases CO₂ emissions whereas Gokmenoglu and Taspinar (2015), Yildirim et al (2017) and Kurt et al (2019) suggest the existence of negative sign of income. Besides, EKC hypothesis is corroborated by Seker et al (2015), Ozturk and Oz (2016) and Kocak and Sarkgunesi (2018) for Turkey.

Ozturk and Oz (2016)	1974-2011	FMOLS, CRR Maki's cointegration, Granger causality, DOLS	CO ₂ , FDI, Y, EC	Pollution Halo hypothesis is valid.
Kizilkaya (2017)	1970-2014	ARDL	CO ₂ , FDI, Y, EC	Neutrality
Yildirim et al (2017)	1974-2013	ARDL, Granger causality	CO ₂ , FDI, FDI ² , Y, EC	Inverted U-shaped
Koçak and Sarguneşi (2018)	1974-2013	Maki's cointegration, DOLS, Bootstrap causality	CO ₂ , FDI, Y, Y ² , EC	PHH is valid.
Akcay and Karasoy (2018)	1974-2012	Johansen cointegration, Granger causality	CO ₂ , FDI, Y, EC, V, FD	Pollution Halo hypothesis is valid.
Kurt et al (2019)	1974-2014	ARDL	CO ₂ , FDI, Y, EC	PHH is valid.

CO₂, carbon dioxide emissions; FDI, foreign direct investment; FDI², the square of FDI; Y, GDP; Y², the square of GDP; EC, energy consumption; FD, financial development; V, industry sector's value added.

3. Data and methodology

This study examines the effects of FDI inflows on CO₂ emissions in Turkey employing Bound test, ARDL model, and Kalman Filter approach. The data used in this study covers the period of 1974-2014 due to data availability. The model to be estimated is as follows:

$$LCO_{2t} = \alpha_0 + \beta_1 LFDI_t + \beta_2 LEC_t + \beta_3 LTO_t + \varepsilon_t \quad (1)$$

where LCO₂ represents carbon dioxide emissions metric tons per capita as a measure of environmental pollution. LFDI denotes foreign direct investment inflows as a percentage of GDP. LEC and LTO are included as control variables. LEC signifies energy use (kg of oil equivalent per capita) as a proxy for energy consumption. LTO is the sum of exports and imports of goods and services as a percentage of GDP being a measure of trade openness. All variables, measured in their natural logarithms, are obtained from World Bank development indicators. β_1 , β_2 , and β_3 signify the long-run elasticity of CO₂ emissions with respect to foreign direct investment,

energy consumption and trade, respectively. The expected sign of β_1 may be either positive or negative based on the effect of FDI on CO₂ emissions. β_2 is expected to be positive because greater energy consumption should lead to higher economic activity and stimulate environmental degradation (Pao and Tsai, 2011: 687). Grossman and Krueger (1991) suggest three mechanisms that trade affects environment: scale, composition, and technique effects. The scale effect implies that free trade worsens the environmental quality by increasing economic expansion. The composition effect refers that free trade may have positive or negative impact on environmental pollution, depending upon whether a country's competitive advantage activities have pollution-intensive. Lastly, the technique effect suggests that increased trade openness improve environmental quality through the transfer cleaner technologies. Accordingly, the expected sign of β_3 can be either positive or negative.

The study employs Bound test developed by Pesaran et al (2001) in order to investigate the co-integration relationship between the variables. Bound test can be applied irrespective of whether the regressors are purely I(0), purely I(1), or mutually co-integrated. Moreover, Bound test approach is more reliable for small sample size than other co-integration test (Narayan and Narayan, 2004: 102). For applied Bound test approach in the analysis, the Unrestricted Error Correction model (UECM) specification is shown in equation 2.

$$\begin{aligned} \Delta LCO_{2t} = & a_0 + a_{1t} + \sum_{i=1}^m a_{2i} \Delta LCO_{2t-i} + \sum_{i=0}^m a_{3i} \Delta LFDI_{t-i} \\ & + \sum_{i=0}^m a_{4i} \Delta LEC_{t-i} + \sum_{i=0}^m a_{5i} \Delta LTO_{t-i} + a_6 LCO_{2t-1} \\ & + a_7 LFDI_{t-1} + a_8 LEC_{t-1} + a_9 LTO_{t-1} + \mu_t \quad (2) \end{aligned}$$

where, Δ signifies first difference operator, "m", and "t" represent number of lags and trend variables, respectively. The null hypothesis of the Bound test in this study is formed as $H_0: \alpha_6 = \alpha_7 = \alpha_8 = \alpha_9 = 0$ meaning that there is no co-integration relationship between the variables. The estimated F statistics is compared with the critical values in Pesaran et al (2001) to test the null hypothesis of no co-integration. If the calculated F statistics is higher than the upper bound of the critical values, the null hypothesis is rejected. If the computed F statistics is lower than the bottom bound of the critical values, than the null hypothesis cannot be rejected (Pesaran et al, 2001; Narayan and Narayan, 2004: 103).

After verifying the evidence of co-integration relationship between the variables, ARDL model is employed to analyze the long- and short-run impacts of the variables on CO₂ emissions. ARDL model specifications for this study are presented in Eq.3 and Eq.4.

$$LCO_{2t} = a_0 + \sum_{i=1}^p a_{1i} LCO_{2t-i} + \sum_{i=0}^q a_{2i} LFDI_{t-i} + \sum_{i=0}^r a_{3i} LEC_{t-i} + \sum_{i=0}^s a_{4i} LTO_{t-i} \quad (3)$$

$$\Delta LCO_{2t} = a_0 + a_1 ECT_{t-1} + \sum_{i=1}^m a_{2i} \Delta LCO_{2t-i} + \sum_{i=0}^n a_{3i} \Delta LFDI_{t-i} + \sum_{i=0}^n a_{4i} \Delta LEC_{t-i} + \sum_{i=0}^n a_{3i} \Delta LTO_{t-i} + \mu_t \quad (4)$$

Eq.3 and Eq.4 is the long-run and short-run ARDL model estimation, respectively. ECT_{t-1} is the error correction term, and α_1 is the speed of adjustment parameter. It shows what the speed of series to reach long-run equilibrium.

In the empirical analysis, the study lastly employs Kalman Filter approach in order to reveal the time-varying relation between CO_2 emission and foreign direct investment. The dynamic approach used by Kalman filter is based on a form of state space representation. This technique recursively estimates the parameters by updating the estimation with every additional observation (Atilgan et al, 2016: 4). The Kalman Filter specification for this study is shown in Eq.5 and Eq.6.

$$LCO_{2t} = \alpha_0 + \alpha_{1,t} LFDI + \varepsilon_t \quad (5)$$

$$\alpha_{i,t} = \alpha_{i,t-1} + v_{i,t} \quad (6)$$

where $\alpha_{1,t}$ denotes the time varying parameter estimates for foreign direct investment elasticity of CO_2 emissions.

4. Empirical results

The study firstly investigates the stationary properties of the variables by using ADF, PP and Ng-Perron test. The results of the stationary test are reported in Table 2.

Table 2. Unit Root Test Results

	ADF Test Results	PP Test Results	
LCO ₂	-2.745	-2.867	ADF and PP Critical Values (Level): %1= -4.20 %5= -3.53
LFDI	-4.558	-4.558	
LEC	-3.046	-3.172	

LTO	-2.457	-2.172	
Δ LCO ₂	-6.152	-6.659	ADF and PP Critical Values (First
Δ LEC	-6.284	-6.494	Differenced):
Δ LTO	-4.589	-5.443	%1= -3.61 %5= -2.94

Ng-Perron Test Results

	MZa	MZt	MSB	MPT
LCO ₂	-10.975	-2.327	0.212	8.380
LFDI	-15.972	-2.818	0.176	5.755
LEC	-12.824	-2.536	0.197	7.109
LTO	-7.409	-1.882	0.254	12.379

Ng-Peron critical values for MZa, MZt, MSB and MPT, respectively:

%1 = -23.80, -3.42, 0.14, 4.03 ; %5 = -17.30, -2.91, 0.17, 5.48

	MZa	MZt	MSB	MPT
Δ LCO ₂	-19.450	-3.117	0.160	1.265
Δ LFDI	-17.357	-2.944	0.169	1.419
Δ LEC	-19.474	-3.119	0.160	1.261
Δ LTO	-18.702	-3.056	0.163	1.317

Ng-Peron critical values for MZa, MZt, MSB and MPT, respectively:

%1 = -13.80, -2.58, 0.17, 1.78 ; %5 = -8.10, -1.98, -0.23, 3.17

The null hypothesis of ADF and PP test is that the series include unit root. The estimated t statistics for LCO₂, LEC and LTO are less than the critical values in their level form indicating that these series are integrated of order I(1). The calculated t statistics for LFDI is greater than the critical values in its level form meaning that LFDI is I(0) according to the results of the both ADF and PP tests.

For Ng-Perron test, the null hypothesis of MZa and MZt tests suggests that the series are not stationary while MSB and MPT have opposite null hypothesis. The estimated t statistics for all series for their level form are less according to MZa and MZt tests and greater than the critical values according to MSB and MPT tests. The estimated t statistics for the all series for the first difference are greater than MZa and MZt tests and less than the critical values of MSB and MPT tests. Accordingly, Ng-Perron test results suggest that all variables are integrated of order I(1) while ADF and PP test results show that all variables except for LFDI are integrated of order I(1). Ng-Perron test has more power in small samples than any other alternative tests including ADF and PP (Gencosmanoglu and Ertugrul, 2015: 290). Hence, the study accepts that all variables including LFDI are I(1).

After confirming that neither of the variables is integrated of two or more, the study examines the co-integration relation by using Bound test approach. The Bound test results are reported in Table 3.

Table 3. Bound Test Results

K	F statistics	Critical Values at %5 Significance Level	
		Bottom Bound	Upper Bound
3	5.99	3.15	4.11

The Bound test results in Table 3 show that F statistics is higher than the upper critical value at 5 per cent significance level implying that the null hypothesis of no co-integration is rejected. Accordingly, the result indicates the presence of co-integration relationship between the variables. Therefore, the ARDL model is applied in order to estimate the long-run and short-run coefficients of the explanatory variables. ARDL (2,2,1,1) model is selected by using Akaike information criterion, and the maximum lag number is taken 4. Table 4 presents the results of the ARDL model.

Table 4. ARDL (2,2,1,2) Model Long- and Short-Run Parameter Estimations

Estimated Lon-run Coefficients		
Variables	Coefficient	T-statistics
LFDI	0.035	2.944*
LEC	0.837	13.703*
LTO	0.094	4.070*
C	-5062	-12.26*
Short-run Estimation and Error Correction Representation		
Variables	Coefficient	T-statistics
D (LCO2(-1))	-0.105	-2.022***
D(LFDI)	0.013	2.778*
D(LFDI(-1))	-0.009	-2.344**
D(LEC)	1.005	14.796*
D(LTO)	-0.003	-0.197
D(LTO(-1))	-0.040	-1.832***
ECT(-1)	-0.651	-5.850*
Diagnostic Tests		
Serial Correlation LM test (Breusch-Godfrey)	1.177 [0.324]	
Heteroscedasticity test (Breusch-Pagan-Godfrey)	0.853 [0.585]	

Normality test	0.989 [0.609]
Ramsey Reset Test	2.111 [0.093]
Stability Tests	
Cusum	Stable**
Cusum of square	Stable**

*, **, and *** denote significance at 1%, 5%, and 10% levels, respectively. p values in parentheses.

According to the results of diagnostic test in Table 4 indicate that the estimated ARDL model has no serial correlation, heteroscedasticity, misspecification, and normality problems. The employed CUSUM and CUSUMsq test confirm the stability of the ARDL model. The results of the long-run coefficients show that all explanatory variables have inelastic, positive and statistically significant effects on CO₂ emissions. The estimated coefficient of FDI indicates that a 1% increase in FDI increases the level of CO₂ emissions by 0.035% in the long-run. Therefore, this finding confirms the PHH hypothesis for Turkey. However, the magnitude of the FDI elasticity of CO₂ emissions is found to be small. This result is in line with the results of Acharya (2009), Pao and Tsai (2011), Seker et al (2015) and Baek (2016). The long-run elasticity of CO₂ emissions with respect to energy consumption is 0.837, meaning that a 1% increase in energy consumption leads to a 0.837% increase in CO₂ emissions in the long-run. This result suggests that energy consumption is an essential driving factor of environmental pollution. The coefficient of trade indicates that CO₂ emissions increase by 0.094% when trade increases by 1%, suggesting the existence of the scale effect introduced by Grossman and Krueger (1991). This noticeable positive impact of trade on environmental pollution is consistent with the results of Halicioglu (2009), Ozatac et al (2017), Cetin (2018), and Karasoy (2019).

In the short-run, FDI and energy consumption affect CO₂ emissions positively while the coefficient of trade is found to be insignificant. Relative to the long-run, the short-run results reveal that energy consumption has a higher impact on CO₂ emission whereas FDI has weaker effect on it. The results show that energy consumption is the main determinants of environmental pollution in the short-run as well as in the long-run. The coefficient of ECT is found negative and statistically significant as expected. The estimated error correction term (-0.651) displays that 0.65% of deviations from the long-run equilibrium in the short-run is eliminated in the current year, which means speed of the adjustment process of the model is quite high.

Lastly, the study utilizes Kalman filter approach in order to investigate dynamic effects of FDI on CO₂ emissions for the period 1990-2014. The time varying parameter (TVP) estimates for FDI elasticity of CO₂

emissions are presented in Figure 1. The estimated time varying parameter is also statistically significant.

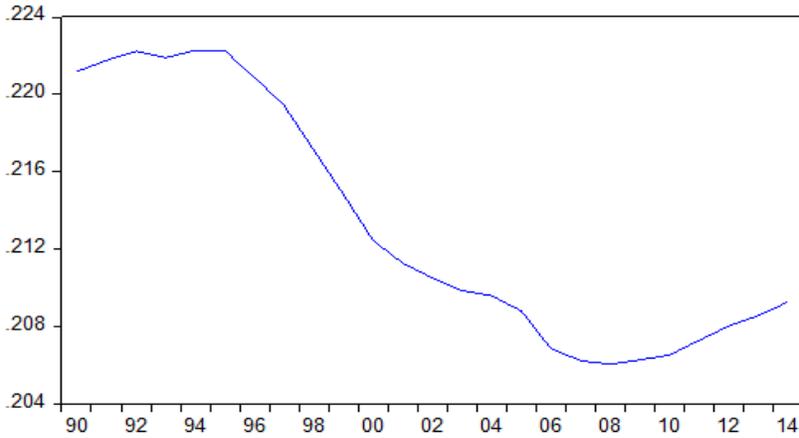


Figure 1. Time-Varying Parameter (TVP) Estimates for FDI Elasticity of CO₂ Emissions

TVP results show that FDI has a positive effect on CO₂ emissions, which is linked to the PHH. The effect of FDI on CO₂ emissions was generally stable between 1990-1995, and then begins to decrease until the year of 2008. On the other hand, the change in the magnitude of the TVP is found to be approximately 0.02, indicating that this decreasing impact was very small. The Kalman Filter estimation results indicate that global financial crises lead to higher positive effect of FDI on environmental pollution. However, the change in the size of the TVP is found to be 0.003. Accordingly, it can be concluded that the dynamic relationship between FDI and CO₂ emissions remained stable in Turkey for the analyzed period.

5. Conclusion

The effects of FDI inflows on environmental quality have been debating during the past two decades. The literature considers two opposite hypotheses on the association between FDI and environment. The Pollution Haven hypothesis suggests that FDI lead to increase in environmental pollution whereas the Pollution Halo hypothesis asserts that FDI improve environmental quality by decreasing pollution. This study investigates the impact of FDI on environment in Turkey over the period 1974-2014. The study employs CO₂ emissions as a proxy for environmental pollution and considers the role of energy consumption and trade on environment.

In the empirical analysis, the relationship between FDI and CO₂ emissions is examined by employing Bound test, ARDL model, and

Kalman Filter approach. The findings obtained from Bound test show that co-integration relationship exists between the variables. ARDL model results indicate that FDI affects positively CO₂ emissions both in the long- and the short-run. Though this finding supports the validity of the PHH hypothesis in Turkey, the effect of FDI on CO₂ emissions is found to be small in comparison with energy consumption and trade. Besides, the estimated long-run and short-run ARDL model results reveal that energy consumption has notable strong positive impact on CO₂ emissions while trade seems to increase environmental pollution only in the long-run. In this study, the error correction term verifies the presence of the long-run relationship between CO₂ emissions and its determinants, namely FDI, energy consumption and trade. Lastly, the dynamic relationship between CO₂ emissions and FDI is examined by employing Kalman Filter approach. This study differentiates from the existence empirical studies on the FDI-CO₂ nexus in Turkey by considering time-varying interaction between CO₂ emissions and FDI. In line with the results of ARDL model, the Kalman Filter result suggests that FDI has a positive effect on CO₂ emissions, which is consistent with the Pollution Haven hypothesis. However, the changes in the magnitude of time-varying parameter are found to be stable for analyzed period. Indeed, after the period of global financial crises, the increasing effect of FDI on environmental pollution is observed, but this impact is found to be negligible. In sum, the Kalman Filter estimation result indicates that the effects of FDI on CO₂ emissions did not exhibit a significant decreasing or increasing trend within the years.

Empirical findings provide some policy implications that should be designed in order to lower environmental pollution in Turkey. Firstly, as the detrimental effect of FDI inflows on environment is not found to be strong, it can be recommended that the policies on limiting FDI inflows in Turkey is not necessary. However, Turkey should aim to attract FDI inflows that have pollution-free technologies to control the adverse effect of FDI on environmental quality. Secondly, considering the finding of significant positive impact of energy consumption on CO₂ emissions both in the long-run and the short-run, Turkey should decrease its fossil fuel energy consumption that lead to incur more carbon emissions, such as coal, natural gas and petroleum. Instead, the policies should promote renewable energy sources which there are high potential for hydropower, wind, biomass, and solar energy in Turkey. In fact, supporting renewable energy can lessen the negative effect of trade on environment. For this purpose, it can be subsidized trade in environmentally friendly industries while discouraging carbon-intensive trade through the taxing policies.

Future studies may search the effect of FDI inflows on environment by using ecological footprint as well as carbon emissions as a measure of environmental degradation in Turkey. It can be also investigated the

relationship FDI and environment by industry levels to reveal more comprehensive analysis for Turkey.

References

- Acharya, J., (2009). "FDI, Growth and the Environment: Evidence from India on CO₂ Emission During the Last Two Decades". *Journal of Economic Development*, 34(1), 43-58.
- Akçay, S. and Karasoy, A. (2018). "Doğrudan Yabancı Yatırımlar ve Karbondioksit Emisyonu İlişkisi: Türkiye Örneği". *Ankara Üniversitesi, SBF Dergisi*, 73(2), 501-526.
- Akin, C.S. (2014). "Yabancı Sermaye Yatırımlarının CO₂ Emisyonu Üzerine Olan Etkisi: Dinamik Panel Veri Analizi". *Akademik Bakış Dergisi*, 44, 1-15.
- Atılğan, E., Kilic, D. and Ertugrul, H.M. (2016). "The Dynamic Relationship Between Health Expenditure and Economic Growth: Is the Health-Led Growth Hypothesis Valid for Turkey?". *The European Journal of Health Economics*, 1-8.
- Baek, J. (2016). "A New Look at the FDI–income–energy–environment nexus: Dynamic Panel Data Analysis of ASEAN". *Energy Policy*, 91, 22-27.
- Baglitaz, H.H. and Yaprak, Z.O. (2016). "An Empirical Analysis of Fragile Five in the Context of the Pollution Haven Hypothesis". *Recent Economic Approaches and Financial Corporate Policy*, 71-93.
- Bakirtas, I. and Cetin, M.A. (2017). "Revisiting the Environmental Kuznets Curve and Pollution Haven Hypotheses: MIKTA Sample". *Environ Sci Pollut Res*, 24, 18273-18283.
- Cetin, M., Ecevit, E. and Yucel, A.G. (2018). "The Impact of Economic Growth, Energy Consumption, Trade Openness, and Financial Development on Carbon Emissions: Empirical Evidence from Turkey". *Environmental Science and Pollution Research*, 25, 36589-36603.
- Chandran, V.G.R. and Tang, C.F. (2013). "The Impacts of Transport Energy Consumption, Foreign Direct Investment and Income on CO₂ Emissions in ASEAN-5 Economies". *Renewable and Sustainable Energy Reviews*, 24, 445-453.
- Desbordes, R. and Wei, S.J. (2017). "The Effects of Financial Development on Foreign Direct Investment". *NBER Working Paper*, 23309, 1-43.

- Fauzel, S. (2017). "The Impact of FDI on CO₂ Emission in A Small Island Developing State: A Cointegration Approach". *Economics and Business Letters* (1), 6-13.
- Gencosmanoglu, O.T. and Ertugrul, H.M. (2015). "Armington Elasticity of Turkey's Import Demand for Cotton". *Tekstil ve Konfeksiyon*, 25(4), 289-292.
- Gocer, İ., Mercan, M. and Peker, O. (2013). "İhracat, Doğrudan Yabancı Yatırımlar ve İşsizlik: Türkiye Örneği". *Business and Economics Research Journal*, 4(1), 103-120.
- Gokmenoglu, K. and Taspınar, N. (2015). "The Relationship between CO₂ Emissions, Energy Consumption, Economic Growth and FDI: The case of Turkey". *The Journal of International Trade & Economic Development*, 25(5), 706-723.
- Grossman, G.M. and Krueger, A.B. (1991). "Environmental Impacts of a North American Free Trade Agreement". *NBER Working Papers Series*, 3914, 1-39.
- Halicioğlu, F. (2009). "An Econometric Study of CO₂ Emissions, Energy Consumption, Income and Foreign Trade in Turkey. *Energy Policy*, 37, 1156-1164.
- Hao, Y., and Liu, Y-M. (2015). "Has the Development of FDI and Foreign Trade Contributed to China's CO₂ Emissions? An Empirical Study with Provincial Panel Data". *Nat Hazards*, 76, 1079-1091.
- Hoffmann, R., Lee, C-G., Ramasamy, B., Yeung, M. (2005). "FDI and Pollution: A Granger Causality Test Using Panel Data". *Journal of International Development*, 17, 311-317.
- Isik, N. and Isik, A. (2018). "Kirlilik Sığınağı Hipotezi ve Doğrudan Yabancı Yatırımlar: Orta Asya Türk Cumhuriyetleri Örneği". 3rd International Congress on Economics, Finance and Energy, Book of Proceedings, 88-104.
- Karahan-Dursun, P. (2019). "Doğrudan Yabancı Yatırımların Eğitim Düzeylerine Göre Genç İstihdam Üzerindeki Etkisi: Türkiye Örneği". *Finans Politik & Ekonomik Yorumlar* (649), 83-111.
- Karasoy, A. (2019). "Drivers of Carbon Emissions in Turkey: Considering Asymmetric Impacts". *Environmental Science and Pollution Research*, 26, 9219-9231.
- Kiviyiro, P. And Arminen, H. (2014). "Carbon Dioxide Emissions, Energy Consumption, Economic Growth, and Foreign Direct Investment: Causality Analysis for Sub-Saharan Africa". *Energy*, 74, 595-606.

- Kizilkaya, O. (2017). "The Impact of Economic Growth and Foreign Direct Investment on CO₂ Emissions: The Case of Turkey. *Turkish Economic Review*, 4(1), 106-118.
- Kocak, E. and Sarkgunesi, A. (2018). "The Impact of Foreign Direct Investment on CO₂ Emissions in Turkey: New Evidence from Cointegration and Bootstrap Causality Analysis". *Environ Sci. Pollut. Res.*, 25, 790-804.
- Kostakis, I., Lolos, S. and Sardianou, E. (2017). "Foreign Direct Investment and Environmental Degradation: Further Evidence from Brazil and Singapore", *Journal of Environmental Management and Tourism*, 45-59.
- Kurt, Ü., Kilic, C. and Ozekicioglu, H. (2019). "Doğrudan Yabancı Yatırımların CO₂ Emisyonu Üzerindeki Etkisi: Türkiye İçin ARDL Sınır Testi Yaklaşımı," *Selçuk Üniversitesi Sosyal Bilimler Meslek Yüksekokulu Dergisi*, 22(1), 213-224.
- Lee, J. W. (2013). "The Contribution of Foreign Direct Investment to Clean Energy Use, Carbon Emissions and Economic Growth". *Energy Policy*, 55, 483-489.
- Mert, M. and Boluk, G. (2016). "Do Foreign Direct Investment and Renewable Energy Consumption Affect the CO₂ Emissions? New Evidence from A Panel ARDL Approach to Kyoto Annex Countries". *Environ Sci Pollut Res*, 23, 21669-21681.
- MFA (Republic of Turkey of Ministry of Foreign Affairs) <http://www.mfa.gov.tr/united-nations-framework-convention-on-climate-change-unfccc-and-the-kyoto-protocol.en.mfa> (28.04.2020).
- Mutafoglu, T.H. (2012). "Foreign Direct Investment, Pollution, and Economic Growth Evidence from Turkey". *Journal of Developing Societies*", 28(3), 281–297.
- Narayan, S. and Narayan, P.K. (2004). "Determinants of Demand for Fiji's Exports: An Empirical Investigation". *The Developing Economies*, XLII-1, 95–112.
- Nasser, O. M. A. and Gomez, X. G. (2009). "Do Well-Functioning Financial Systems Affect the FDI Flows to Latin America?". *International Research Journal of Finance and Economics*, 29, 60-75.
- Omri, A., Nguyen, D.K., Rault, C. (2014). "Causal Interactions between CO₂ Emissions, FDI, and Economic Growth: Evidence from Dynamic Simultaneous-Equation Models". *Economic Modelling*, 42, 382-389.
- Ozatac, N., Gokmenoglu, K.K. and Taspinar, N. (2017). "Testing the EKC Hypothesis by Considering Trade Openness, Urbanization, and

- Financial Development: The Case Of Turkey”. *Environ. Sci. Pollut. Res.*, 24, 16690-16701.
- Ozturk, Z. and Oz, D. (2016). “The Relationship between Energy Consumption, Income, Foreign Direct Investment, and CO₂ Emissions: The Case of Turkey”. *Çankırı Karatekin Üniversitesi İİBF Dergisi*, 6(2), 1-20.
- Pao, H-T. and Tsai, C-M. (2011). “Multivariate Granger Causality between CO₂ Emissions, Energy Consumption, FDI (foreign direct investment) and GDP (gross domestic product): Evidence from A Panel of BRIC (Brazil, Russian Federation, India, and China) Countries”. *Energy*, 36, 685-693.
- Pesaran, M. H, Shin, Y. and Smith, R.J (2001). “Bounds Testing Approaches to the Analysis of Level Relationships”. *Journal of Applied Econometrics*, 16, 289-326.
- Polat, M.A. (2015). “Türkiye’de Yabancı Sermaye Yatırımları ile CO₂ Emisyonu Arasındaki İlişkinin Yapısal Kırılmalı Testler ile Analizi”. *Uluslararası Sosyal Araştırmalar Dergisi*, 8(41),1127-1135.
- Sahin, D. (2018). “Asya Ülkelerinde CO₂ Emisyonu, Doğrudan Yabancı Sermaye Yatırımları, Ekonomik Büyüme ve Enerji Tüketimi İlişkisi”. *Yönetim ve Ekonomi Araştırmaları Dergisi*, 16(3), 210-218.
- Sasmaz, M.U. and Yayla, Y.E. (2018). Doğrudan Yabancı Sermaye Yatırımlarının Ekonomik Kalkınma Üzerindeki Etkisi: OECD Ülkeleri Örneği. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 11(1), 359-374.
- Salahuddin, M., Alam, K., Ozturk, I. and Sohag, K. (2018). “The Effects of Electricity Consumption, Economic Growth, Financial Development and Foreign Direct Investment on CO₂ Emissions in Kuwait”. *Renewable and Sustainable Energy Reviews*, 81, 2002-2010.
- Sapkota, P. and Bastola, U. (2017). “Foreign Direct Investment, Income, and Environmental Pollution in Developing Countries: Panel Data Analysis of Latin America”. *Energy Economics*, 64, 206-212.
- Seker, F., Ertugrul, H.M. and Cetin, M. (2015). “The Impact of Foreign Direct Investment on Environmental Quality: A Bounds Testing and Causality Analysis for Turkey”. *Renewable and Sustainable Energy Reviews*, 52, 347-356.
- Shaari, M.S., Hussain, N.E. and Abdullah, H. (2014). “Relationship Among Foreign Direct Investment, Economic Growth and CO₂ Emission: A Panel Data Analysis”. *International Journal of Energy Economics and Policy*, 4(4), 706-715.

- Shahbaz, M., Nasreen, S., Abbas, F., and Anis, O. (2015). "Does Foreign Direct Investment Impede Environmental Quality in High-, Middle-, and Low-Income Countries?" *Energy Economics*, 51, 275-287.
- Shahbaz, M., Balsalobre-Lorente, D. and Sinha, A. (2019). Foreign direct Investment – CO₂ emissions nexus in Middle East and North African countries: Importance of biomass energy consumption. *Journal of Cleaner Production* 217 (2019) 603-614.
- Solarin, S.A., Al-Mulali, U., Musah, I. and Ozturk, I. (2017). "Investigating the Pollution Haven Hypothesis in Ghana: An Empirical Investigation". *Energy*, 124, 706-719.
- Solarin, S.A. and Al-Mulali, U. (2018). "Influence of Foreign Direct Investment on Indicators of Environmental Degradation", *Environmental Science and Pollution Research*, 25, 24845-24859.
- Sung, B., Song, W-Y. and Park, S-D. (2018). "How Foreign Direct Investment Affects CO₂ Emission Levels in the Chinese Manufacturing Industry: Evidence from Panel Data". *Economic Systems*, 42, 320-331.
- Tang, C.F. and Tan, B.W. (2015). "The Impact of Energy Consumption, Income and Foreign Direct Investment on Carbon Dioxide Emissions in Vietnam", *Energy*, 79, 447-454.
- Turkstat(2020).<http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=336>
24
- Yaylali, M., Dogan, E.M., Yilmaz, V.M. and Karaca, Z. (2015). "The Examination of Relationship between Foreign Direct Investments and Carbon dioxide Emissions in Turkey with ARDL Approach". *Alphanumeric Journal*, 3(2),107–112.
- Yildirim, M., Destek, M.A. and Ozsoy, F.N. (2017). "Doğrudan Yabancı Yatırımlar ve Kirlilik Sığınağı Hipotezi". *C.Ü. İktisadi ve İdari Bilimler Dergisi*, 18(2), 99-111.
- Yilmaz, T., Zeren, F. and Koyun, Y. (2017). "Doğrudan Yabancı Yatırımlar, Ekonomik Büyüme ve Karbondioksit Emisyonu İlişkisi: BRICS ve MINT Ülkeleri Üzerinde Ekonometrik Bir Uygulama". *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 22(4), 1235-1254.
- Zeren, F. (2015). "Doğrudan Yabancı Yatırımların CO₂ Emisyonuna Etkisi: Kirlilik Hale Hipotezi mi Kirlilik Cenneti Hipotezi mi?". *Journal of Yasar University*, 10(37), 6381-6477.
- Zhang, C. and Zhou, X. (2016). "Does Foreign Direct Investment Lead to Lower CO₂ Emissions? Evidence from A Regional Analysis in China". *Renewable and Sustainable Energy Reviews*, 58, 943-951.

CHAPTER IX

OPTIMAL SIZE OF GOVERNMENT AND ECONOMIC GROWTH: AN EMPIRICAL ANALYSIS OF THE ARMEY CURVE IN TURKEY

Asst. Prof. Dr. Yasemin DUMRUL

Kayseri University, Kayseri, Turkey

e-mail: ydumrul@kayseri.edu.tr, Orcid ID: : 0000-0001-5961-2931

1.Introduction

Ensuring sustainable development and reducing poverty is the main economic policy objective of both developed and developing country governments. In this context, ensuring economic growth can be expressed as the main target for overcoming poverty and increasing the welfare level of the society (Olaleye et. al, 2014: 47). In the economic literature, there are two basic growth models: the exogenous growth model (neoclassical growth model) pioneered by Solow (1956) and Swan (1956) and the endogenous growth model (new growth models) pioneered by Romer (1986), Lucas (1988), Barro (1990) and Rebelo (1991). It is argued that with the neoclassical growth model, the factor affecting the economic growth of countries is technological change, this variable is determined externally and the per capita income of countries converges over time. Accordingly, since economic growth is under the influence of an external factor, government policy does not have an impact on economic growth except for the transition to a steady state (Herath, 2012: 8). In other words, the government's impact on the economic growth process has not been studied in the neo-classical growth model. On the other hand, the new growth theory argues that government policy can have far-reaching effects on a country's long-term growth performance. The government can have an impact on long-term growth by influencing the effectiveness of resource utilization, factor accumulation rate and technological progress rate with three main fiscal policy instruments (taxation, public spending and total budget balance) (Pevcin, 2004: 213). In other words, contrary to Neoclassical growth theory, it is argued that endogenous factors, including government policy, can affect economic growth in the new growth theory (Herath, 2012: 8).

The effect of government spending on the economy and the weight of the public sector in the economy, it is one of the ongoing economic and political debates. Governments have an impact on the economic welfare of nations by ensuring the rule of law, protecting property rights, providing a specific set of public goods and eliminating the deterioration in resource allocation due to externalities. However, due to the increasing taxes,

borrowing and/or financing of government expenditures by printing money, the public sector having a large weight in the economy may have negative effects on the economy. It can also lead to negative spillovers, such as the disincentive effects of increased taxation and increased borrowing and the crowding out of private investments (Husseiny, 2019: 271). Contrary to this situation, if the weight of the public sector in the economy is too small or even zero, economic growth can be very limited due to the difficulties in providing public goods. It is therefore of great importance what the optimal level of government expenditure will be to maximize growth (Asimakopoulos and Karavias, 2016: 65). Calculating the optimal government expenditure dimension or the optimal size of the government is also important in terms of not wasting resources, channeling resources into productive areas and determining how to achieve the highest economic growth without additional burden on the country.

Public sector financing deficits, which arise as a result of the high level of government expenditures not being met by government revenues, are considered as one of the most important causes of the mentioned macroeconomic problems. However, government expenditure is seen as an important fiscal policy tool for developing countries to get out of the vicious circle of poverty (Şanlısoy and Sunal, 2016: 103). The aim of this study is to examine the validity of Armey curve both theoretically and empirically, expressing the effect of government size on economic growth. This study consists of 5 sections. The plan for the rest of the study is sequenced as follows: Section 2 reflects the relationship between public expenditure size and economic growth within the scope of Armey curve and empirical literature. Section 3 presents government expenditure and economic growth trends in Turkey. Section 4 explains the research methodology of the study and presents the finding results. Section 5 summarises the study, including policy implications.

2. Literature review

2.1. The concept of Armey curve

Leading economists who study the relationship between the optimal size of the government and economic growth are Barro (1990), Armey (1995), Rahn and Fox (1996) and Scully (1998, 2003). In this study, the relationship between the optimal size of the government and economic growth will be examined from the Armey Curve. The Armey Curve was built by Richard Armey (1995) on the Laffer Curve, which assumes that there is a tax rate that maximizes the amount of income the government receives from taxation.

The Armey Curve examines the relationship between public sector size and economic growth and assumes that an optimal size of public sector expenditure exists (Olaleye et. al, 2014: 52). The optimal size of the

government is expressed as the size of the public sector that maximizes economic growth (Şen and Kaya, 2019: 51). In other words, while the economic growth is at its maximum point, the optimal size of the public sector is ensured. Figure 1 shows the Armey Curve.

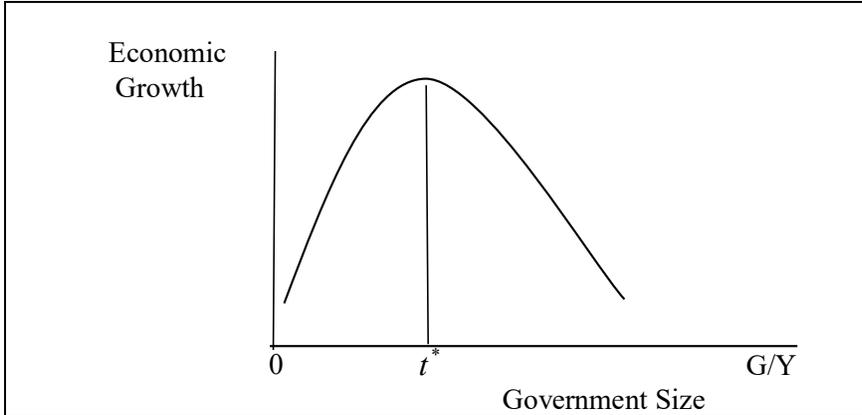


Fig. 1: Armey curve

In Figure 1, economic growth is shown by the real GDP and the size of the public sector by the ratio of government expenditures to GDP. As can be seen from Figure 1, Armey Curve is expressed by the inverse U-shaped relationship between public sector size and economic growth. Accordingly, there is a positive relationship between the size of the public sector and economic growth up to the threshold value (t^* -max.point) and a negative relationship after the threshold value (t^*).

In Figure 1, when government expenditure is zero or there is no public sector in an economy, goods and services to be produced by the government will be provided by the private sector. Since the absence of public sector in an economy leads to lawlessness, insecurity and instability, individuals will prefer not to saving and investment in such an environment, and therefore economic growth will not be achieved. However, a small public sector can contribute to the country's well-being by ensuring the rule of law and property rights and establishing a safe and stable environment for investors and savings. In addition, public services can positively affect economic growth by determining the legal and social framework on which the private sector is based. However, in a situation where the public sector is absent or very small, the economic growth rate will be very limited. Vedder and Gallaway (1998) stated that if the goods and services in the economy are fully provided by the public sector, economic growth will remain low, as problems will arise in the efficient use of resources. In other words, when all goods and services are produced by the private sector or all input and output decisions are taken by the government, per capita economic growth is likewise low. However, when

it comes to a combination of private and government decisions on allocating resources, economic growth will often be higher (Vedder and Gallaway, 1998: 1).

According to the Armeý curve, increasing public spending up to a certain point where economic growth reaches maximum value increases economic growth. In other words, there is a positive relationship between the size of the public sector and economic growth. Some of the studies suggesting a positive relationship between the size of the public sector and economic growth are as follows: Ram (1986), Kormendi and Meguire (1986), Ghali (1999), Günalp and Gür (2002), Bose et al. (2007) and Alexiou (2009). According to this view, it is argued that expanding the government dimension prevents the formation of market failures, provides an insurance function to private property and government expenditure can encourage private investments that will cause economic growth (Nademi et.al. 2010: 1; Chen and Lee, 2005: 1051). The high growth rate that occurs as public spending increases is the result of the public sector's providing growth-promoting goods and services (Şen and Kaya, 2019: 54).

According to Armeý curve, increasing public expenditures causes a decrease in economic growth after a certain point where economic growth reaches its maximum value. Some of the studies suggesting a negative relationship between the size of the public sector and economic growth are as follows: Landau (1983), Engen and Skinner (1991), Guseh (1997), Fölster and Henrekson (2001) and Dar and Amirhalkhali (2002), Romero-Avila and Strauch (2008), Roy (2009), Afonso and Fuceri (2010). This view argues that the increase in public expenditure has decreasing returns, excessive expansion of public expenditure will have the crowding-out effect to private investments and public expenditure will turn into inefficient public expenditures due to the deterioration of resource allocation and corruption.

It is stated that when the size of the public sector increases, more taxes will be needed to cover public expenditures, which will gradually damage the economy (Nademi et. al., 2010: 1; Chen and Lee, 2005: 1052). Similarly, Vedder and Gallaway (1998) stated that when government expenditure continues to grow beyond a certain point, the law of diminishing returns applies and the increase in public spending causes economic stagnation and a decrease in economic growth. Chen and Lee (2005) argue that increases in government size damage productivity and economic growth because government activities are often inefficient, the regulatory process imposes excessive burden and costs on the economic system and a government's fiscal and monetary policies tend to distort economic incentives and reduce the efficiency of the system (Chen and Lee, 2005: 1051).

2.2. Literature review

The relationship between government size, defined as the share of government expenditure in total GDP and economic growth was initially analyzed within the framework of a linear model, first developed by Feder (1982) and adapted by Ram (1986) by using a Cobb Douglas production function. Studies have shown that the size of the government has positive or negative effects on economic growth. However, after Grossman (1987, 1988), empirical literature has explored the possibility of a nonlinear relationship, assuming that government size has only a certain positive effect on growth. (Facchini and Melki, 2011: 2). Sheehey (1993), Armev (1995), Vedder and Gallaway (1998) and Chen and Lee (2005), Forte and Magazzino (2010), Varol Iyidogan and Turan (2017) stated that there are different opinions about the effect of government size on economic growth. The stated situation may be due to a non-linear rather than linear relationship between government size and economic growth (Nademi et.al. 2010, 1; Olaleye et.al, 2014: 47). In other words, the functional relationship between government size and economic growth is expressed as a quadratic function. After presenting the inverted U-shaped Armev Curve in the literature, the main argument is about the direction (positive or negative) the effect of government size on economic growth, it has moved towards determining what the optimal government size is. In addition, in most of the empirical studies on Armev curve, it is revealed that the optimal public expenditure size is between the threshold values expressed in Friedman (1997). Indeed, Friedman (1997) argues that the optimal level of government expenditures is between 15-50% of national income or output. This rate varies depending on the development levels of the countries (Altunç and Aydın, 2012: 83).

Studies dealing with the relationship between the size of the public sector and economic growth analyzed the effect of total public expenditure or in a specific field (defense, education, infrastructure, etc.) public expenditure or public debt on different economic outcomes such as GDP or GNP growth, total factor productivity or unemployment (Facchini and Melki, 2011: 4). Some of the international studies examining the relationship between public sector size and economic growth to determine the optimal size of the public sector are as follows: Asogwa et al. (2019) used a concave parabolic model for Ghana and Nigeria to analyze whether the Armev curve was valid and what the optimal size of government was for these countries. The study concluded that the optimal size of government as a percentage of GDP is 7.3% for Ghana and 12.5% for Nigeria.

Husseiny (2019) analyzed whether there is an optimal size of government for the Egyptian economy using the Johansen cointegration test for during the time period from 1981/1982 to 2014/2015. The study

found that the optimal size of government ranged from 30.5 percent to 31.2 percentage of GDP.

Bozma, Başar and Eren (2019) examined whether the Armeey Curve applies to the G7 countries and what the optimal size of government is for the G7 countries using the ARDL approach for the period 1980-2014. As a result of the study, it was found that the Armeey Curve was valid for the USA, Canada and France, but not in other G7 countries (UK, Japan, Italy and Germany). The optimal size of government is 12.46% for the USA, 23.57% for France and 18.93% for Canada.

Coayla (2018) tested the relationship between government expenditure and economic growth with regression analysis for Peru in the period 1984-2017. The result of the study shows that the Armeey curve prevails in the Peruvian economy and the optimal level of government expenditure as a percentage of GDP is 20.76%.

Murshed et.al. (2018) analyzed the relationship between government size and economic growth in the framework of Armeey curve for the period 1980-2016 using the panel data method for 9 selected countries from South and Southeast Asia. Armeey Curve is valid for all panel and Southeast Asia subpanel data in the study. In addition, it has been concluded that the optimal size of government in the context of the all panel and the Southeast Asia sub-panel is 148,627.5 and 57,765.7 million USD.

Hok et.al (2014) examined the relationship between the optimal size of government expenditures and economic growth using the panel ARDL approach for 8 ASEAN countries in the period 1995-2011. In the study, the inverse U-shaped relationship between economic growth and government expenditures has been confirmed. In addition, the study concluded that the optimal size of government expenditures as a percentage of GDP is 28.5%.

Christie (2014) analyzed the relationship between government size and economic growth with the threshold regression model for 136 countries during 1971-2005. The study concluded that the optimal size of government for developed countries is in the range of 26-32%.

Herath (2012) analyzed the relationship between optimal size of government and economic growth for Sri Lanka using regression analysis and Chow's breakpoint test during 1959-2003 and estimated the optimal public sector size at approximately 27%.

Forte and Magazzino (2011) tested the optimal size of government for 27 European Union countries in the period 1970-2009 with the panel GMM method. The optimal size of the government as a proportion of GDP for the countries considered is: Austria 38.21%, Belgium 35.39%, Denmark 38.63%, Finland 40.38%, France 39.49%, Germany 41.99%, Greece

39.33%, Ireland 44.47%, Italy 37.68%, the Netherlands 35.52%, Portugal 42.28% and the UK 43.50%.

Facchini and Melki (2011) tested whether the Armey curve is valid in France using the OLS method in the period 1871-2008. In the study, it was concluded that the Armey curve is valid in France and the optimal government size is 30%.

Vaziri et al. (2011) examined the validity of the Armey curve using the bootstrapping method (threshold regression model) in the economies of Iran and Pakistan in the period 1960-2007. As a result of the study, it was found that the Armey curve is valid in the countries considered.

Samimi et al. (2010) examined the effect of government size on economic growth for selected Islamic countries (Iran, Pakistan, Turkey, Egypt, Algeria, Indonesia, Oman and Jordan) over the period 1980-2007 using the threshold regression model. As a result of the study, it was found that there is a non-linear relationship between the size of the government and economic growth in the countries studied. The threshold values obtained in the countries are as follows: Iran 24.60%, Pakistan 11.90%, Turkey 13.96%, Egypt 16.53%, Algeria 16.54%, Indonesia 7.00%, Oman 26.11% and Jordan 26.09%.

Mutaşcu and Miloş (2009) tried to determine the optimal size of government within the framework of Armey curve by using panel data analysis for Old EU members (EU-15) and New EU members (EU-12) in the period 1999-2008. As a result of the study, threshold values as a percentage of GDP were estimated as 30.42% for Old EU members and 27.46% for New EU members.

Chen and Lee (2005) analyzed the validity of Armey curve in Taiwan economy using the threshold test in the period 1979Q1-2003Q3. As a result of the study, it was found that there is a nonlinear relationship between the size of government and economic growth. As a proportion of GDP, the optimal size of total government expenditures is 22.84%, the optimal size of government investment expenditures is 7.30%, and the optimal size of government consumption expenditures is 14.97%.

Pevcin (2004) analyzed the validity of the Armey curve in selected European countries (12 European countries) using panel data analysis in the period 1950-1996. As a result of the study, the existence of Armey curve has been proven. The optimal government size for the countries considered varies between 36% and 42% as a share of GDP.

Vedder and Gallaway (1998) tried to determine the optimal government size for 6 countries (USA, Canada, Denmark, Italy, Sweden and United Kingdom) in the period 1947-1997 using the regression analysis method. The optimal size of the government as a percentage of GDP was estimated

at 17.45% for the US, 21.37% for Canada, 26.14% for Denmark, 22.23% for Italy, 19.43% for Sweden and 20.97% for the United Kingdom.

Some of the studies examining the relationship between government size and economic growth in Turkey are as follows: Şen and Kaya (2019) analyzed the optimal size of the government using different size of public sector indicators in Turkey with the TAR model for the period 2006:1-2016:2. The results of the study showed that the economic growth maximizing the optimal public sector size in Turkey, above the optimal when considering government consumption expenditures as an indicator of government size, it was found to be less than optimal if considering government investment expenditures.

Yamak and Erdem (2018) tested whether the Armey curve is valid in Turkey for the 1998-2016 period using ARDL bounds testing approach and Hodrick- Prescott method. According to study results, Armey curve is valid in Turkey. In addition, the study found that the size of the government (optimal government size) that maximizes the economic growth rate is approximately 16% in the long run.

Varol İyidoğan and Turan (2017) analyzed the relationship between government size and economic growth for the period 1998Q1-2005Q1 using the threshold regression model. According to the study there is a nonlinear relationship between variables and Armey curve is valid in Turkey. The estimated threshold levels (as a percentage of GDP) in the study are 16.5% for government total expenditure, 12.6% for government consumption expenditure and 3.9% for government investment expenditure.

Pamuk and Dündar (2016) examined optimal volume of government sector using Johansen co-integration test and vector error correction model (VECM) during the period 1950-2006 for Turkey. The result of the study showed that Armey curve is valid in Turkey. In addition, it was found that the optimal government size is equal to approximately 23.5% of GNP.

Turan (2014) analyzed the relationship between public spending and economic growth in Turkey for the periods 1950-2012 and 1970-2012 using the OLS method. Two empirical specifications were used in the study. In the first specification, in which the total of central government expenditures is examined, it is stated that the optimal size of the public sector is 8.80% and 15.4% of GDP in the periods 1950-2012 and 1970-2012; In the second specification where non-interest expenditures are analyzed, it is concluded that the optimal size of the public sector is 9.1% and 17% of GDP. Accordingly, Armey curve is valid for the periods considered when both the total of central government expenditures and non-interest expenditures are taken into account.

Altunç and Aydın (2013) tested whether there is an inverted U-shaped relationship between public spending and economic growth in Turkey, Romania and Bulgaria for the period 1995-2011 using the ARDL method. As a result of the study, it was found that the Armey Curve is valid in the countries considered and the optimal size of the public sector varies between 22% and 25%.

Altunc and Aydin (2012) analyzed whether Armey curve in Turkey is valid for the total government expenditure and government expenditure components during the period 1975-2010 period using the Engle-Granger co-integration test. In the study, it has been concluded that there is an "inverse U" shaped relationship between economic growth and other expenditure categories excluding government investment expenditures (total government expenditures, current expenditures and transfer expenditures). Moreover, the optimal size of public expenditure for Turkey's economy, it was found that the 16% of GDP.

There is no consensus on the size of government spending that maximizes economic growth in applied studies. Obtaining different results in the studies may arise from the difference between the data used in the studies, the method, the period and the developed (transfer expenditures are predominant)/underdeveloped countries or developing countries (current and investment expenditures are predominant among government expenditures) and the use of a different government expenditure component. It may also result from the changes in social and economic factors that affect the management of government resources from country to country and structural factors such as the structure of government expenditures and the efficiency of government expenditures. As a result, studies on different country economies in order to determine the optimal size of the government sector are important in terms of policies to be implemented.

3. Government expenditure and economic growth trends in Turkey

The size of the government sector and economic growth with the effect of policies in Turkey has changed over time. In Figure 2, during the period 1961-2018, the size of the government sector and economic growth in Turkey has shown. In Figure 2, general government final consumption expenditures (percentage of GDP) are taken into account to express the size of the public sector and the growth rate of GDP to represent economic growth.



Fig. 2: The relationship between economic growth and the size of government in Turkey

As can be seen from Figure 2, it can be said that the size of the public sector was at a stable and relatively low level from 1961 until the 1970s. After the first and second oil crises in 1973-1974 and 1977-1978, government spending decreased. With the transition to free market economy since 1980 with the effect of globalization, the decrease in the size of the public sector continued. However, since 1990, the size of the public sector has increased with the effect of both the increase in the interest payments made to the national debt and the increase in the non-interest government expenditures and the 1994 crisis broke out. Since 1998, within the framework of the disinflation program in Turkey's economy, a narrowing fiscal policy has been implemented and public expenditures have been reduced.

Despite the effects of liberal economic policies implemented in this period preventing the increase in public expenditures, government expenditures continued to increase due to social, political and economic problems in the country. These increases resulted in the November 2000, February 2001 and 2008 crises. The measures taken in order to reduce the impact of financial crises and to stimulate domestic demand caused an increase in public expenditures, thus the size of the public sector (Firat and Tuğlu, 2019: 7).

Economic growth follows a fluctuating course in the period 1961-2018. Declines in economic growth rate in the 1970s; The emergence of inflation in Turkey, the problems in the political field, stems from the first and second oil crisis. In the 1980s, with the transition to free market economy and ensuring political stability, the economic growth rate increased. In the 1990s and continued fluctuating growth rates in Turkey. 1994 crisis and 1997 Asian crisis were effective in the decrease in growth rates. While entering the 2000's, Turkey experienced two major crises in November 2000 and February 2001. After the 2001 liquidity crisis caused by the increase in foreign exchange demand and triggered by the interest and

exchange rate increases, economic growth fell to its lowest level in the period under consideration. Emerging crisis in the world in 2008 has also affected Turkey and the economic growth rate has fallen. Although fluctuation in economic growth continued from 2010 to 2019, there was no negative growth.

In summary, economic growth decreased significantly and reached negative values during the crisis periods. In order to increase economic growth, fiscal stimulus packages including measures of expansionary fiscal policy (such as increase in government spending, tax reductions and fiscal incentives) have been implemented (Varol Iyidogan and Turan, 2017: 143). There has been an increase in economic growth rates after the policies implemented.

4. Research methodology

4.1 Data, model and methodology

In this study will be analyzed whether Armeý curve is valid. Annual data for Turkey from 1961 until 2018 were obtained from the World Development Indicators of the World Bank. In this study, general government final consumption expenditure (of GDP) is used as public expenditure data and real GDP is used as economic growth data. In this study, the Vedder and Gallaway (1998) econometric model is used to test whether the Armeý Curve is valid and the related model is shown in Equation (1).

$$GDP_t = \alpha_0 + \alpha_1 GE_t + \alpha_2 GE_t^2 + \varepsilon_t \quad \alpha_2 < 0 \quad (1)$$

In equation (1), GDP represents economic growth and shows real gross domestic product. Public expenditures expressed in GE. α_1 ve α_2 are coefficients for variables, α_0 is constant term, ε_t is the error term. The positive sign of the coefficient α_1 (positive sign in the linear term) indicates the positive effects of government expenditure on economic growth, The negative sign of the coefficient α_2 (negative sign of the quadratic term) measures the negative effects of increasing public expenditure on economic growth (Vedder and Gallaway, 1998: 4). For Armeý curve to be valid, the coefficient α_2 must be negative and statistically significant. With this equation, the linear effect of government expenditures on economic growth can also be tested. The optimal size of the public sector (GE*) is calculated as in Equation (2).

$$GE^* = -\frac{\alpha_1}{2(\alpha_2)} \quad (2)$$

In this study, unlike other studies examining the Armeý curve in Turkey will be used with a structural break unit root test and structural break cointegration test. Structural changes may occur for various reasons (economic crises, sudden policy changes, etc.) in the period considered in the economic time series. In this study, Zivot and Andrews (1992) unit root test as unit root test and Gregory-Hansen (1996) cointegration test as cointegration test will be applied in order to see the effect of structural changes. In addition, Toda-Yamamoto causality test will be used to reveal the causality relationship between variables.

In Zivot and Andrews (1992) single break unit root test, break time is determined internally. The observation that the smallest t statistic is obtained in this test expresses the break time. In the Zivot and Andrews unit root test with structural break, Three models are used: break in intercept (Model A), break in trend (Model B) and break in both (Model C). These models are shown in the equations below (Zivot ve Andrews,1992: 254).

Model A: Break in intercept

$$y_t = \mu + \beta t + \alpha y_{t-1} + \theta_1 DU(\phi) + \sum_{i=1}^k c_i \Delta y_{t-i} + e_t \quad (3)$$

Model B: Break in trend

$$y_t = \mu + \beta t + \alpha y_{t-1} + \theta_2 DT(\phi) + \sum_{i=1}^k c_i \Delta y_{t-i} + e_t \quad (4)$$

Model C: Break in both

$$y_t = \mu + \beta t + \alpha y_{t-1} + \theta_2 DT(\phi) + \theta_1 DU(\phi) + \sum_{i=1}^k c_i \Delta y_{t-i} + e_t \quad (5)$$

In the above models, DU is the dummy variable expressing the break in the mean occurring at each possible date of break (TB). DT is the dummy variable indicating the break in the trend.

Zivot and Andrews (1992) unit root test with structural break states that the null hypothesis “the series contains unit root”, the alternative hypothesis “the series is stationary”. If the value of the t statistic calculated within the absolute value is greater than the critical value Zivot and Andrews, the null hypothesis is rejected.

Gregory and Hansen (1996) cointegration test with structural break consists of three models shown below: break in level (C), break in trend (C/T) and break in regime (C/S) (Gregory ve Hansen, 1996: 102-103).

$$y_{1t} = \mu_1 + \mu_2 \phi_{1t} + \alpha^T y_{2t} + e_t \quad t = 1, \dots, n \quad (6)$$

$$y_{1t} = \mu_1 + \mu_2 \phi_{1t} + \beta t + \alpha^T y_{2t} + e_t \quad t = 1, \dots, n \quad (7)$$

$$y_{1t} = \mu_1 + \mu_2 \phi_{1t} + \alpha_1^T y_{2t} + \alpha_2^T y_{2t} \phi_{1t} + e_t \quad t = 1, \dots, n \quad (8)$$

μ_1 and μ_2 shown in the above equation denote constant terms before and after structural break, respectively. The slope coefficients of the cointegration relationship before and after structural break are expressed as α_1 and α_2 , respectively (Gregory and Hansen, 1996: 103).

While the null hypothesis tested in Gregory and Hansen (1996) states that there is no cointegration relationship between structural change and variables, the alternative hypothesis is that there is a cointegration relationship between structural change and variables. Three different test statistics are used to test the validity of the hypotheses: ADF , Z_t and Z_α . These test statistics are compared with the critical values in Gregory and Hansen (1996). If the calculated test statistic is less than the critical value, the null hypothesis cannot be rejected and it is concluded that there is no cointegration relationship between variables under structural breaks.

After the cointegration analysis, Toda-Yamamoto (1995) causality test can be used to determine whether there is a causality relationship between variables. Toda-Yamamoto causality test results can be obtained by constructing $VAR(k + d_{\max})$. Equations regarding the Toda-Yamamoto (1995) causality test are presented below (Adriana, 2014: 230).

$$Y_t = a_0 + \sum_{i=1}^k b_{1i} \cdot Y_{t-i} + \sum_{i=k+1}^{k+d_{\max}} b_{2i} \cdot Y_{t-i} + \sum_{i=1}^k c_{1i} \cdot X_{t-i} + \sum_{i=k+1}^{k+d_{\max}} c_{2i} \cdot X_{t-i} + e_{1t} \quad (9)$$

$$X_t = d_0 + \sum_{i=1}^k e_{1i} \cdot X_{t-i} + \sum_{i=k+1}^{k+d_{\max}} e_{2i} \cdot X_{t-i} + \sum_{i=1}^k f_{1i} \cdot Y_{t-i} + \sum_{i=k+1}^{k+d_{\max}} f_{2i} \cdot Y_{t-i} + e_{2t} \quad (10)$$

In Toda-Yamamoto (1995) test, the null hypothesis is that X is not the cause of Y ($H_0 : c_{1i} = 0$). Similarly the second null hypothesis that Y is not cause of X ($H_0 : f_{1i} = 0$) (Adriana, 2014: 230). In Toda-Yamamoto (1995) test, MWALD test statistic is suggested to test the null hypothesis. The MWALD test statistic has asymptotically χ^2 distribution.

4.2. Empirical findings

Table 1 shows the results of Zivot and Andrews unit root test, which determine the structural change in the series internally. While the break dates for the economic growth variable indicate the 2001 crisis and beyond,

they reflect after the transition to free market economy for government expenditures.

Table 1: Zivot and Andrews unit root test results

Level Values of Variables	Model A (t-stat)	Model A Break Date	Model B (t-stat)	Model B Break Date	Model C (t-stat)	Model C Break Date
<i>GDP</i>	0.11648	2004	-2.893	2002	-2.963	2001
<i>GE</i>	-4.0448	1981	-3.111	1986	-4.092	1981
<i>GE</i> ²	-4.3549	1981	-3.426	1986	-4.452	1981
Difference Values of Variables	Model A (t-stat)	Model A Break Date	Model B (t-stat)	Model B Break Date	Model C (t-stat)	Model C Break Date
ΔGDP	-7.5450	2004	-7.596	2002	-7.705	2003
ΔGE	-8.2810	1989	-7.563	1982	-8.221	1986
ΔGE ²	-6.7616	2000	-6.551	1999	-6.937	1989
Critic. Value	Model A		Model B		Model C	
1%	-5.34		-4.80		-5.57	
5%	-4.93		-4.42		-5.08	
10%	-4.58		-4.11		-4.82	

As can be seen from Table 1, when the t statistics obtained as a result of the analysis are compared with the critical values given in Zivot and Andrews (1992), the calculated t statistics for all variables are smaller than the critical values (1%, 5%, 10%). For this reason, the null hypothesis that the series contains unit root cannot be rejected. In other words, the null hypothesis showing the existence of unit root in series without structural break is accepted. According to the result of Zivot and Andrews unit root test with structural break, all variables become stationary when the first difference is taken.

After the unit root test, Gregory and Hansen (1996) cointegration test, which allows single structural break, was used to reveal whether there is a long-term relationship between variables under structural break. Gregory and Hansen cointegration test results are given in Table 2.

Table 2: Gregory and Hansen cointegration test results

Model	ADF	TB	Z_t	TB	$Z\alpha$	TB
C	-3.70271 (-4.92)	1970	-3.73562 (-4.92)	1970	-25.0026 (-46.98)	1990
C/T	-3.71590 (-5.29)	2009	-2.80566 (-5.29)	2009	-17.5895 (-53.92)	2009

C/S	-4.11628 (-5.50)	2007	-4.13243 (-5.50)	2008	26.44726 (-58.33)	2008
-----	---------------------	------	---------------------	------	----------------------	------

Not: Critical values determined according to the number of variables are taken from Gregory and Hansen (1996: 109). Values in parentheses indicate critical values at 5% significance level.

Since the ADF , Z_t and Z_α test statistics at the 5% significance level for all three models are smaller than the critical values in terms of absolute value, the null hypothesis, which indicates that there is no cointegration between the series, cannot be rejected. In other words, the null hypothesis is accepted that there is no cointegration relationship between variables with structural change. Therefore, according to the Gregory and Hansen cointegration test results, there is no long-term relationship between economic growth and government spending under structural breaks. Thus Armey Curve in Turkey is not valid. In Table 2, TB refers to the structural break dates. The break dates obtained in the Gregory and Hansen cointegration test are consistent with the developments in the economy in the period under consideration.

As a result of the cointegration test with structural break, it was seen that there was no cointegration relationship between variables. In this case, Toda-Yamamoto (1995) causality test was used to reveal the causality relationship between variables. In Toda Yamamoto test, the length of lag (k) was determined as 1 by considering the Schwarz and Hannan-Quinn information criteria. The maximum degree of integration of the series (d_{\max}) is 1 starting from unit root test. In causality analysis, p is the optimal lag length and the optimal lag length equals $p = (k + d_{\max})$. Therefore, the causality test results for the second order VAR model are presented in Table 3.

Table 3: Toda-Yamamoto causality test results

Causality Direction	χ^2 Test Statistics	Optimal Lag Length	Probability
GE \rightarrow GDP	4.904196	2	0.0268
GDP \rightarrow GE	0.005115	2	0.9430

According to Toda-Yamamoto analysis results in Table 3, the null hypothesis that "the size of government expenditure is not the cause of GDP" is rejected at the 5% significance level. The null hypothesis that "GDP is not the cause of the size of government expenditure" cannot be rejected at the 5% significance level. Thus, with the Toda-Yamamoto test, it is concluded that there is a one-way causality relationship from government expenditure size to GDP.

5. Conclusions

How is the size of the public sector has an impact on economic growth and what should be the weight of the public sector in the economy has been discussed for a long time. In this study, the relationship between public sector size and economic growth is examined within the scope of Armey Curve. According to the Armey Curve, whether public expenditures, which are an important fiscal policy tool in increasing the welfare level of countries, have a positive or negative effect on economic growth varies depending on the size of the public sector. However, there is no consensus in the applied literature on what should be the weight of the public sector in the economy.

In tis study was analyzed whether Armey Curve is valid in Turkey using the unit root test with structural break and the cointegration test with structural break. As a result of the study, a cointegration relationship between public expenditures and economic growth under structural breaks could not be found in the period considered. In other words, Armey curve under structural breaks in Turkey in the period dealt with is not valid. When the causality relationship between the variables is examined, it is concluded that there is a one-way causality relationship from public expenditures to economic growth. Thus creating positive externalities of public spending can be said that an important policy instrument for promoting Turkey's economic growth. Indeed, private capital accumulation is insufficient to realize the growth in developing countries such as Turkey, the expenditure to be incurred by the public sector are exhibiting greater importance.

References

- Adriana, D. (2014). "Revisiting the relationship between unemployment rates and shadow economy. A Toda-Yamamoto approach for the case of Romania", *Procedia Economics and Finance*, 10: 227-236.
- Afonso, A. and Fuceri, D. (2010). "Government size, composition, volatility and economic growth". *European Journal of Political Economy*, 26(4): 517-532.
- Alexiou, C. (2012). "Government spending and economic growth: econometric evidence from the South Eastern Europe (SEE)". *Journal of Economic and Social Research*, 11(1): 1-16.
- Altunc, O. F. ve Aydın C. (2012). "Türkiye’de kamu sektörü büyüklüğü ve ekonomik büyüme ilişkisinin ampirik analizi". *Ekonomik Yaklaşım*, 23 (82): 79-98.
- Altunc, O. F. and Aydın C. (2013). "The relationship between optimal size of government and economic growth: Empirical evidence from Turkey, Romania and Bulgaria". *Procedia Social and Behavioral Sciences*, 92: 66-75.
- Armey, R. (1995). *The Freedom revolution*. Washington, D.C.: Regnery Publishing Co.
- Asimakopoulous S. and Karavias Y. (2016). "The impact of government size on economic growth: a threshold analysis". *Economics Letters*, 139: 65-68.
- Asogwa, F. O., Okwudili, A. S. and Urama, M. S. (2019). "Economic growth and public expenditure: Country specific test of the Armey Curve Hypothesis in Nigeria and Ghana". *Advances in Social Sciences Research Journal*, 6(1): 498-509.
- Barro, R. J. (1990). "Government spending in a simple model of endogenous growth". *Journal of Political Economy*, 98: 103-125.
- Bose, N., Haque, M. E. and Osborn, D. R., (2007). "Public expenditure and economic growth: A disaggregated analysis for developing countries". *The Manchester School*, 75(5): 533-556.
- Bozma, G., Başar, S. and Eren, M. (2019). "Investigating validation of Armey curve hypothesis for G7 countries using ARDL model". *Doğuş Üniversitesi Dergisi*, 20(1): 49-59.
- Chen, S.-T. and Lee C.-C. (2005). "Government size and economic growth in Taiwan: A threshold regression approach", *Journal of Policy Modeling* 27: 1051-1066.
- Christie, T. (2014). "The effect of government spending on economic growth: Testing the non-linear hypothesis". *Bulletin of Economic Research*, 66(2): 183-204.
- Coayla, E. (2018). "The Armey Curve: Size of public spending and economic growth in Peru". *Journal of Applied Economic Sciences (JAES)*, 59: 1365-1372.

- Dar, A. A. and AmirKhalkhali, S. (2002). "Government size, factor accumulation, and economic growth: Evidence from OECD Countries". *Journal of Policy Modeling*, 24(7-8): 679-692.
- Engen, E. and J. Skinner. (1991). "Fiscal policy and economic growth". In paper presented at NBER conference on taxation.
- Facchini, F. and Melki, M. (2011). "Optimal government size and economic growth in France (1871- 2008) : An explanation by the State and market failures". ffhalshs-00654363f
- Feder, G., (1982). "On export and economic growth", *Journal of Development Economics*, 12: 59-73.
- Firat E. ve Tuğlu, D. (2019). "Finansal kriz dönemlerinde kamu harcamaları ve ekonomik büyüme ilişkisi: 1998-2018 Türkiye örneği". *Aksaray Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 11(3): 1-10.
- Forte, F. and Magazzino, C. (2011). "Optimal size government and economic growth in EU Countries". *Economia Politica*, 3: 295 322.
- Fölster, S. and Henrekson, M. (2001). "Growth effects of government expenditure and taxation in rich countries". *European Economic Review*, 45(8): 1501-1520.
- Ghali, K. H. (1999). "Government size and economic growth: Evidence from a multivariate cointegration analysis". *Applied Economics*, 31(8): 975-987.
- Gregory, A.W. and Hansen, B.E. (1996) "Residual-based tests for cointegration in models with regime shifts," *Journal of Econometrics*, 70: 99-126.
- Grossman, P., (1987). "The optimal size of government", *Public Choice*, 53: 131-147.
- Grossman, P., (1988). "Growth in government and economic growth: the Australian experience". *Australian Economics Papers*, 27: 33-45.
- Guseh, J. (1997). "Government size and economic growth in developing countries: A political-economy framework". *Journal of Macroeconomics*, 19(1): 175-192.
- Güenalp, B. and Gür, T. (2002). "Government expenditures and economic growth in developing countries: Evidence from a panel data analysis". *METU Studies in Development*, 29(3-4): 311-332.
- Herath, S. (2012). "Size of government and economic growth: A nonlinear analysis". *Economic Annals*, 57(194): 7-30.
- Hok, L., Jariyapan, P., Buddhawongsa, P. and Tansuchat, R. (2014). "Optimal size of government spending: Empirical evidence from eight countries in Southeast Asia". *The Empirical Econometrics and Quantitative Economics Letters*, 3(4): 31-44.
- Husseiny, I.A.E. (2019) "The optimal size of government in Egypt: An empirical investigation". *The Journal of North African Studies*, 24(2): 271-299.

- Kormendi, R.C. and Meguire .P, (1986). "Government departments, government spending, and private sector behaviour; reply". *American Economic Review*, 76(1): 191-203.
- Landau, D. (1983). "Government expenditure and economic growth: A cross-country study". *Southern Economic Journal*, 49: 783-792.
- Lucas, R. (1988). "On the mechanics of economic development". *Journal of Monetary Economics*, 22: 3-42.
- Murshed, M., Mredula, F. and Tabassum, F. (2018). "An empirical assessment of optimal government size and economic growth in light of the Armeý curve: A panel data investigation". *World Review of Business Research*, 8(1): 161-173.
- Mutaşcu, M. and Miloş, M. (2009). "Optimal size of government spending: The case of European Union member states". *Annales Universitatis Apulensis Series Oeconomica*, 11(1): 447-456.
- Nademi, Y., Abounoori E and Kalmarzi, H. S. (2010). "Does Armeý curve exist in OECD economies? A Panel Threshold Approach". Working Paper, Econmodels. com
- Olaleye, S. O., Edun F., Bello H. T. and Taiwo S. B.(2014). "Government expenditure and economic growth: An empirical analysis of the Armeý curve in Nigeria," *Romanian Economic Journal*, 17(51): 47-66.
- Pamuk, Y. ve Dündar, U. (2016). "Kamu harcamalarının optimal boyutu: Türkiye örneđi". *Hacettepe Üniversitesi İİBF Dergisi*, 34(3): 23-50.
- Pevcin, P. (2004). Economic output and the optimal size of government. *Economic and Business Review*, 6(3): 213-227.
- Rahn, R., and Fox, H. (1996) What is the optimum size of government? Vernon K. Kriebe Foundation.
- Ram, R. (1986). "Government size and economic growth: A new framework and some evidence from cross-section and time-series data". *American Economic Review*, 76(1): 191 203.
- Rebelo, S. (1991). "Long-run policy analysis and long-run growth". *The Journal of Political Economy*, 99: 500-521.
- Romer, P. M. (1986). "Increasing returns and long-run growth". *The Journal of Political Economy*, 94: 1002-1037.
- Romero-Avila, D. and Strauch, R., (2008). "Public finances and long-term growth in Europe: Evidence from a panel data analysis", *European Journal of Political Economy*, 24(1): 172-191.
- Roy, A. G. (2009). "Evidence on economic growth and government size". *Applied Economics*, 41(5): 607-614.
- Samimi, A. J., Nademi, Y. and Zobeiri, H. (2010). "Government size & economic growth: A threshold regression approach in selected Islamic Countries". *Australian Journal of Basic and Applied Sciences*, 4(8): 2247-2249.

- Sheehey, E. (1993). "The effect of government size on economic growth". *Eastern Economic Journal*, 19(3): 321-328.
- Solow, R.M. (1956). "A contribution to the theory of economic growth". *Quarterly Journal of Economics*, 70(1): 65-94.
- Swan, T.W. (1956). "Economic growth and capital accumulation". *Economic Record*, 32(2): 334-361.
- Şanlısoy, S. and Sunal, O. (2016). "The relationship between public expenditures and economic growth: The case of Turkey". *Gümüşhane University Electronic Journal of the Institute Of Social Sciences*, 7(17): 102-122.
- Şen, H. ve Kaya, A. (2019). "Alternatif göstergeler bazında Türkiye’de optimal kamu kesimi büyüklüğünün tahmini". *Bankacılar Dergisi*, 109: 50-81.
- Toda, H. Y. and Yamamoto T. (1995), "Statistical inferences in vector autoregressions with possibly integrated processes". *Journal of Econometrics*, 66: 225-250.
- Turan, T. (2014). "Optimal size of government in Turkey". *International Journal of Economics and Financial Issues*, 4(2): 286-294.
- Varol Iyidoğan, P. and Turan, T. "Government size and economic growth in Turkey: A threshold regression analysis". *Prague Economic Papers*, University of Economics, Prague, 2: 142-154.
- Vaziri, H., Nademi, Y., Paghe A.A. and Nademi, A. (2011). "Does Armeý curve exist in Pakistan and Iran economies?". *Journal of Applied Sciences Research*, 7(5): 562-565.
- Vedder, R. K. and Gallaway, L. E. (1998). "Government size and economic growth". Paper prepared for the Joint Economic Committee, Washington, D.C.
- Yamak, R. ve Erdem, H.F. (2018). "Türkiye ekonomisinde Armeý eğrisi geçerli midir?". *Uluslararası İktisadi ve İdari İncelemeler Dergisi*, Prof. Dr. Harun Terzi Özel Sayısı: 335-346.
- Zivot, E. and Andrews, D.W.K. (1992) "Further evidence on the great crash, the oilprice shock, and the unit root hypothesis," *Journal of Business and Economic Statistics*, 10: 251-270.

CHAPTER X

THE ROLE OF THE DESIGN CONCEPT WITHIN DESIGN INNOVATION: A CASE STUDY FROM TURKISH CONSUMER ELECTRONICS MARKET

Dr. Kutay MUTDOĞAN

Isun Enerji, İstanbul, Turkey

e-mail: kmutdogan@gmail.com, Orcid ID: 0000-0002-7357-027X

Introduction

In today's business world, global competition level has increased a lot and comparatively with the history of the companies, they have few opportunities to differentiate themselves and to have a superior position in the market place. Innovation, that is whether creating a completely new product or an organizational process or; redefining an existing product or an organizational process for increasing the functional usage, positioning in a new consumer market, decreasing costs, increasing the organizational effectiveness with the redefinition of some corporate process or similar activities is the core competency of today's companies. Design concept, having different definitions by different perspectives has become the primary tool and the core value to sustain innovation for the companies. The innovation efforts, in which design is the main supporting factor or structuring the innovation strategy with the unique features of the design concept result with the 'design innovation' concept for the companies. In this research, a case study from Turkish consumer electronics market will be analyzed to be able to highlight the whole 'design innovation' process for an existing company.

The 'design innovation' concept; or the role of 'design' concept in the innovation process; or the differences of pure product design and the technical design of the relevant products might always be mixed with each other and have to be defined clearly and separately. One of the most important indicators to be able to differentiate those definitions is their effect on the company's and the country's economy from the business perspective. Historically the relationship between the design concept and its economic effects has been underestimated from the innovation perspective. Theoretically, Adam Smith (1776) was the first researcher established the link in between the technical change and the economic growth which was focused on the macro perspective, nations' wealth.

It was so many years later; a researcher approached differently to the 'innovation'. Schumpeter (1934); argued that innovation is neither a linear development process and nor an incrementally development. After this milestone analysis, some other researches were focused on 'innovation' concept. Freeman (1982) was the first researcher put the role of the design

in the center at his 'innovation' definition. To be able to understand the concept of 'design innovation' which has started to be used for the last decades (ie. Kimbell, 2002; Meredith, 1991; Presendorfer, 1995; Cawood, 1997), there is still a conflict in using a common accepted definition. In the last decades; the relationship between design and innovation and the effects of this relationship on economics (Freeman, 1982); and the role of design within the innovation process (OECD, 1992) has been analyzed. However, there is still a flu picture in using the combined definition for 'design innovation' and discussions going on to have a common statement (Mutlu & Er, 2003).

In this research a company from Turkish consumer electronics market will be analyzed. The company decided to design, manufacture and penetrate its innovative products in Turkish market in 2016. This case study is based on an innovation process in which design concept is in the center which might be very valuable both for the business professionals and academicians.

The Etymological Concept Declarations

Due to the 'American Heritage Dictionary' (2000), innovation is defined as; the act of introducing something new'. Leonard and Swap (1999), were the researchers linked the 'creativity' concept with the innovation definition and also added the usefulness and functionality purposes to the end of regarding process. According to the researchers; the whole innovation process has to be related with value addition for new products, services and processes.

Design, on the other hand, is the other main concept that is analyzed in this research. Due to the 'American Heritage Dictionary' (2000), design is defined as 'the purposeful or inventive arrangement of parts or details'. Leonard and Swap (1999) stated that; the design activity is an interactive process which includes many different functions and activities together in a non-linear processing. Those processes could have some minor unique characteristics but generally the researchers identified those areas and activities as follows; Graphics (promotional and technical literature; company image and logo; typography and books; interiors); Design (architecture; fashion, footwear, textiles); Products (software and CAD; electrical and electronic circuitry; engineering components; arts, crafts, jewelry; engineering processes; engineering structures) resulted with consumer and industrial products having unique features.

The Development of the Innovation Theory and the Role of Design Concept at Innovation Theory

Schumpeter, the first researcher who defined 'innovation', as the engine of the capital economy, in the beginning of 20th century; only after Adam

Smith, in the 18th century, firstly stated that the technological development for the companies was the main source for improving and for their existence in the industrial markets. The modern version of innovation theory now has turned into a multi-disciplinary process analyzed by Freeman (1982, 1990), Elliot (1985) and Sylwester (2000).

The root idea of the modern innovation theory formed by Schumpeter (1954b) who defined the regular flow of money and goods regularly in between economical units which was called as the 'circular flow' principle. According to the researcher, only with the help of group of innovation activities, the defined circular flow could continue and sustain within a regular growing and static economic process. Due to Schumpeter, innovations were the accelerators of making profit and sustaining margins and profit in his defined system; and the only way of making those innovation activities were entrepreneurs. Only with the efforts of those entrepreneurs and their innovation activities, that cycle equilibrium point could reach out a better level and by only this way; the wealth of the companies and as a result the society might improve (Schumpeter, 1939). At this point, the researcher's 'innovation' definition got more attention; 'the fundamental impulse that sets and keeps the capitalist engine in motion comes from new consumer goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates' (Schumpeter, 1942).

Schumpeter (1934) grouped innovations into two groups; product and process type innovations. Due to the researcher, product innovation; is either launching a new product as like a replacement of an existing product which better satisfies the needs of the customers or completely launching a new product which is a new product both for the market and the company as well. On the other hand, process innovation was defined as; is replacing one product with another but in a cheaper way. In the modern times of innovation theories, researchers have also added the organizational type of innovations in the Schumpeter's process type innovation group (Mutlu & Er, 2003). Utterback and Abernathy (1975) mentioned different parts related with the process innovation which are the organizational structure, interactions with the suppliers, and the elements of the whole process that finally resulted with the increased efficiency and effectiveness.

OECD (1992) made a similar definition for innovation but from a different perspective which is either process or a product type but should create a commercial value. Due to OECD (1992); different types of innovation definitions were defined as;

- The technological changes made on products and processes are called as technological innovations and if those changes turned

into a product and if that product is penetrated into the market then it is called as product innovation.

- For a major product innovation to be realized; a major change in the usage of the product, product performance characteristics, design properties or attributes should be improved or changed compared with the existing product. It could either be a complete new product or define a complete new usage of an existing product.
- Incremental type of innovation is defined as; the small incremental improvements in terms of product features or penetrating them in lower costs.

In the modern ages; some marketing researchers also have added different perspectives for the type of innovations such as; customer touch points, the sales and distribution channels, finance or some other areas (ie. Campbell and Collins, 2001).

The levels of innovation for the companies is also another important factor for the consumers, companies and the market itself where the relevant company is operating. Tidd et al. (2001) mentioned that; the effects of the innovation and the degree of innovation itself completely varied the status and the results of the innovative activity from the company, consumer and society's perspectives. The level of the innovation is also linked with the role of design concept which is also the other major topic analyzed in this research. Rothwell and Gardiner (1988) mentioned the re-design concept as; the integrated form of the existing product with the new one. According to those researchers and also to Walsh et al. (1992); the re-design process and the incremental innovation process is more effective than inventing completely a new product from the economic perspective.

According to one of the modern times innovation theorists, Cooper (2000), the innovation mainly is categorized into two that is 'new to the market' or 'new to the company' depending upon to the status of the new and the innovative product. The researcher even enlarged the categories into subcategories by defining six different type of innovations:

- New to the world products;
- New product lines;
- Improvements to current product lines;
- Modifications to current products;
- Repositioning of the current products at different market segments;
- Cost reduction processes.

As mentioned above, the definition of the theory of innovation enlarged for the last decades in the modern times. Coombs et al. (1987)

stated that; innovation concept is a linear process at which it is sequence of activities, starting from R&D and ending with solid product. The defined model is a system in which each end of a stage is the start of another stage. Before developing an alternative model, OECD (1992) defined the Coombs et al.'s linear model as; the matter of time series in which it mainly starts with research activities, continues with product development and production stages, and finally ends with penetrating the relevant innovative product into the market. OECD (1992), then redefined the process into an interactive model at which; the design concept is in the center of the model and there is a continuous interaction and feedback process in between all of the stages. In this interactive model; the innovation process starts with finding an opportunity in a market, developing a new science or technology based figment for being able to match with this opportunity, following with an analytical design for the relevant product(s) or corporate process and ending with the product development, manufacturing and marketing of the specific innovation.

As mentioned earlier, innovation process is such that might include the product(s) or processes and might include a complete new solid product or a modification or might include the whole stages explained before or might include some of the stages with different levels of interaction. As a result, the academic world still does not have a common understanding in describing the model and formulating the whole process with the role of design concept within the model. The innovation process may occur with different labels in the business world or academic world such as; innovation process, product design and development process, or new product development process (Mutlu & Er, 2003).

A Case Study Showing the Role of Design in Innovation Process from Turkish Consumer Market

In this research, a Turkish joint venture company and its innovative products will be analyzed. The company was founded in 2016 and founded as a joint venture company by two of top hundred holdings in Turkish construction market. Only for this research the relevant company will be named as the ABC Company for the rest of the manuscript because of the legal concerns, and its products will be named as Product A,B, and C because of the legal concerns again. The company had two operational areas; the first one mainly included the macro engineering projects as being partner with a German company manufacturing solar organic PV thin films that could be applied on any type of a surface, generating electricity. The other operational area of the ABC Company was developing wearable solar consumer electronic products for the end consumers such as solar powerbanks, solar speakers, and solar instant charging tools which will be called as Product A, Product B, and Product C for the rest of this research.

The idea of penetrating solar wearable consumer electronic products was generated due to the gap observed in the market. Before ABC Company's operations, there were some non-branded solar instant charging tools but they were not serving as powerbanks or speakers. For the powerbank and speaker markets there were many products worldwide however there were no branded solar powerbanks or speakers positioned in the market. ABC Company decided to penetrate the wearable consumer electronics market, differently from any other companies worldwide, by designing new and innovative products which generate energy from solar energy. This unique approach made the products of ABC Company innovative in which design concept was in the center.

While deciding to launch its new and innovative products, ABC Company started the process as making a market analysis both from primary resources by setting blogs, using corporate social media, questioning at target audience digital platforms and from secondary resources by utilizing global resources. The company realized that; there was a market opportunity for the solar wearable products for the potential target audience since there were solar tools for charging purposes and also non-solar powerbanks and speakers before but it was the first time market opportunity generated that those features might got together and turned into solar wearable consumer electronic products. There were two different design topics for the relevant innovation process; the first one was the appearance of the products and the second one was the engineering design in which solar thin films were used to cover the products and made them generating electrical charge from solar energy.

The idea of the ABC Company exactly fitted with the 'new product development' defined by Walsh et al. (1992). Due to the researcher, the development of a new product was; transforming the technical ideas or market needs and opportunities into a new product in any market. The researchers also added that there should be a difference in between the 'new product development' and the 'technological innovation'. The case of the ABC Company fitted with the technological innovation definition made by Roy and Bruce (1984) that also inspired from the research of Walsh et al. (1988). Due to the researchers, for a new product to be defined within 'technological innovation' topic, the process has to include 'Manufacturing Engineering', 'Research, Design and Development', and 'New Product Marketing'.

- **Manufacturing Engineering;** Tooling and industrial engineering feeds manufacturing and manufacturing feeds production, marketing and sales. ABC Company, as mentioned before, designed its products according to the feedback came from its target audience. The design process included both the appearance of the products and the electronic, engineering design of the

products (ie the circuit design for the transfer of solar energy into produced electrical charge, the sounds came from the solar tools, the color of the keycaps, the stimulant sounds etc., the wireless connections etc.).

- **Research, Design and Development;** Basic research and invention having an interaction with a group of activities (named as design or development activities) including concept design, prototype development and testing, final product or design engineering in which those activities also interact with each other. This process also includes the production, marketing and sales activities as well which interacts with after-sales service and trouble-shooting activities. The ABC Company, established cross-functional teams to follow up the manufacturing process and those teams consisted of engineers, finance experts manufacturing experts, sales and marketing experts, market research and insight experts. The experts managed the process as a team to achieve the collaborative objectives in an interactive way both considering the views and feedbacks came from internal and external customers, financial necessities, technical qualifications, technical performance indicators, retailer requirements and similar topics. There were also focus group workshops designed to be able to understand the ‘just-in-time’ views of the target audience and also by being registered into one of most qualified ‘crowd-sourcing’ platforms and by taking again ‘just-in-time’ feedback from that platform, the relevant new product teams could able to interfere the process if it was technically or economically possible.
- **New Product Marketing;** This process includes market research and testing having interactive relations with basic research and invention and the design/development activities. The process also includes test marketing and marketing activities which are very important in matching the new innovative product with the potential target audience. As the main pillars of its marketing strategy, the ABC Company based its strategies on the functional uniqueness of the company’s products firstly and the other pillar mainly focused on ‘fun’ factor secondly. In fact, it can be easily understood that both factors were strongly related with the ‘design’ concept. The functional unique features of the relevant products were created by engineering design and the ‘fun’ factor of the relevant products for marketing purposes were created by industrial design teams with the frame and the visible parts of the relevant products.

For most of the time, in the professional world and academic world the terms of ‘design’, ‘product design’, and ‘product design and development’

might be either used as substitutes or might be used for defining different concepts comparatively (Mutlu & Er, 2003). According to Walsh et al. (1992); 'design and development' and the whole 'new product development' process are used as the same process for some of the production departments at companies. The researchers explained the reason for using those terms identical as making a broad definition for the process which is; 'the activity that transforms the brief or initial market specification into design concepts and prototypes, and then into detailed drawings, technical specifications and other instructions needed to actually manufacture a new product'. This definition exactly described the situation realized within the ABC Company case. The company tried to use multi and cross functional teams in addition to the views of the potential target audience to interfere the final status of its products and made modifications to the industrial and technical designs for having potentially the best end product delivery.

Lorenz (1990), focused the role of design in the product innovation process from the strategic perspective. Due to the researcher, the traditional ways and tools for differentiating the products are not effective as they were in the past. Rather, design process becomes the core differentiator for the companies and their products. According to the researcher, the role of the design concept promoted from the supporting role used only for marketing purposes to the main role identifying the core product uniqueness. Another researcher, Marzano (2000), also analyzed the design concept from the strategic perspective. He positioned the 'design' concept in a very high strategic level that supports the improvement of civilization, the balance of technology and the balance of socio-culture values. Porter (1980) also emphasized the strategic role of design as it has a main duty in gaining advantage in competition by enhancing quality, increasing the usefulness of the product, showing aesthetics with the optimum pricing. For the ABC Company case; the industrial and the technical designs of the relevant products are the main strategic pillars in its competitive status and differentiated the company from its competitors and at the consumer electronics market.

There are some other researchers and institutions (Walsh et al., 1992; Freeman, 1982; OECD, 1992) made similar definitions focusing the role of design in the production innovation process. According to them, design process and especially the industrial design, is the core concept in product development from the micro scale; and the core concept in product innovation from the macro scale. OECD (1992), enlarged the definition and stated that; at the end of the design process, a company might achieve the desired and aesthetic form components, the technical competencies, and the operational features while developing and manufacturing a new product.

One of the most important factors regarding design is its effect on the corporate strategies as mentioned on the previous parts of this research. Er (1997), underlined the strategic role of industrial design in product development such as; with the help of design factor companies might have the chance to answer 'how' and 'why' questions of the potential consumers.

Another important topic that literature discusses regarding the 'design' concept is; the confusion in between 'product design' and 'industrial design'. According to Mutlu and Er (2003), the main difference of those two concepts is if the relevant product(s) are manufactured or not. Although the 'product design' is the collection of activities and ends with a solid product served for the consumers; the 'industrial design' is defined as the practice within the design function (Mutlu & Er, 2003). ABC Company's case is again a nice example for differentiating those definitions. The ABC Company created many industrial designs for its innovative solar consumer electronic products, however launched only three main products as solar powerbanks, solar speakers, and solar instant charging tools. While ABC Company only licensed those three different products at 24 countries, on the other hand the company licensed 24 different product designs at the same countries. The reason why the ABC company did not launch all of those product prototypes was; those prototypes were either not liked by the potential target audience at the final stage or some of those product prototypes' launch were postponed due to the privileges and the financial status of the ABC Company.

As it is targeted for this research, it is very important to match the 'innovation' and 'design' concepts together and to define a new combined term which is the 'design innovation'. Oakley (1990) defined the 'design innovation' as a process or a system. Due to the researcher; design is a concept which helps the invention into an innovation or fine-tunes an existing product to increase its functional features. He also added that, design innovation is such a process that it helps companies to fine-tune their products to be able to meet their customer needs in a better way. Another research about 'design innovation' was made by Rothwell and Gardiner (1988). They focused on 'robust design' at which existing products are re-designed to increase the functionality of the product or to create a new consumer segment by changing the usage of the product in another way. In fact, in the ABC Company's case, the products of the company and the design innovation process that the company followed could be evaluated in two ways.

From one perspective; the products of ABC Company might be evaluated as a completely new innovation since before than ABC Company manufactured there were not any solar powerbanks or solar speakers manufactured and penetrated in the global markets. From a

different perspective; the products of the ABC Company could be evaluated as robust design innovation as Rothwell and Gardiner (1988) defined since there were solar instant charging tools but only for charging purposes or there were powerbanks and speakers in the markets but without solar energy generating electricity to charge the regarding tools. So someone might claim that with the help of design innovation, ABC Company redesign either the solar instant charging tools and created new products for a completely new consumer segment or redesign the powerbank and speaker to make them charged with the solar energy which made the case unique in terms of showing design innovation. As a result, already there are some conflicts in the specific definition of the 'design innovation' term; it could either be an innovation in the design of an existing product to renew it or could be a radically new design of a new product innovation (Mutlu & Er, 2003).

Conclusion

The 'design innovation' is comparatively a new term in the business world and academic world. Although there have been some researches done about the term and its role in the innovation process, there is still a confusion in understanding the role of the design function within the innovation process. For most of the researches, innovation is still accepted as the technical improvements for the product generation process. However, the role and the importance of the design factor for those innovation processes have mostly been ignored and been accepted as one of the differentiators for the companies' innovation activities in their competitive strategies.

For the last years, there is a shift of view that technical improvements are no longer a single accelerator for the innovation process, rather, it has been emphasized that innovation process can only be achieved by multi-functional and cross-functional efforts. This multi-functional support brings different perspectives and different views which are the main building blocks for innovation process. In addition to social sciences, design, especially the 'industrial design' is also another important factor in building different perspectives created by variable functional departments which results with innovative products. According to OECD (1992); industrial design is the core factor for innovation process. As a result of this shift in understanding put the 'industrial design' in the center and it has to be supported by various views and various design practices composed by different corporate functions due to their own needs to satisfy the potential consumers (Mutlu & Er, 2003).

Another critical concern in the academy and business worlds is the difference in between the industrial design and the technical design. In this comparison; while the technical design is mostly defined with only the

technical and the scientific improvements, industrial design is mostly defined as the improvements realized by the design function. Both design types may end with the same or different results however the process or the central role in those two types of designs differ (Mutlu & Er, 2003).

The other discussion mainly subjects the potential results of the design innovation process. As mentioned in the previous part, the result of the process could either be creating completely a new product or changing some of the features of the existing products, so that increasing the usefulness of the product, decreasing the cost or the price of the product or sustaining similar advantages both for the companies or potential end users. In any cases, the role of the design increases and the focus of the academy and business worlds giving the importance of the design function, especially the role of the industrial design have increased a lot for the recent years.

The ABC Company case is a very qualified example highlighting and exhibiting almost all of the discussions mentioned in this manuscript. ABC Company decided to launch an innovative product portfolio in which the company decided to design and manufacture solar powerbanks, solar speakers, and finally solar instant charging devices. It is a very explanatory case showing the ‘design innovation’ concept in which industrial design, technical design, robust design and the practices in design domain were all involved. In addition, this is a qualified example that design concept is the core competency factor in developing innovative products which could either be accepted as completely new products for the global markets and for the ABC Company or could be accepted as reorganized innovative products that were transformed from solar wearable products or from non-solar consumer electronics.

This case study is also a good example that shows the role of the design concept in innovation in matching the company strategies with its consumer needs. The ABC Company set its marketing strategies on two pillars, which were based on the design factor since the company served the functionality of the products and the ‘fun’ feeling for its customers that both linked with the innovations in design or being innovative with the design factors. Another important factor relevant with this case study is the ‘design’ process itself that the ABC Company followed. In this case, it is very obvious that the design factor is a very core tool in marketing as well from the consumers’ perspective.

Another important topic that is covered in this case study is its capability in showing the modern ages design process. As it has been emphasized in the last years’ relevant researches and as it is explained in details above, the ABC Company created a multi-functional matrix team to be able to design, manufacture and market its products. Those product

teams consisted of people from R&D, engineering, industrial design, market research and intelligence, brand marketing, trade marketing, product management, manufacturing, sales and finance departments. As a result, the design innovation process of the ABC Company was multi-functional, integrated and composed process in which new product innovation process took all the corporate and consumer details into consideration. The process also included the industrial and technical design concepts together at the same time which made the case study more interesting and more instructive.

The case study analyzed in this research would be a useful resource both for the relevant managers in the business world and the academicians working on the 'design innovation' process. It is very clear that innovation is a very important concept, that companies have to adopt and apply in developing their new products and support the companies for positioning themselves in the market places. It is also very clear that; the role of the design factor, both helps the products and processes be more innovative and having a main role in sustaining innovation process or manufacturing innovative products both from the corporate and consumer perspectives.

References

- Campbell, M. and Collins, A. (2001). In Search of Innovation. *The CPA Journal*, April. 26-35.
- Cawood, G. (1997). Design Innovation and Culture in SMEs. *The Design Management Journal*, 8 (4), Fall 1997.
- Coombs, R., Saviotti, P., and Walsh, V. (1987). *Economics and Technological Change*. Rowman & Littlefield Publishers. New Jersey, USA.
- Cooper, R., G. (2000). *Product Leadership: Creating and Launching Superior New Products*. Perseus Books. Cambridge, MA.
- Elliot, J. E. (1985). Schumpeter's Theory of Economic Development and Social Change: Exposition and Assessment. *International Journal of Social Economics*, 12 (6-7). 6-28.
- Er, A. (1997). Development Patterns of Industrial Design in the Third World: A Conceptual Model for Newly Industrialized Countries. *Journal of Design History*, 10 (3).
- Freeman, C. (1982). *The Economics of Industrial Innovation*. 2nd Edition, Frances Pinter, London.
- Freeman, C. (1990). *The Economics of Innovation*. Edward Elgar Publishing. England/USA.

- Kimbell, R. (2002). *Assessing Design Innovation*. Working Paper. Technology Education Research Unit, Goldsmiths University of London.
- Leonard, D. and Swap, W. (1999). *When Sparks Fly: Igniting Creativity in Groups*. Harvard Business School Press. Boston, Massachusetts.
- Lorenz, C. (1990). *The Design Dimension*. Basil Blackwell. Oxford.
- Marzano, S. (2000). *New Values for the New Millennium*. Corporate Presentation. Philips Electronics N.V. Eindhoven. The Netherlands.
- Meredith, B. (1991). Design Innovation and the Team. *The Design Management Journal, Summer*. 38-42.
- Mutlu, B. and Er, A. (2003). *Design Innovation: Historical and Theoretical Perspectives on Product Innovation by Design*. A Paper Presented at the 5th European Academy of Design Conference held in Barcelona, April, 2003.
- Oakley, M. (1990). *Design Management: A Handbook of Issues & Methods*. Basil Blackwell. Oxford.
- OECD (Organization for Economic Co-operation and Development). (1992). *Technology and The Economy: The Key Relationships*. OECD Publications, Paris.
- Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press. New York.
- Presendorfer, W. (1995). Design Innovation and Fashion Cycles. *The Journal of American Economic Review*, 85 (4). 771-792.
- Rothwell, R. and Gardiner, P. (1988). Re-Innovation and Robust Designs: Producer and User Benefits. *Journal of Marketing Management*, 3 (3). 64-72.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Harvard University Press, Cambridge, Massachusetts.
- Schumpeter, J. A. (1939). *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*. Mc-Graw Hill. New York.
- Schumpeter, J. A. (1942). *Capitalism, Socialism, and Democracy*. Harper & Brothers. New York.
- Schumpeter, J. A. (1954b). *History of Economic Analyses*. Oxford University Press. New York.
- Smith, A. (1776). *Wealth of Nations*. Dent, London.
- Sylwestor, K. (2000). *The Political Economy of Science, Technology and Innovation*. Edward Elgar Publishing. Cheltenham, UK.

- The American Heritage Dictionary. (2000). *The American Heritage Dictionary of the English Language, 4th Edition*. Houghton Mifflin Company, United States.
- Tidd, J., Bessant, J., and Pavitt, K. (2001). *Managing Innovation: Integrating Technological, Market and Organizational Change, 2nd Edition*. John Wiley & Sons Ltd. West Sussex, England.
- Utterback, M. J. and Abernathy, W. J. (1975). A Dynamic Model of Process and Product Innovation, OMEGA. *The International Journal of Management Science*, 3 (6).
- Walsh, V., Roy, R., and Bruce, M. (1988). Competitive by Design. *Journal of Marketing Management*, 4 (2).
- Walsh, V., Roy, R., Potter, S., and Bruce, M. (1992). *Winning by Design: Technology, Product Design and International Competitiveness*. Basil Blackwell, Oxford.

CHAPTER XI

THE FINANCIAL EFFECTS OF COVID-19 ON BUSINESSES IN TURKEY

Asst. Prof. Dr. Osman EROĞLU

Mardin Artuklu University, Mardin, Turkey,
e-mail:osmaneroglu2181@hotmail.com, Orcid ID:0000-0002-8149-0149

1. Introduction

There have been various pandemics, some of which spread across vast geographies in the course of human history, caused massive death toll of human population and had huge impact on the human civilizations. COVID-19 seems to be one of these pandemics and arguably will have huge effects on the course of human future. The COVID-19 outbreak caused by the SARS-CoV-2 virus, which emerged in Wuhan, China's Hubei province on December 31, 2019, quickly spread to 6 continents and hundreds of countries and went down in history as the first pandemic caused by coronaviruses (Dikmen et al., 2020: 30). It was officially announced by the World Health Organization (WHO) on March 11, 2020, that the new type of coronavirus disease (COVID-19) emerged in China is a global epidemic. The spread of coronavirus to numerous countries as well as Turkey did' not take long and within months most parts of the globe was effected not only in terms of health issues but also of economic problems and uncertainties

The economic consequences of the COVID-19 epidemic, which influenced the whole world, began to be felt threateningly. The COVID-19 outbreak has generated a massive shock of uncertainty, even larger than that compared with the 2008 economic crisis. The great uncertainty caused by Corona virus is comparable to the uncertainty of the 1929 Great Depression (Baker et al., 2020:7).

According to the OECD, which predicts that the global economy will narrow by 6% in 2020 and the unemployment rate among the OECD member states will rise to 9.2% in 2020 from 5.4% in 2019. whether or not there will be a second epidemic, the outcomes of the crisis are serious and will be long termly (OECD, 2020). Tucker stresses that this outbreak is feasible to induce bankruptcy for many well-known companies in many industries (2020). In the COVID-19 outbreak while some businesses are struggling, others thriving. The thriving businesses are mostly related to food industry and to internet-based industries such as online shopping, online education, and online entertainment. Other businesses that are associated with healthcare and medication are growing and performing strong in this outbreak (Donthu & Gustafsson, 2020:285).

In this paper, the short term financial impact of COVID-19 on the businesses in diverse sectors in Turkey has been examined. In this regard, the top 10 ranks of 5 businesses in various sectors were selected according to the list of Turkey's largest 500 companies ranked in 2020 by the "Fortune 500 Turkey Survey". The growth of these businesses in the first and second quarters of 2019 and 2020 and the changes of their shares in the stock market in the same period were analyzed.

2. General Information On The COVID-19

Coronaviruses (CoV) constitute a large family of viruses that can cause disease in humans and animals found in nature (Zhu and others., 2019). Of the large family of coronaviruses, coronaviruses the world encountered before are the Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The new coronavirus, which emerged China on 31 December 2019, first began to spread among the workers butchering animals such as pig, dog, rat, civet cat, rat, and snakes, etc. and consumers at a wholesale market in Wuhan (Chen et. al., 2020) and transformed the whole country, especially this region, in a short period of time. On January 12, 2020, the World Health Organization (WHO) temporarily named the newly discovered coronavirus "2019-nCoV". This single-stranded, positive-polarity enveloped RNA strain was considered the seventh coronavirus (CoV) that could infect humans (Wang & Wang, 2020).

In January 2020, the coronavirus caused serious repercussions on the world agenda. Within months, it started to influence Europe, especially Italy, Spain, England, and Germany. Death cases were ordinarily in individuals of advanced age or with conducting systemic diseases such as hypertension, diabetes, cardiovascular disease, cancer, other immunosuppressive conditions, especially chronic lung diseases (Huang et. al., 2020). The World Health Organization classified the COVID-19 outbreak as an "International Public Health Emergency" on January 30. By April 15, 2020, the strengthened cases approached 2 million with over 125.00 deaths in the world (ECDC, 2020). By 31 August 2020, there have been over 25 million confirmed cases including 844,312 deaths in the world (WHO, 2020).

The first COVID-19 case in Turkey was seen on March 11. The government took the measures against the spread of the pandemic immediately. In this regard, the government announced the closure of schools as of the following Monday on 12 March, postponed football matches, etc. A week after the first case detection, the first death occurred due to coronavirus on March 15 (Wikipedia, 2020), and the number of cases exceeded 100 in couple days. The number of deaths exceeded 100 on

March 28 and 1000 on April 10, and the number of cases reached 101790 on April 23 (Keleş, 2020:93). The number of cases peaked on April 11, 2020, in Turkey (Şirin and Özkan, 2020). Although there were increases and decreases in the epidemic curve, the number of cases declined significantly and related decreases were observed in the number of deaths. By 31 August 2020, there have been 270.133 confirmed patients including a total of 6.370 deaths in Turkey (Republic of Turkey Ministry of Health, 2020).

In Turkey, to reduce the economic impacts of the COVID-19, regulations were made throughout the country and support packages were introduced. The first of these was announced on March 18. Within the scope of the 100 billion TL package, many decisions were made including tax liabilities, loans, short-time working allowance, and assistance to families in need. The second package proposal was accepted on April 15, and support was provided to the unemployed such as cash support, debt postponement, and limitation of profit distribution. Besides, provisions for the prohibition of dismissals, measures for temporarily closed workplaces, postponement of municipal receivables, postponement of education loan payments, assistance to the elderly and disabled, and prevention of stockpiling were included. The purpose of this study in this regard is to expose the financial impact of COVID-19 on businesses in Turkey.

3. Research Method

In this study, the short term financial impact of COVID-19 on the businesses in diverse sectors in Turkey is intended to be examined in this context, the top 10 ranks of 5 businesses in various sectors were chosen according to a list of Turkey's largest 500 companies ranked in 2020 by the "Fortune 500 Turkey Survey". The top of the 10 companies of "Turkey Fortune 500 List" is shown in table 1 (Branding Türkiye, 2020). The businesses called Türkiye Petrol Rafinerileri A.Ş (operates oil refineries), Türk Hava Yolları (the national flag carrier airline of Turkey), BİM Birleşik Mağazacılık A.Ş (a discount retail company), Ford Otomotiv Sanayi A.Ş (automotive manufacturing company) and Arçelik A.Ş (multinational household appliances firm) in different industries were selected. These industries are airline, oil and gas, discount store, automotive, and consumer electronics. The growth of these businesses in the first and second quarters of 2019 and 2020 and the changes of their shares in the stock market in the same period were analyzed.

Table 1 Turkey Fortune 500 List (2020)

Ranking	Name of the Company
1	Türkiye Petrol Rafinerileri A.Ş
2	Enerji Piyasaları İşletme A.Ş
3	Türk Hava Yolları
4	Petrol Ofisi A.Ş.
5	Opet Petrolcülük A.Ş
6	BİM Birleşik Mağazacılık A.Ş
7	Ford Otomotiv Sanayi A.Ş
8	Ahlatcı Kuyumculuk San. Ve Tic. A.Ş
9	Arçelik A.Ş
10	Rönesans İnşaat

Source: (Branding Türkiye, 2020)

4. Findings

The gross domestic product (GDP) grew by 4.5 percent in the first quarter of 2020 in Turkey yet it was decreased by 9.9 percent in 2020 compared to the same quarter of the previous year in the second quarter. This paper attempts to identify the current impact of the COVID-19 outbreak comparatively on THY, TÜPRAŞ, FORD OTOSAN, BİM, and ARÇELİK in the first and second quarters of 2019-2020 and how their shares have changed in this period. This paper uses data from the stock market BİST 100 in Turkey and the web pages of the reviewed businesses.

4.1. Turkish Airlines (THY)

With 37, 670 employees, and the largest mainline carrier in the world by many passenger destinations, THY is the national flag carrier airline of Turkey (THY, 2020). In the 1st quarter of 2020, THY's passenger number decreased by 20% compared to the same period of the previous year. As part of the fight against COVID-19, all international flights were temporarily suspended as of the end of March 27, 2020. Turkish Airlines (THY) lost 2 billion 23 million TL in the first quarter of 2020 due to the coronavirus outbreak and reported a loss of 1 billion 250 million TL in the same quarter of 2019. THY announced a net loss of 2.23 billion TL in the second quarter of 2020 and the net profit of the company in the second quarter of 2019 was 133 million TL. Due to COVID-19 second-quarter sales of THY decreased

by 67% compared to the same period of previous year. In table 2 all amounts (net loss and net profit) are expressed in million us dollars.

Table 2 Turkish Airline's 3 Months Financial Statement

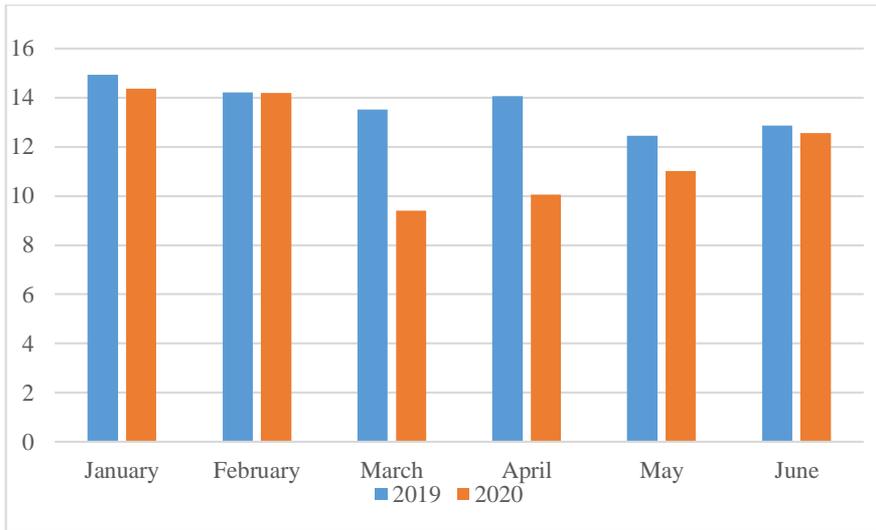
Year	2019	2020
First Quarter	Net Loss 229 Million US Dollars	Net Loss 327 Million US Dollars
Second Quarter	Net Profit for the period 26 Million US dollars	Net Loss for the period of 327 Million US dollars

While the average share value of THY was 13.67 in the first 6 months of 2019, it was only 11.93 (12,72% decrease) in 2020. March of 2020 is the month when THY's stocks are at their lowest level (9.40 which was 13,51 in 2019 30,42% decrease) due to the first COVID-19 cases has seen in Turkey in this month. Due to COVID-19, 2020's monthly shares average prices in six months are lower than in 2019. Details are shown in table 3 and graphic 1 below.

Table 3 Turkish Airline's Shares Average Prices (Monthly)

Month	2019	2020
January	14,92	14,36
February	14,21	14,18
March	13,51	9,40
April	14,07	10,06
May	12,45	11,02
June	12,86	12,56
Average	13,67	11,93

Graphic 1 Turkish Airline's Shares Average Prices (Monthly)



4.2. Türkiye Petrol Rafineleri A.Ş. (TÜPRAŞ)

TÜPRAŞ, established in 1983; it has a crude oil processing capacity of 28.1 million tons per year with its 4 refineries located in Kocaeli, İzmir, Kırıkkale, and Batman. With the added value created by the total income, it is the largest industrial company in Turkey. TÜPRAŞ is the 7th largest refinery company in Europe and it is among the refinery companies with the highest complexity in the Mediterranean, with an average Nelson complexity index of 9.5 (TÜPRAŞ, 2020). Following the implementation of quarantine measures to prevent the COVID-19 epidemic that affected the world, an unprecedented demand contraction began to occur. As global aviation activities came to a major halt with the cancellations of international and regional flights, the biggest negative impact was experienced in jet fuel demand. Due to the voluntary and compulsory curfews that cover more than half of the world's population, the demand for road fuels has also taken its share from this weakening, and product margins have been suppressed with the effect of falling demand. In addition to the low refinery profitability environment, TÜPRAŞ recorded a net loss of 2,265 million TL in the first quarter of 2020, reported a loss of 375 million TL in the same quarter of 2019. As a result of the negative effects of the KOVID-19 measures on oil product demand and the weakening of product margins TÜPRAŞ recorded a net loss of 185 million TL in the second quarter of 2020, reported a profit of 185 million TL in the same quarter of 2019. In table 4 all amounts of TÜPRAŞ (net loss and net profit) are expressed in million us dollars.

Table 4 TÜPRAŞ's 3 Months Financial Statement

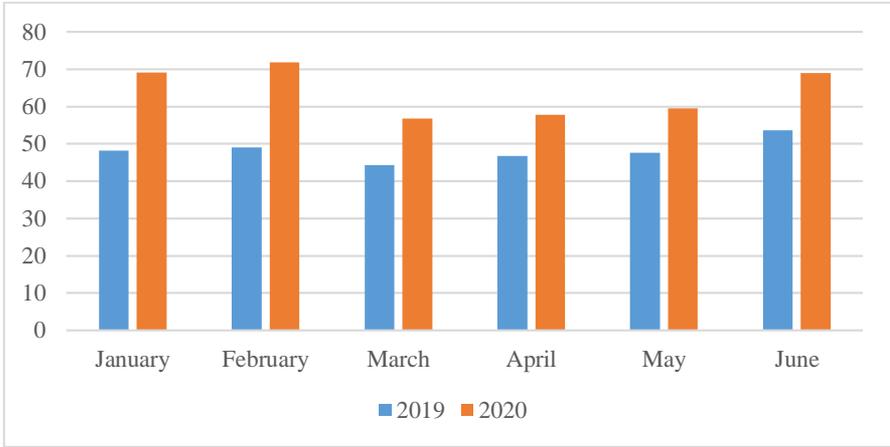
Year	2019	2020
First Quarter	Net Loss 68 Million US Dollars	Net Loss 342 Million US Dollars
Second Quarter	Net Profit for the period of 154 Million US dollars	Net Loss for the period 27 Million US dollars

While the average share value of TÜPRAŞ was 123,41 in the first 6 months of 2019, it was only 97,132 (21,29%) in 2020. March is the month when TÜPRAŞ's stocks are at their lowest level (82,85 which was 131,75 in 2019 37,11% decrease) due to the fact that first COVID-19 cases were seen in Turkey in this month. Details are shown in table 5 and graphic 2 below.

Table 5 TÜPRAŞ's Shares Average Prices (Monthly)

Month	2019	2020
January	112,89	121,11
February	127,32	110,74
March	131,75	82,85
April	129,26	87,28
May	120,31	83,68
June	118,93	88,36
Average	123,41	97,132

Graphic 2 TÜPRAŞ's Shares Average Prices (Monthly)



4.3. FORD OTOSAN

Ford Otosan (Ford Otomotiv Sanayi A.Ş.), is an automotive manufacturing company based in Turkey. The firm is publicly-traded (18%) company, where Ford Motor Company (41%) and Koç Holding A.Ş.(41%) have equal shares. Within the scope of COVID-19 effects, due to the interruption of trade in Europe and problems in the supply chain; production activities were suspended from March 20, 2020, on the Gölcük Custom line, and on March 23, 2020, in the Gölcük Transit line, and the Yeniköy and Eskişehir factories and production activities have been resumed in Eskişehir plant as of April 27, 2020, and in Kocaeli plants on May 04, 2020 (FORDOTOSAN, 2020). Turkey's automotive sector production in the first quarter of 2020 decreased by 5.6% over the same period of the previous year. The first-quarter production of Ford Otosan in 2020 decreased by 18.4% compared to the same period of 2019. Turkey's automotive sector sales increased by 41.3% in the first quarter of 2020 compared to the same period of the previous year. Ford Otosan's domestic sales increased by 43.4%, especially due to the increase in passenger car and Transit sales. Ford Otosan announced a net profit of 629 million TL in the first quarter of 2020. Compared to the same period in 2019, the company increased its profit by 32%. Ford Otosan's net profit for the second quarter of 2020 is 280 million TL. Accordingly, quarterly, the net profit of the company for the second quarter of 2020 decreased by approximately 31% compared to the same period of the previous year. On table 6, all amounts of FORD OTOSAN (net loss and net profit) are expressed in million us dollars.

Table 6 FORD OTOSAN's 3 Months Financial Statement

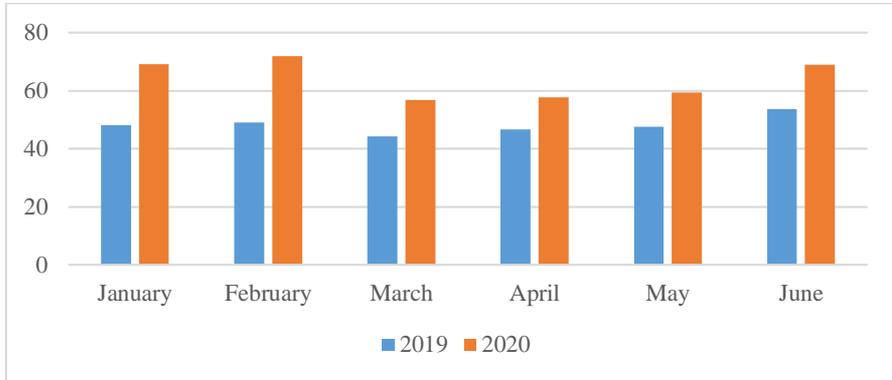
Year	2019	2020
First Quarter	Net Profit 87 Million US Dollars	Net Profit 95 Million US Dollars
Second Quarter	Net Profit for the period 72 Million US dollars	Net Profit for the period 40 Million US dollars

While the average share value of FORD OTOSAN was 48,27 in the first 6 months of 2019, it was 63,99 (32,56% increase) in 2020. March is the month when FORD OTOSAN's stocks are at their lowest level (56,74) in 2020 as the first COVID-19 cases began to emerge in Turkey this month. Details are shown in table 7 and graphic 3 below.

Table 7 FORD OTOSAN's Shares Average Prices (Monthly)

Month	2019	2020
January	48,23	69,11
February	49,04	71,88
March	44,24	56,74
April	46,77	57,76
May	47,67	59,45
June	53,68	69,02
Average	48,27	63,99

Graphic 3 FORD OTOSAN’s Shares Average Prices (Monthly)



4.4. BİM

Birleşik Mağazalar A.Ş (BİM) is a retail company which has a discount model that is inspired by the German discounter ALDI, known for offering a limited range of basic food items and consumer goods at competitive prices in Turkey (BİM, 2020). While the company stated that KOVID-19 caused changes in consumer behavior, it was reported that the customer traffic in the stores decreased whereas the spending volume increased significantly. BİM's net profit for the first quarter in 2020 increased by 99.8% compared to the same period of the previous year and reached 430.4 million TL. BİM's net profit for the second quarter in 2020 increased by 101% compared to the same period of the previous year and reached 697.4mn TL. On table 8, all amounts of FORD OTOSAN (net loss and net profit) are expressed in million US dollars.

Table 8 BİM’s 3 Months Financial Statement

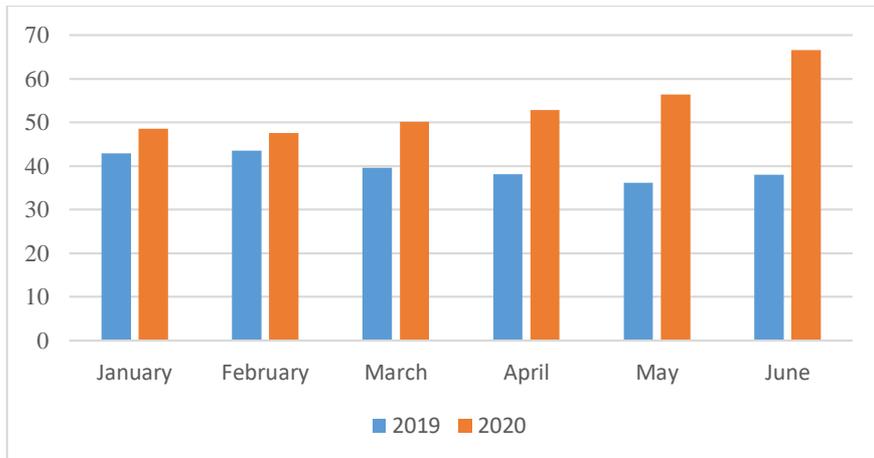
Year	2019	2020
First Quarter	Net Profit 39 Million US Dollars	Net Profit 65 Million US Dollars
Second Quarter	Net Profit for the period 61 Million US dollars	Net Profit for the period of 101 Million US dollars

While the average share value of BİM was 39,72 in the first 6 months of 2019, it was 53,63 (53,04% increase) in 2020. The COVID-19, which affected the whole world, caused a great movement in the retail sector and the sales increased a lot; therefore, BİM's shares increased monthly. Details are shown in table 9 and graphic 4 below.

Table 9 BİM's Shares Average Prices (Monthly)

Month	2019	2020
January	42,95	48,49
February	43,54	47,55
March	39,62	50,11
April	38,13	52,81
May	36,16	56,33
June	37,96	66,52
Average	39,72	53,63

Graphic 4 BİM's Shares Average Prices (Monthly)



4.5. ARÇELİK

Arçelik A.Ş. controlled by Koç Holding, is a multinational household appliances manufacturer in Turkey that is active for more than 100 countries. During the most intense measures against the COVID-19, Arçelik's sales revenues decreased abroad. The external demand decreased

sharply in April, started to recover in May, and normalized in June 2020. In the second quarter of 2020, when the negative economic effects of the KOVID-19 epidemic were felt most, the company's sales revenues were realized as 7.8 billion TL, in line with the market expectation, with the effect of the strong course of the domestic market and the return of the European market to a growth trend in June (ARÇELİK, 2020). In 2020, Arçelik's net profit in the first quarter increased by 13% compared to the same period last year, reaching 255.7 million TL. Arçelik announced a net profit of 407 million TL in the second quarter of 2020; moreover, the net period profit increased by 86% compared to the previous year. On table 10, all amounts of ARÇELİK (net loss and net profit) are expressed in million us dollars.

Table 10 ARÇELİK's 3 Months Financial Statement

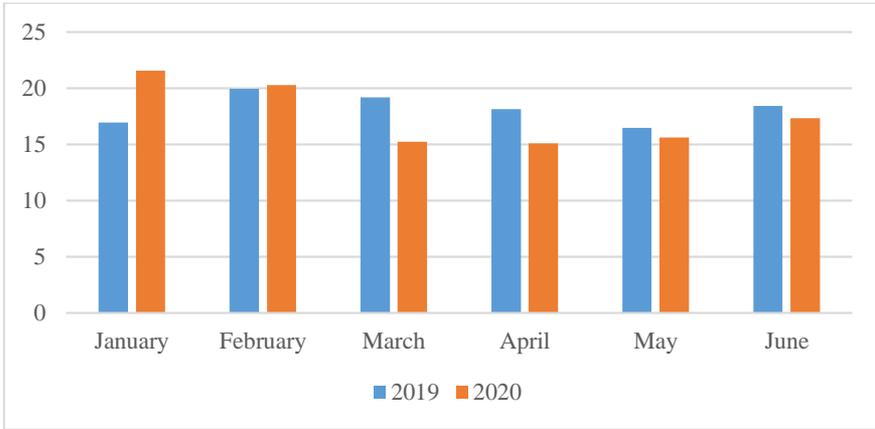
Year	2019	2020
First Quarter	Net Profit 46 Million US Dollars	Net Profit 65 Million US Dollars
Second Quarter	Net Profit for the period 38 Million US dollars	Net Profit for the period 59 Million US dollars

While the average share value Arçelik was 18,17 in the first 6 months of 2019, it was 17,51 (3,6% decrease) in 2020. April is the month when Arçelik's stocks are at their lowest level (15,10) in 2020. Details are shown in table 11 and graphic 5 below.

Table 11 ARÇELİK's Shares Average Prices (Monthly)

Month	2019	2020
January	16,94	21,55
February	19,95	20,29
March	19,16	15,21
April	18,14	15,10
May	16,45	15,59
June	18,42	17,32
Average	18,17	17,51

Graphic 5 ARÇELİK's Shares Average Prices (Monthly)



5. Discussion

The gross domestic product (GDP) grew by 4.5 percent in the first quarter of 2020 in Turkey yet it has decreased by 9.9 percent in 2020 compared to the same quarter of the previous year in the second quarter. Turkish Airlines (THY) lost 2 billion 23 million TL in the first quarter of 2020 due to the coronavirus outbreak and reported a loss of 1 billion 250 million TL in the same quarter of 2019. THY announced a net loss of 2.23 billion TL in the second quarter of 2020 and the net profit of the company in the second quarter of 2019 was 133 million TL. Due to COVID-19 second-quarter sales of THY decreased by 67% compared to the same period last year. While the average share value of THY was 13.67 in the first 6 months of 2019, it was only 11.93 (12,72% decrease) in 2020. TÜPRAŞ recorded a net loss of 2,265 million TL in the first quarter of 2020, reported a loss of 375 million TL in the same quarter of 2019. TÜPRAŞ recorded a net loss of 185 million TL in the second quarter of 2020, reported a profit of 185 million TL in the same quarter of 2019. While the average share value of TÜPRAŞ was 123,41 in the first 6 months of 2019, it was only 97,132 (21,29%) in 2020. Ford Otosan announced a net profit of 629 million TL in the first quarter of 2020. Compared to the same period in 2019, the company increased its profit by 32%. Ford Otosan's net profit in the second quarter of 2020 is 280 million TL. Accordingly, quarterly, the net profit of the company for the second quarter of 2020 decreased by approximately 31% compared to the same period of the previous year. While the average share value of FORD OTOSAN was 48,27 in the first 6 months of 2019, it was 63,99 (32,56% increase) in 2020. BİM's net profit for the first quarter in 2020 increased by 99.8% compared to the same period of the previous year and reached 430.4 million TL. BİM's net profit for the second quarter in

2020 increased by 101% compared to the same period of the previous year and reached 697.4mn TL. While the average share value of BİM was 39,72 in the first 6 months of 2019, it was 53,63 (53,04% increase) in 2020. Arçelik's net profit in the first quarter increased by 13. % compared to the same period last year, reaching 255.7 million TL. Arçelik announced a net profit of 407 million TL in the second quarter of 2020; moreover, the net period profit increased by 86% compared to the previous year. While the average share value Arçelik was 18,17 in the first 6 months of 2019, it was 17,51 (3,6% decrease) in 2020. Table 12 summarises the short term effects of COVID-19 on selected businesses in Turkey.

Table 12 The Financial Effects Of COVID-19 On Businesses In Turkey

Firm	First Quarter of 2020 (Comparison with 2019)	Second Quarter of 2020 (Comparison with 2019)	Share Status (First 6 months of 2020) (Comparison with 2019)
THY	Negative	Negative	Negative
TÜPRAŞ	Negative	Negative	Negative
FORD	Positive	Negative	Positive
BİM	Positive	Positive	Positive
ARÇELİK	Neutral	Positive	Close neutral

6. Conclusion

The studies and reports published by the WHO on the COVID-19, which has spread across the world in a very short period time since it has emerged in Wuhan, China, and mobilized international health authorities due to its adverse effects. Developed financial markets including Turkey's have been affected in a very significant way. With this study, the effects of the developments related to the COVID-19 pandemic with the financial impact on businesses in Turkey were exposed. This study aims to stress how the businesses in the examined sectors have been adversely affected by increasing the impact of the epidemic. According to the study, the discount market chain, BİM was positively affected by the epidemic. THY in the airline industry and TÜPRAŞ in the oil and gas industries are experiencing

a radical break yet ARÇELİK in the consumer electronics industry and FORD OTOSAN in the automotive industry is marginally affected the epidemic. This study has some limitations and the main limitations are the short term of analysis of financial effect and lack of international comparison.

References

- ARÇELİK, Date of access: 01.09.2020, https://www.arcelik.com.tr/?gclid=EAIaIQobChMIItKCG08zb6wIVwFRCh06NgfcEAAYASAAEgLu7_D_BwE, (2020).
- Baker, S. R., Bloom, N., Davis, S. J., & Terry, S. J., COVID-Induced Economic Uncertainty (No. w26983). National Bureau of Economic Research, (2020).
- BİM, Date of access: 01.09.2020, <https://www.bim.com.tr/default.aspx>, (2020).
- Branding Turkiye, Fortune 500 Türkiye Listesi (2020), Date of access: 01.09.2020, <https://www.brandingturkiye.com/fortune-500-turkiye-listesi-2020-aciklandi/>, (2020).
- Chen, L., & Hong, J., Coronavirus hits China's workers as businesses say they can't pay wages now. Fortune. Date of access: 31 March 2020, from <https://fortune.com/2020/02/19/coronavirus-china-workers-businesses-pay-wages/>, (2020).
- Donthu. N., Gustafsson A., Effects of COVID-19 on business and research Journal of Business Research 117 (2020), pp.284-289.
- European Centre for Disease Prevention and Control (ECDC), COVID-19 Situation update worldwide. Date of access: August 28, 2020, from <https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases>, (2020).
- FORDOTOSAN, Date of access: 01.09.2020, <https://www.fordotosan.com.tr/tr>, (2020).
- Huang C, Wang Y, Li X, Ren L, Zhao j, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020; 395: 497-506.
- Keleş E., COVID-19 VE BİST-30 Endeksi Üzerine Kısa Dönemli Etkileri, Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi • Cilt: 42 • Sayı: 1, (2020), pp. 91-105.
- OECD, World Economic Outlook, June (2020).

- Republic of Turkey Ministry of Health, Date of access: 01.09.2020, <https://covid19.saglik.gov.tr/?lang=en-US>, (2020) .
- Şirin H., Özkan. S., Dünyada ve Türkiye’de COVID-19 Epidemiyolojisi, Kulak Burun Boğaz ve Baş Boyun Cerrahisi Dergisi, (2020).
- Uğraş Dikmen A., Kına H.M., Özkan S., İlhan M.N., COVID-19 Epidemiyolojisi: Pandemiden Ne Öğrendik, J Biotechnol and Strategic Health Res. 2020;1(Özel Sayı):pp29-36
- Tucker, H., Coronavirus bankruptcy tracker: These major companies are failing amid the shutdown. Forbes <https://www.forbes.com/sites/hanktucker/2020/05/03/coronavirus-bankruptcy-tracker-these-major-companies-are-failing-amid-the-shutdown/#5649f95d3425>. (2020).
- Wang, J., & Wang, Z. Strengths, weaknesses, opportunities and threats (swot) analysis of China’s prevention and control strategy for the COVID-19 epidemic. International Journal of Environmental Research and Public Health, 17(7), 1-17. doi:10.3390/ijerph17072235, https://tr.wikipedia.org/wiki/Türkiye%27de_COVID-19_pandemisi, Date of access: 27.008.2020, (2020)
- THY, Date of access: 01.09.2020, <https://www.turkishairlines.com/tr-tr/>, (2020).
- TÜPRAŞ, Date of access: 01.09.2020, <https://www.tupras.com.tr>, (2020).
- WHO, Date of access: 01.09.2020, <https://covid19.who.int>, (2020).
- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. N Engl J Med. 2020;382(8): pp.727-33.

CHAPTER XII

A REVIEW OF THE RELATIONSHIP OF SOCIAL MEDIA WITH EDUCATION AND ACADEMIC PERFORMANCE

Asst. Prof. Dr. Emrah Sitki YILMAZ

Gaziantep University, Gaziantep, Turkey

e-mail: esyilmaz@gantep.edu.tr, Orcid ID: 0000-0003-2741-4222

1. Introduction

The advances experienced in the digitalization process today, along with technological developments of the day, have brought the concept of social media and, consequently, social media tools to a different dimension beyond traditional methods as modern communication tools (Lau, 2017; Nagle, 2018). The use of social media tools as a part of learning and teaching processes in terms of education and academic performance, along with the changes in interpersonal communication patterns, has given these sites a significant importance (Galikyan and Admiraal, 2019; Wakefield and Frawley, 2020). Social media sites, whose importance has increased with the development of technology; are web-based digital platforms where people or communities can communicate with each other online, have an interactive structure thanks to mutual relations, where users can create content, share this contents, and which allow for all kinds of change of collaboration (Boyd and Ellison, 2007; Kaplan and Haenlein, 2010). Social media sites, which are among the most popular web applications of the century, are also described as virtual environments created by users who want to interact with others by sharing information, experiences and views on any subject of interest (Pütter, 2017). Social media sites, which are established on both mobile and web-based technologies and are a communication tool used by billions of people worldwide; in addition to being able to create profiles for people in a limited system, to ensure that the created profiles can be viewed to the extent permitted, and to establish groups, provides advantages in many subjects such as communication, information search, social interaction, marketing, entertainment and spending time compared to other interactive channels (Eid and Al-Jabri, 2016; Gayathridevi and Pattabiraman, 2019; Li and Das, 2020).

Social media sites, which cause profound changes in the way people communicate, are leading to major changes to occur in education and academic performance (Scott and Goode, 2020). Unlike traditional communication tools, social media sites, which are rising in line with advances in web 2.0-based technology, and whose usage rates are increasing every day, are based on the basis of connecting, learning and building their own network for users (Gagne, et al., 2018). Social media

sites used on this basis provide significant advantages over education and development in all types of professions and guide students as well as practitioners in terms of academic performance (Arrigoni, et al., 2016). In addition, social media sites that prepare the basis for the formation of interaction-based relationships between teachers and students increase the level of practice activities and perceived quality element involved in the learning process when compared to face-to-face education (López, et al., 2014; Chang, et al., 2019; Hussein and Hussain, 2019; Bou-Hamad, 2020).

Social media sites today are, while dependent on internet infrastructure, web applications where students can meet their career and professional goals and personal needs through the establishment of research groups, creation of projects among these groups, discuss ideas by establishing dialog between each other, participate in information exchange, develop academic skills and gain experience in terms of time management (Junco, 2015; Liu, et al., 2017). From this point of view, social media sites play a significant role in the development of academic performance as a creative, proactive and innovative understanding based on scientific foundations, with new practices, activities, resources, tools, and learning and teaching outcomes (Wanner, et al., 2019). Unlike traditional education methods such as textbooks, virtual environments such as Microblogs like Twitter, social networks like Facebook, professional platforms like LinkedIn, video sharing sites like YouTube, Snapchat and photo sharing sites like Instagram, as well as virtual environments such as Google Drive, SkyDrive, Dropbox data sharing and storage, blogs, forums, podcasts and wikis allowing the creation of various content, are used as modern technologies in the education and academic performance fields, maximizing the concept of communication (Eid and Al-Jabri, 2016; Lambić, 2016; Sterling, et al., 2017; Klobas, et al., 2018; Busalim, et al., 2019; D'Aquila, et al., 2019; Stvilia and Gibradze, 2019; Taylor and Breeze, 2020; Wakefield and Frawley, 2020; Zarzour, et al., 2020).

2. The Relationship Of Social Media With Education And Academic Performance

Social media tools are very important in terms of sustainability of academic performance and adaptation to the structure of interdisciplinary work together with the field of education (Lahti, et al., 2017). In particular, the integration of social media tools into higher education institutions has different impacts on wider communities, particularly students and teachers, and offers new perspectives for change (Akins, et al., 2019). This change with social media tools includes many steps including the creation of academic programs, the quality, development and control of the programs created, as well as various evaluation and update processes (Hussein and Hussain, 2019). The assessment process include evaluations in terms of

academic performance, such as sharing of lecture notes, the lectures themselves and the grades at the end of the semester in terms of students, and percentage of participation of students, the ability for team work and access to various data in terms of teachers (Jankowski, et al., 2018; Suskie, 2018). In addition, the assessment processes beyond education processes in terms of exam scores, continuation with higher education and the follow up of performance processes, employment status, leadership skills, team work abilities, innovative styles, professional development processes, personal skills, ethics and employer opinions for students following graduation using social media tools such as LinkedIn in particular are continuing (Zacharis, 2015; Hussein and Hussain, 2019). When studies on the matter are considered, it has been determined that social media tools have positive impact on education and academic performance with the provision of critical thinking, the development of intellectual and digital skills with level of knowledge, gaining competence, creating activity and autonomy, project based learning, problem based solution creation, the development of communication and team work between students, awareness of duties, creation of collaboration skills and creative elements, the ability to conduct surveys and interviews, the more rapid gathering of required data, the gaining of community awareness, and the provision of additional pedagogical applications (Tang and Lam, 2014; Lee and Bonk, 2016; Papastavrou, et al., 2016; Wang, et al., 2016; Blight, et al., 2017; Luzón, 2018; Chang, et al., 2019; Marín, 2020). In addition to these, social media tools provide great advantages to both students and teachers by being active participants in terms of education and academic performance by enabling the sharing of supporting digital content such as pictures, videos and links, as well as visualization tools such as documents, graphics and analysis to facilitate learning about the topics instructed by teachers, creation of solutions and the development of knowledge (Balakrishnan and Lay, 2016; Liu, 2016; Macià and García, 2016; Asterhan and Bouton, 2017; Ifinedo, 2017; Wirtz and Zimbres, 2018; Busalim, et al., 2019; Akande, et al., 2020; Pang, 2020; Rasheed, et al., 2020).

The use of social media tools in terms of educational and academic performance at primary and high school level, apart from higher education institutions, shows that it has positive effects on the socialization of students, increasing their level of cooperation, improving their free team work and meeting their psychological needs (Tirado-Morueta, et al., 2020). These effects give students, especially at primary school level, opportunities to participate in a variety of dynamic structures such as creating a social network and producing online works such as stories, creating various activities and performing different organizations with their peers (Liu, et al., 2017). For high school-level students, it is seen that video sharing sites, especially YouTube, are used to facilitate learning

processes by uploading videos and various other materials in terms of educational and academic performance in or out of the classroom (Balakrishnan and Lay, 2016). The YouTube platform where the captured videos can be easily uploaded, besides its various benefits such as better explaining certain subjects and lessons to high school students, creating innovative video presentations and hosting guest speakers, offers the ability of being able to share ideas and create different discussion environments, ability to communicate, form motivation and being a point of spending pleasurable time (Everson, et al., 2013; Klobas, et al., 2018).

When the ways of using social media tools in terms of education and academic performance are examined, there are some disadvantages besides the benefits similar to the use of modern and technological developments. Social media tools that allow all members of society to interact with each other are used personally for purposes such as growing networks of friends and connections, and professionally for purposes such as education, academic performance and professional development (Fox and Bird, 2017). From this point of view, it is stated that personal and professional uses are mixed with each other and there are some difficulties for both students and teachers (Qualman, 2012). In addition, there are a number of negative factors for teachers, such as the fact that they face social pressure to stay connected in their private lives and outside of working hours, in addition to their working hours and public spaces, their workloads increase more than normal conditions, and anxiety about loss of respect through social media tools is present (Owen, et al., 2016). The studies, when considered from the point of view of students, shows that due to the networks created within this integrated system only covering a specific course process it is not sufficient to establish long term communities, that the time allocated to social media tools is more than that allocated for education and academic performance, and in particular for students in the first years of higher education having a negative impact on individual performance in terms of reflecting themselves in many activities such as cooperation and multitasking task distributions (Krasilnikov and Smirnova, 2017; Lima and Zorrilla, 2017; Casal, 2019). In addition to these, the inclusion of students in multiple tasks aimed at the course leading to focus problems, it also leads to the lack of necessary care required by courses requiring more detailed content, a drop in participation in multitasking and a drop in the tendency to remain on task, a drop in cognitive performance personally, and lack of free time to learn new things and participate in different activities (Wood, et al., 2012; Bellur, et al., 2015). In addition, performing activities such as writing messages, reading and commenting via social media during online lessons can be distracting for students (Wei, et al., 2012; Kuznekoff and Titsworth, 2013). Another negative aspect of the use of social media tools in terms of educational and

academic performance is that the rate of use of internet and social media tools outside the objectives of the students increases and this situation causes the students to lose motivation and their academic grades to decline (Michikyan, et al., 2015; Giunchiglia, et al., 2018; Chang, et al., 2019; Evers, et al., 2020; Spence, et al., 2020; Whelan, et al., 2020).

3. Conclusion

Developments in Web 2.0 technologies position social media tools far beyond traditional communication methods. Social media tools, which play an important role in changing the understanding of people's communication with increasing usage rates, provide many advantages to their users in terms of education and academic performance as well as in terms of their interaction-based features. The subject of this study is the detailed examination of the positive and negative impacts of the use of social media in the field of education, considering the contributions to both teachers and students on their academic performances. Literature reviews reveal that social media tools have many advantages, especially in terms of educational and academic performance, over students. In addition to known opportunities such as communication and socialization, social media tools provide students with benefits such as being a part of a dynamic whole, collaborating, creating task awareness and utilizing all kinds of documents, also brings with them responsibilities of being within an active system, and disadvantages such as lack of motivation and loss of performance. In terms of teachers, it can create disadvantages such as changes in working conditions and increased workload, as well as many positive features such as easy examination of performance monitoring and evaluation processes. From this point of view, it will be possible to use social media tools more actively in the field of education and to provide the necessary digital infrastructure to be included in this system as an element of increasing academic performance and to solve e-security problems completely. In order to use these technologies with high-level efficiency together with the digital infrastructure provided, it is necessary to provide technical training to both teachers and students within a proactive structure and to provide supporting elements such as providing quick solution tools for problems that may be experienced.

References

- Akande, O. N., Badmus, T. A., Akindele, A. T., and Arulogun, O. T. (2020). Dataset to support the adoption of social media and emerging technologies for students' continuous engagement. *Data in Brief*, 31(1), 105926, <https://doi.org/10.1016/j.dib.2020.105926>.
- Akins, E. E., Giddens, E., Glassmeyer, D., and Gruss, A. (2019). Sustainability Education and Organizational Change: A Critical Case

Study of Barriers and Change Drivers at a Higher Education Institution. *Sustainability*, 11(2), 501-518, <https://doi.org/10.3390/su11020501>.

- Arrigoni, C., Alvaro, R., Vellone, E., and Vanzetta, M. (2016). Social media and nurse education: An integrative review of the literature. *Journal of Mass Communication and Journalism*, 6 (1), 1-8, <https://doi.org/10.4172/2165-7912.1000290>.
- Asterhan, C. S., and Bouton, E. (2017). Teenage peer-to-peer knowledge sharing through social network sites in secondary schools. *Computers & Education*, 110(1), 16-34, <https://doi.org/10.1016/j.compedu.2017.03.007>.
- Balakrishnan, V., and Lay, G. C. (2016). Students' learning styles and their effects on the use of social media technology for learning. *Telematics and Informatics*, 33(3), 808-821, <https://doi.org/10.1016/j.tele.2015.12.004>.
- Bellur, S., Nowak, K. L., and Hull, K. S. (2015). Make it our time: In class multitaskers have lower academic performance. *Computers in Human Behavior*, 53(1), 63-70, <https://doi.org/10.1016/j.chb.2015.06.027>.
- Blight, M. G., Ruppel, E. K., and Schoenbauer, K. V. (2017). Sense of Community on Twitter and Instagram: Exploring the Roles of Motives and Parasocial Relationships. *Cyberpsychology, Behavior and Social Networking*, 20(5), 314-319, <https://doi.org/10.1089/cyber.2016.0505>.
- Bou-Hamad, I. (2020). The impact of social media usage and lifestyle habits on academic achievement: Insights from a developing country context. *Journals & Books*, 118(1), 105425, <https://doi.org/10.1016/j.childyouth.2020.105425>.
- Boyd, D. M., and Ellison, N. B. (2007). Social Network Sites: Definition, History and Scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230, <https://doi.org/10.1111/j.1083-6101.2007.00393.x>.
- Busalim, A. H., Masrom, M., and Zakaria, W. N. (2019). The impact of Facebook Addiction and self-esteem on students' academic performance: A multi-group analysis. *Computers & Education*, 142(1), 103651, <https://doi.org/10.1016/j.compedu.2019.103651>.
- Casal, S. S. (2019). The Impact of Social Media Participation on Academic Performance in Undergraduate and Postgraduate Students. *International Review of Research in Open and Distributed Learning*, 20(1), 124-143, <https://doi.org/10.19173/irrodl.v20i1.3751>.
- Chang, C.-T., Tu, C.-S., and Hajiyev, J. (2019). Integrating academic type of social media activity with perceived academic performance: A role

- of task-related and non-task-related compulsive Internet use. *Computers & Education*, 139(1), 157-172, <https://doi.org/10.1016/j.compedu.2019.05.011>.
- D'Aquila, J. M., Close, and Mattia, A. (2019). Are instructor generated YouTube videos effective in accounting classes? A study of student performance, engagement, motivation, and perception. *Journal of Accounting Education*, 47(1), 63-74, <https://doi.org/10.1016/j.jaccedu.2019.02.002>.
- Eid, M. I., and Al-Jabri, I. M. (2016). Social networking, knowledge sharing, and student learning: The case of university students. *Computers & Education*, 99(1), 14-27, <https://doi.org/10.1016/j.compedu.2016.04.007>.
- Evers, K., Chen, S., Rothmann, S., Dhir, A., and Pallesen, S. (2020). Investigating the relation among disturbed sleep due to social media use, school burnout, and academic performance. *Journal of Adolescence*, 84(1), 156-164, <https://doi.org/10.1016/j.compedu.2016.04.007>.
- Everson, M., Gundlach, E., and Miller, J. (2013). Social media and the introductory statistics course. *Computers in Human Behavior*, 29(1), 69-81, <https://doi.org/10.1016/j.chb.2012.12.033>.
- Fox, A., and Bird, T. (2017). The challenge to professionals of using social media: teachers in England negotiating personal-professional identities. *Education and Information Technologies*, 22(2), 647-675, <https://doi.org/10.1007/s10639-015-9442-0>.
- Gagne, J. C., Yamane, S. S., Conklin, J. L., Chang, J., and Kang, H. S. (2018). Social media use and cybercivility guidelines in U.S. nursing schools: A review of websites. *Journal of Professional Nursing*, 34(1), 35-41, <https://doi.org/10.1016/j.profnurs.2017.07.006>.
- Galikyan, I., and Admiraal, W. (2019). Students' engagement in asynchronous online discussion: The relationship between cognitive presence, learner prominence, and academic performance. *The Internet and Higher Education*, 43(1), 100692, <https://doi.org/10.1016/j.iheduc.2019.100692>.
- Gayathridevi, B., and Pattabiraman, V. (2019). Towards User Profiling From Multiple Online Social Networks. *Procedia Computer Science*, 165(1), 456-461, <https://doi.org/10.1016/j.procs.2020.01.006>.
- Giunchiglia, F., Zeni, M., Gobbi, E., Bignotti, E., and Bison, I. (2018). Mobile Social Media Usage and Academic Performance. *Computers in*

Human Behavior, 82(1), 1-20,
<https://doi.org/10.1016/j.chb.2017.12.041>.

- Hussein, A., and Hussain, M. (2019). Social-media based assessment of academic programs. *Studies in Educational Evaluation*, 62(1), 149-157, <https://doi.org/10.1016/j.stueduc.2019.06.003>.
- Ifinedo, P. (2017). Examining students' intention to continue using blogs for learning: Perspectives from technology acceptance, motivational, and social-cognitive frameworks. *Computers in Human Behavior*, 72(1), 189-199, <https://doi.org/10.1016/j.chb.2016.12.049>.
- Jankowski, N. A., Timmer, J. D., Kinzie, J., and Kuh, G. D. (2018). Assessment That Matters: Trending Toward Practices That Document Authentic Student Learning. *National Institute for Learning Outcomes Assessment*, 1(1), 1-33, <https://eric.ed.gov/?id=ED590514>.
- Junco, R. (2015). Student class standing, Facebook use and academic performance. *Journal of Applied Developmental Psychology*, 36(1), 18-29, <https://doi.org/10.1016/j.appdev.2014.11.001>.
- Kaplan, A. M., and Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59-68, <https://doi.org/10.1016/j.bushor.2009.09.003>.
- Klobas, J. E., McGill, T. J., Moghavvemi, S., and Paramanathan, T. (2018). Compulsive YouTube usage: A comparison of use motivation and personality effects. *Computers in Human Behavior*, 87(1), 129-139, <https://doi.org/10.1016/j.chb.2018.05.038>.
- Krasilnikov, A., and Smirnova, A. (2017). Online social adaptation of first-year students and their academic performance. *Computers & Education*, 113(1), 327-338, <https://doi.org/10.1016/j.compedu.2017.05.012>.
- Kuznekoff, J. H., and Titsworth, S. (2013). The Impact of Mobile Phone Usage on Student Learning. *Communication Education*, 62(3), 233-252, <https://doi.org/10.1080/03634523.2013.767917>.
- Lahti, M., Haapaniemi-Kahala, H., and Salminen, L. (2017). Use of Social Media By Nurse Educator Students: An Exploratory Survey. *The Open Nursing Journal*, 11(1), 26-33, <https://doi.org/10.2174/1874434601711010026>.
- Lambić, D. (2016). Correlation between Facebook use for educational purposes and academic performance of students. *Computers in Human Behavior*, 61(1), 313-320, <https://doi.org/10.1016/j.chb.2016.03.052>.

- Lau, W. W. (2017). Effects of social media usage and social media multitasking on the academic performance of university students. *Computers in Human Behavior*, 68(1), 286-291, <https://doi.org/10.1016/j.chb.2016.11.043>.
- Lee, J., and Bonk, C. J. (2016). Social network analysis of peer relationships and online interactions in a blended class using blogs. *Internet and Higher Education*, 28(1), 35-44, <https://doi.org/10.1016/j.iheduc.2015.09.001>.
- Li, N., and Das, S. K. (2020). Efficiently discovering users connectivity with local information in online social networks. *Online Social Networks and Media*, 16(2), 100062, <https://doi.org/10.1016/j.osnem.2020.100062>.
- Lima, M. D., and Zorrilla, M. E. (2017). Social Networks and the Building of Learning Communities: An Experimental Study of a Social MOOC. *International Review of Research in Open and Distributed Learning*, 18(1), 40-64, <https://doi.org/10.19173/irrodl.v18i1.2630>.
- Liu, C.-C., Chen, Y.-C., and Tai, S.-J. D. (2017). A social network analysis on elementary student engagement in the networked creation community. *Computers & Education*, 115(1), 114-125, <https://doi.org/10.1016/j.compedu.2017.08.002>.
- Liu, M.-H. (2016). Blending a class video blog to optimize student learning outcomes in higher education. *Internet and Higher Education*, 30(1), 44-53, <https://doi.org/10.1016/j.iheduc.2016.03.001>.
- López, P. M., Mojarro-Aliaño, Á., and Aguaded, I. (2014). Social Network Analysis of a Blended Learning experience in Higher Education. *Research on Education and Media*, 6(2), 69-78, <http://hdl.handle.net/10272/14743>.
- Luzón, M.-J. (2018). Constructing academic identities online: Identity performance in research group blogs written by multilingual scholars. *Journal of English for Academic Purposes*, 33(1), 24-39, <https://doi.org/10.1016/j.jeap.2018.01.004>.
- Macià, M., and García, I. (2016). Informal online communities and networks as a source of teacher professional development: A review. *Teaching and Teacher Education*, 55(1), 291-307, <https://doi.org/10.1016/j.tate.2016.01.021>.
- Marín, V. I. (2020). Research-based learning in education studies: Design inquiry using group e-Portfolios based on blogs. *Australasian Journal of Educational Technology*, 36(1), 1-20, <https://doi.org/10.14742/ajet.4523>.

- Michikyan, M., Subrahmanyam, K., and Dennis, J. (2015). Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample. *Computers in Human Behavior*, 45(1), 265-272, <https://doi.org/10.1016/j.chb.2014.12.033>.
- Nagle, J. (2018). Twitter, cyber-violence, and the need for a critical social media literacy in teacher education: A review of the literature. *Teaching and Teacher Education*, 76(1), 86-94, <https://doi.org/10.1016/j.tate.2018.08.014>.
- Owen, N., Fox, A., and Bird, T. (2016). The development of a small-scale survey instrument of UK teachers to study professional use (and non-use) of and attitudes to social media. *International Journal of Research & Method in Education*, 39(2), 170-193, <https://doi.org/10.1080/1743727X.2015.1041491>.
- Pang, H. (2020). Is active social media involvement associated with cross-culture adaption and academic integration among boundary-crossing students? *International Journal of Intercultural Relations*, 79(1), 71-81, <https://doi.org/10.1016/j.ijintrel.2020.08.005>.
- Papastavrou, E., Hamari, L., Fuster, P., Fatkulina, N. I., and Salminen, L. (2016). Using blogs for facilitating and connecting nurse educator candidates. *Nurse Education Today*, 45(1), 35-41, <https://doi.org/10.1016/j.nedt.2016.06.004>.
- Rasheed, M. I., Malik, M. J., Pitafi, A. H., Iqbal, J., Anser, M. K., and Abbas, M. (2020). Usage of social media, student engagement, and creativity: The role of knowledge sharing behavior and cyberbullying. *Computers & Education*, 159(1), 104002, <https://doi.org/10.1016/j.compedu.2020.104002>.
- Pütter, M. (2017). The Impact of Social Media on Consumer Buying Intention. *Journal of International Business Research and Marketing*, 3(1), 7-13, <https://doi.org/10.18775/jibrm.1849-8558.2015.31.3001>.
- Qualman, E. (2012). *Socialnomics: How Social Media Transforms the Way We Live and Do Business*. New Jersey: John Wiley & Sons.
- Scott, N., and Goode, D. (2020). The use of social media (some) as a learning tool in healthcare education: An integrative review of the literature. *Nurse Education Today*, 87(1), 104357, <https://doi.org/10.1016/j.nedt.2020.104357>.
- Spence, A., Beasley, K., Gravenkemper, H., Hoefler, A., Ngo, A., Ortiz, D., and Campisi, J. (2020). Social media use while listening to new material negatively affects short-term memory in college students.

Physiology & Behavior, 227(1), 113172,
<https://doi.org/10.1016/j.physbeh.2020.113172>.

- Sterling, M., Leung, P., Wright, D., and Bishop, T. F. (2017). The Use of Social Media in Graduate Medical Education: A Systematic Review. *Academic Medicine*, 92(7), 1043-1056, <https://doi.org/10.1097/ACM.0000000000001617>.
- Stvilia, B., and Gibradze, L. (2019). Exploring Twitter use and services of academic innovation centers. *The Journal of Academic Librarianship*, 45(5), 102052, <https://doi.org/10.1016/j.acalib.2019.102052>.
- Suskie, L. (2018). *Assessing Student Learning: A Common Sense Guide*. New Jersey: John Wiley & Sons.
- Tang, E., and Lam, C. (2014). Building an effective online learning community (OLC) in blog-based teaching portfolios. *The Internet and Higher Education*, 20(1), 79-85, <https://doi.org/10.1016/j.iheduc.2012.12.002>.
- Taylor, Y., and Breeze, M. (2020). All imposters in the university? Striking (out) claims on academic Twitter. *Women's Studies International Forum*, 81(1), 102367, <https://doi.org/10.1016/j.wsif.2020.102367>.
- Tirado-Morueta, R., Berlanga-Fernández, I., Vales-Villamarín, H., Guzmán-Franco, M. D., Duarte-Hueros, A., and Aguaded-Gómez, J. I. (2020). Understanding the engagement of elementary school students in one-to-one iPad programs using an adaptation of self-system model of motivational development. *Computers in Human Behavior*, 105(1), 106224, <https://doi.org/10.1016/j.chb.2019.106224>.
- Wakefield, J., and Frawley, J. K. (2020). How does students' general academic achievement moderate the implications of social networking on specific levels of learning performance? *Computers & Education*, 144(1), 103694, <https://doi.org/10.1016/j.compedu.2019.103694>.
- Wang, Y.-S., Li, C.-R., Yeh, C.-H., Cheng, S.-T., Chiou, C.-C., Tang, Y.-C., and Tang, T.-I. (2016). A conceptual model for assessing blog-based learning system success in the context of business education. *The International Journal of Management Education*, 14(3), 379-387, <https://doi.org/10.1016/j.ijme.2016.09.002>.
- Wanner, G. K., Phillips, A. W., and Papanagnou, D. (2019). Assessing the use of social media in physician assistant education. *International Journal of Medical Education*, 10(1), 23-28, <https://doi.org/10.5116/ijme.5c14.ef82>.
- Wei, F.-Y. F., Wang, Y. K., and Klausner, M. (2012). Rethinking College Students' Self-Regulation and Sustained Attention: Does Text

Messaging During Class Influence Cognitive Learning?
Communication Education, 61(3), 185-204,
<https://doi.org/10.1080/03634523.2012.672755>.

Whelan, E., Islam, A. N., and Brooks, S. (2020). Applying the SOBC paradigm to explain how social media overload affects academic performance. *Computers & Education*, 143(1), 103692, <https://doi.org/10.1016/j.compedu.2019.103692>.

Wirtz, J. G., and Zimbres, T. M. (2018). A systematic analysis of research applying 'principles of dialogic communication' to organizational websites, blogs, and social media: Implications for theory and practice. *Journal of Public Relations Research*, 30(1), 5-34, <https://doi.org/10.1080/1062726X.2018.1455146>.

Wood, E., Zivcakova, L., Gentile, P., Archer, K., Pasquale, D. D., and Nosko, A. (2012). Examining the impact of off-task multi-tasking with technology on real-time classroom learning. *Computers & Education*, 58(1), 365-374, <https://doi.org/10.1016/j.compedu.2011.08.029>.

Zacharis, N. Z. (2015). A multivariate approach to predicting student outcomes in web-enabled blended learning courses. *The Internet and Higher Education*, 27(1), 44-53, <https://doi.org/10.1016/j.iheduc.2015.05.002>.

Zarzour, H., Bendjaballah, S., and Harirche, H. (2020). Exploring the behavioral patterns of students learning with a Facebook-based e-book approach. *Computers & Education*, 156(1), 103957, <https://doi.org/10.1016/j.compedu.2020.103957>.

CHAPTER XIII

BASIC ARTIFICIAL INTELLIGENCE APPLICATIONS IN SUPPLY CHAIN MANAGEMENT

Assoc. Prof. Dr. Gülsen Serap ÇEKEROL* & Inst. Özer COŞMAN**

*Eskişehir Technical University, Eskişehir, Turkey
e-mail: gscekerol@eskisehir.edu.tr, Orcid ID: 0000-0003-0391-2489

**Akdeniz University, Antalya, Turkey
e-mail: ozercosman@akdeniz.edu.tr, Orcid ID: 0000-0001-7553-8225

1. Introduction

Throughout history, all commercial stakeholders have been shaped by technological changes, and the commercial activities of these stakeholders have undergone significant changes. These changes and their effects have exposed themselves within different dimensions in certain periods and caused revolutions in the commercial field. These revolutions are generally called as the industrial revolution. The world has gone through the revolution of mechanics 1.0, the revolution of electricity 2.0, and the revolution of electronics 3.0 till the Industry 4.0, which is today's Industrial Revolution. Industry 4.0, which initially appeared in Germany in 2011, consists of concepts such as autonomous machines, the internet of things, the internet of services, cyber systems and cellular transportation systems (Özdemir and Özgüner, 2018, p.39). The concept of Industry 4.0 is not only related to the industry itself, but also depicts itself as a holistic change in social, ecological and economic terms (Kayıkçı, 2018, p.783).

With the impact of Industry 4.0 and global markets making their effects felt deeply in the world, businesses have had to offer their goods and services to their clients at lower prices, higher quality and faster so as to be successful in their areas. This case means a further upsurge in the value of goods and services for both businesses and clients. Especially in the presence of demand uncertainty, high supply risk and high competition, businesses exert themselves to shape and manage all business processes correctly so that they can achieve their goals and exchange their products with increased value. In the management of these processes; the business, as a whole, had better be in the right structure with all stakeholders within the organization and have to make the right decisions.

This structuring also exposes itself in supply chain management. The profession of supply chain management (SCM) keeps on changing and improving in accordance with the requirements of the developing global supply chain. With the supply chain which includes a broad range of disciplines, the definition about supply chain may be ambiguous. Nevertheless, according to the Supply Chain Management Experts

Council¹, supply chain management contains the management and planning of each activity which is related to sourcing, supplying, conversion and all of the activities about logistics management. What is more, coordination and cooperation with channel partners are also contained. They are supposed to be suppliers, intermediaries, third party service providers, and customers. Basically, the supply and demand management within and among companies are integrated by supply chain management (<https://www.cscmp.org>).

Some presumable or unexpected events threatening the supply chains' profitability and continuity have always affected them, particularly the global ones. Therefore, practitioners and researchers are always into trying to explore the reasons of these events in an enterprise in order to decrease the impacts of the risks related. Due to three main reasons, this interest has considerably uplifted within the past 20 years. First of all, the adoption of lean management and the perspective of punctuality towards the production and logistics may have climbed efficiency; nonetheless, they may also have led the supply chains to be more vulnerable to adverse cases as they have very little tolerance against changes and faults. (Snyder et al., 2016, p.89).

Industry 4.0 has different applications in many areas from production to sales and even customer services. According to a study, Industry 4.0 applications provide 10-30% reduction in production costs, 10-20% reduction in quality management costs and 10-30% reduction in logistics costs (Aylak et al., 2020, p.99). Cooperation among suppliers, manufacturers and clients can be achieved through ensuring coordination and transparency throughout product lifecycle, digitization and process automation. This also makes the contribution to the applications of Industry 4.0 in the field of supply chain control noteworthy (Tjahjono et al., 2017, p.1176). Companies and firms, noticing this, from different sectors have especially moved towards digitizing their supply chain operations. Digitalization ensures companies to react, take precautions and adapt much faster in the supply chain.

In the recent past, being able to manage the risk has become a very important task for the managers of supply chain, especially due to the developing global competition, rising cost pressures, increasing consumer expectations and constantly growing complex economic structure (Daultani et al., 2015, p.5685). Owing to the increasing complicated economic structure and modern supply chains composed of mutual relations, it becomes difficult and even impossible to predict uncertain or unknown developments and their effects. (Helbing et al., 2005, p.345). The

¹ Council of Supply Chain Management Professionals is a U.S.A based organization.

risks and the uncertainties often throw the operational efficiency of the supply chain and profits of businesses into disorder (Khojasteh, 2018, p.3).

The main problem with discussing the risks and uncertainties is that they emerge in different types and structures. Risks may occur at any point in the supply chain, from initial supplier structuring to end consumers, and they cause problems in the supply of raw materials, sudden increases or decreases in product demand, delays in the chain as the results of natural disasters, and permanent losses in the short and long term. As a result, risks affect any links of the supply chain or the entire system. Businesses are beginning to use and spend more resources with today's increasing vagueness for the estimation of supply, demand and internal unclearness (Vanany et al., 2009, p.16).

In the recent past, being able to manage the risk has become an substantial task for supply chain managers, particularly because of the developing global competition, rising cost pressures, increasing consumer expectations and constantly growing complicated economic structure (Daultani et al., 2015, p.5685). According to Tang and Musa (2011, p.26-27), supply chain is a very complex production system, and there are many different definitions and sources of supply chain risk in the literature. In the following figure, supply chain risks are classified in different aspects:

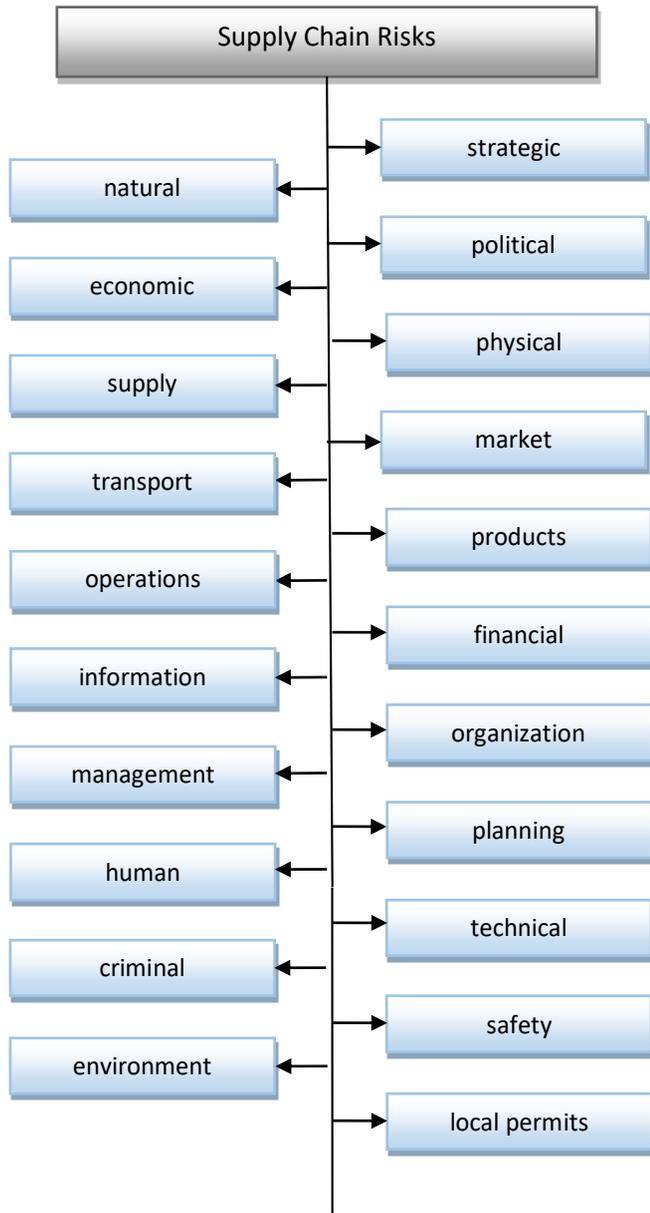


Fig. 1 Supply Chain Risks
(Water, 2007, p.100-101)

There are lots of alternative methods, from qualitative to quantitative, from the empirical studies and conceptual theories approaches to mathematical optimization, statistics and simulation within the research related to supply chain risk management (SCRM). Considering implemented strategies, in order to prepare appropriate remission and probability plans, SCRM may follow either the reactive strategy which is applied after a risk materializes or the proactive strategy which allows to detect and to evaluate risks before they occur (Baryannis et al, 2019, p.2179). So as to be successful, proactive strategies lean on the capacity of accurately estimating of emergence and the potential influence of risks. Using techniques in the wide spectrum of artificial intelligence (AI), this capacity of accurate estimation can be obtained.

AI, after its publicity in the 1950s, this field has seen some periods of extreme growth and remarkable setback. Lately, among others, some factors such as the presence of Big Data and growing computational power have caused renovated attention in this field. Owing to this sustainable evolution in the researches of AI, the definition is constantly improving too.

The term of artificial intelligence was firstly introduced by John McCarthy at the Dartmouth Conference in 1956. Artificial intelligence, according to John McCarthy, is “the science and engineering of making intelligent machines, especially intelligent computer programs. It does not limit itself to methods that can only be observed biologically even though it is about trying to understand human intelligence through computers, which is a similar business.” (Akben and Incenacar, 2018, p.186).

To achive a formalized definition and measure of Machine Intelligence, Legg and Hutter assayed a complete analysis of notable definitions of intelligence, and they determined two fundamental prerequisite characteristics of a human or a machine to assume intelligent in their analysis: (1) the ability of choosing their actions carefully to lead to performance or capital, in terms of some kind of target or objective; (2) the capability of dealing not with an absolutely familiar environment, but with some probabilities which cannot entirely be foreseen, through learning and conformation (Baryannis et al, 2019, p.2183).

2. Methodologies and techniques of AI

It is very well known that AI is not only able to think and act like humans, but also think rationally and act rationally just like humans (Russell and Norvig 1995). Therefore, according to these prominent characteristics, it is also possible to classify AI into some sub-fields: (1) artificial neural networks (ANN) and rough set theory (“thinking humanly”); (2) machine learning, expert systems, and GAs (“acting humanly”);(3) fuzzy logic (“thinking rationally”); and (4) agent-based

systems (“acting rationally”). These sub-fields are discussed below. (Min, 2010, p.15)

2.1. Thinking humanly

Artificial neural networks; The theory of an ANN was based on the way that the living organ’s neurons and functions, that is to say brain cells. Utilizing computer memories' interconnected network, ANN is capable of identifying patterns, distinguishing things, clustering objects and learning from experience; moreover, it can process vague or intangible pieces of information. To explain in detail, ANN consists of a series of nodes corresponding to biological neurons. These nodes are linked to each other, and every link possesses a numerical weight associated with it, and the weights and the links of them are the fundamental instruments of the storage for long-term memory. In order that the output of one neuron can input into another neuron linked to it, the system processes information. The weights are liable to the weakening or strengthening of the information that is transferred via the link. First, the links are located, afterwards the valuation of weights are determined throughout a process which is called learning. When the network gets started, through using an inductive learning algorithm and trained in supervised or unsupervised environments, the ANN is able to be modified to improve its performance (McCulloch and Pitts 1943, Russell and Norvig 1995), so it is very probable to teach ANN to answer to several data patterns or comprehend latent relationships underneath the data given according to our requests (Min, 2010, p.15)

For the risk assessment of production losses, the appropriate cost predictions (output) for Artificial Neural Networks (ANN) are provided with some certain scenarios, with time of manufacture, amounts and capacities (input). Thus, ANNs can acquire the ability to calculate cost predictions for alternative scenarios through learning how they can relate input and output based on this training data (Baryannis et al, 2019, p.2193).

Having been fed with the input data about production time, quantities and capacities, ANNs are trained by using calculated expenditure estimates for the input available. For different groups of input data, they obtain the ability to learn how to calculate cost estimates. Compared to separate event simulation, the superiority of ANNs in terms of flexibility, adaptability and accuracy of response are approved by the evaluation results (Zsidisin and Henke, 2019, p64.).

AI is an artificial neural network offering a great capability for the generalizations, using specific scenarios such as pattern recognition, solving nonlinear problems, time series estimation, performance measurement, cost estimation, scheduling, production / supply planning, customer segmentation and order assignment. (Silva et al, 2017, p.2085).

Rough Set Theory; Rough set theory (RST) was created by Pawlak (1982) and was developed to classify imprecise, uncertain, and incomplete information or knowledge expressed in terms of data acquired from experience (Dubois and Prade, 1990, p.191).

RST, which has found a lot of real life applications and is deemed as a new mathematical tool to cope with various decision problems, is a new mathematical approach to ambiguity and vagueness. RST provides new perspective to the decision process and offers new productive algorithms. It has been proven that the original version of RST is especially beneficial in the analysis of multi-feature classification problems under discrepancy after information granulation, i.e., objects with the same description but belonging to different classes (Zou et al., 2011, p.107).

2.2. Acting humanly

Machine Learning; ML (machine learning) can be defined as “the scientific study of algorithms and computational models on computers using experience for progressively improving the performance on a specific task or to make accurate forecasts” (Mohri et al., 2018, p.1). The term “experience” in the above definition refers to the past data which are accessible to the learner to construct a prediction model. These datasets can be digitized human-labelled datasets or data collected through interactions with the environment (Sharma et al., 2020, p.3).

Machine learning can be divided into five categories, which are concept learning configured to correctly recognize or construct conceptual meanings relevant to future decision-making processes following an inductive learning process, decision tree learning referring to classify all of the objects by testing their values for certain properties and then constructing a decision tree, perceptron learning targeting to get useful knowledge, reduce mistakes, and solve decision problems by using a “perceptron” a single layer of the network, Bayesian learning teaching the computer to grasp representations of probabilistic functions, reinforcement learning training the computer to perform at high levels through giving constant feedback in a form of rewards. (Min, 2010, p.16).

Expert Systems; Computer-based systems simulating human decision making are named as Expert systems (ESs), which are able to be integrated into information systems in order to advance their precision and efficiency. That they include modelling of the thinking process of human experts very familiar with the given problem domain is the very basic characteristic of expert systems. (Singh et al., 1996, p.9).

The systems mentioned above usually include two main factors: A knowledge base including all of the information requirements which human/librarian experts utilize to decide and inference engine imitating the

format of human decision makings that relies on the a knowledge base and a rule base. The manner of human experts to make decisions is elaborated for the design rules of the knowledge base. The rules include two main phases, which are “if phase” consisting of conditions and “then phase” consisting of results. With the application of reasoning via the inference engines, ESs differ from other computer systems. The inference engine, as mentioned before, simulates human when making decisions based on the knowledge base and a rule base. (Asemi et al., 2020, p.4).

2.3 Thinking rationally

Fuzzy Logic; Within the data we are gathering, several views of the digital economy are reflected. Appropriate statistical tools observing these aspects should be well adapted on account of the fact that human opinion is uncertain in many cases, and receiving precise information becomes far more difficult if data contains fuzziness. Fuzzy logic was introduced for coping with such problems (Meier et al., 2019, p.1).

Unlike classical logical systems, the aim of Fuzzy logic is to model the imperfect paradigms of reasoning which play a vital role in the phenomenal human ability to make rational decisions in an environment of vagueness and inaccuracy. Eventually, this ability depends on our capability of reaching a close answer to any questions based on a store of knowledge that is incomplete, inaccurate or completely unreliable (Zadeh, 1988, p.83).

2.4. Acting rationally

Agent-based Systems; The technique that separates a decision problem into sub-problems and solves these sub-problems using independent entities called agents is called distributed problem solving technique, and one of which is the agent-based system. In order to process given tasks, there are different methods, knowledge and resources for every agent to use (Min, 2010, p.19).

Axelrod (1997) believes that providing an environment with its own characteristics, forecasting and exploring its scenarios forthcoming, experimenting possible alternative decisions, setting different rates for the decision variables and analyzing the results of these changes are all possible (Barbati et al., 2012, p.6020).

3. Conclusion

Radical changes have been experienced in businesses and in all their stakeholders since the beginning of railways and steam power use in the industry. Until Industry 4.0, the effect of technology on the structures, activities and targets of businesses has been immense. Increasing competition, especially due to the effect of globalization, has forced businesses to produce higher value with less cost. However, within the trade environment in which the number of players and products is too high,

technology has shown itself this time not to create problems but to solve them. Especially, supply chain management, which has become even more complex, has begun to get help from technology and has begun to be reshaped through artificial intelligence, which has become more and more mentioned about in recent years.

Even though there are some factors available to prevent real progress in this direction, excellent coordination in supply chains is optimal if partner companies co-work to attain this goal. For instance; if there is no complete information on the other partners' demand, the partners have to foresee this demand. AI consists of four identified basic characteristics in supply chain models that contain:

- optimization
- prediction
- modeling and simulation
- decision support that can be used to supply chain management

Each of these characteristics is capable of using one of the techniques in AI (Soleimani, 2018, p.89).

Through artificial intelligence applications, delivery performance is gone up, supplier risk is dropped, labour costs are reduced, product defects are decreased, delivery times are improved, production speed is upsurged, suppliers are more accurately selected, vehicle routes are made better, and the bond between the customer and the business is further strengthened. Particularly in today's trading structure in which the light-out industry has started to increase, it will be ineluctable that the connection between artificial intelligence and supply chain management will be further strengthened.

That the right artificial intelligence application should be selected for the right supply chain activity should not be forgotten. The success of the activity depends on the right choice of AI assigned to the supply chain role. Each artificial intelligence application is unique, and this originality determines the capabilities and limits of artificial intelligence.

Consequently, artificial intelligence applications have significantly been developing in recent years, yet this improvement has not yet reached perfection. Therefore, more digitalization and more data loading are required. High amount of data loading is the biggest factor in the path for perfection. Thus, supply chains will be more robust and resilient, and problems will proactively and reactively be solved against all possible risks.

References

- Akben, D., & Incenacar (2018). T. Tedarik Zinciri Yönetiminde Yapay Zekâ.
- Asemi, A., Ko, A., & Nowkarizi, M. (2020). Intelligent libraries: a review on expert systems, artificial intelligence, and robot. *Library Hi Tech*.
- Aylak, B. L., Kayikci, Y., & Taş, M. A. (2020). Türkiye'de Lojistik Sektöründe Faaliyet Gösteren İşletmelerin Dijital Trendlerinin İncelenmesi. *Journal of Yasar University*, 15(57).
- Barbati, M., Bruno, G., & Genovese, A. (2012). Applications of agent-based models for optimization problems: A literature review. *Expert Systems with Applications*, 39(5), 6020-6028.
- Baryannis, G., Validi, S., Dani, S., & Antoniou, G. (2019). Supply chain risk management and artificial intelligence: state of the art and future research directions. *International Journal of Production Research*, 57(7), 2179-2202.
- Daultani, Y., Kumar, S., Vaidya, O. S., & Tiwari, M. K. (2015). A supply chain network equilibrium model for operational and opportunism risk mitigation. *International Journal of Production Research*, 53(18), 5685-5715.
- Dubois, D., & Prade, H. (1990). Rough fuzzy sets and fuzzy rough sets. *International Journal of General System*, 17(2-3), 191-209.
- Helbing, D., Ammoser, H., & Kühnert, C. (2006). Disasters as extreme events and the importance of network interactions for disaster response management. In *Extreme events in nature and society* (pp. 319–348). Berlin: Springer.
- https://cscmp.org/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms.aspx?hkey=60879588-f65f-4ab5-8c4b-6878815ef921,%202019
- Kayikci, Y. 2018. “Sustainability impact of digitization in logistics.” *Procedia manufacturing* 21: 782-89.
- Khojasteh, Y. (2018). *Supply chain risk management*. Springer, Singapore.
- Lawrence V. Snyder, Zümbül Atan, Peng Peng, Ying Rong, Amanda J. Schmitt & Burcu Sinsoysal (2016) OR/MS models for supply chain disruptions: a review, *IIE Transactions*, 48:2, 89-109
- Meier, A., Portmann, E., & Terán, L. (Eds.). (2019). *Applying fuzzy logic for the digital economy and society*. Springer International Publishing.

- Min, H. (2010). Artificial intelligence in supply chain management: theory and applications. *International Journal of Logistics: Research and Applications*, 13(1), 13-39.
- Özdemir, A., & Özgüner, M. (2018). Endüstri 4.0 ve Lojistik Sektörüne Etkileri: Lojistik 4.0. *İşletme ve İktisat Çalışmaları Dergisi*, 6(4), 39-47.
- Sharma, R., Kamble, S. S., Gunasekaran, A., Kumar, V., & Kumar, A. (2020). A systematic literature review on machine learning applications for sustainable agriculture supply chain performance. *Computers & Operations Research*, 104926.
- Silva, N., Ferreira, L. M. D., Silva, C., Magalhães, V., & Neto, P. (2017). Improving supply chain visibility with artificial neural networks. *Procedia Manufacturing*, 11, 2083-2090.
- Sodhi, M. S., Son, B. G., & Tang, C. S. (2012). Researchers' perspectives on supply chain risk management. *Production and operations management*, 21(1), 1-13.
- Soleimani, S. (2018). A Perfect Triangle with: Artificial Intelligence, Supply Chain Management, and Financial Technology. *Archives of Business Research*, 6(11).
- Tang, O., Musa, S. N. (2011). Identifying risk issues and research advancements in supply chain risk management. *International journal of production economics*, 133(1), 25-34
- Tjahjono, B., Esplugues, C., Ares, E., & Pelaez, G. (2017). What does industry 4.0 mean to supply chain?. *Procedia Manufacturing*, 13, 1175-1182.
- Vanany, I., Zailani, S., & Pujawan, N. (2009). Supply chain risk management: literature review and future research. *International Journal of Information Systems and Supply Chain Management (IJISSCM)*, 2(1), 16-33.
- Waters, D. (2007). *Supply chain risk management: vulnerability and resilience in logistics*. Kogan Page Publishers.
- Zadeh, L. A. (1988). Fuzzy logic. *Computer*, 21(4), 83-93.
- Zou, Z., Tseng, T. L. B., Sohn, H., Song, G., & Gutierrez, R. (2011). A rough set based approach to distributor selection in supply chain management. *Expert Systems with Applications*, 38(1), 106-115.
- Zsidosin, G. A., & Henke, M. (Eds.). (2019). *Revisiting Supply Chain Risk*. Cham: Springer.

CHAPTER IV

GREEN IRONY: GREENWASHING

Asst. Prof. Dr. Vesile OZCİFCİ

Aksaray University, Aksaray, Turkey

e-mail: vesileozcifci@aksaray.edu.tr, Orcid ID:0000-0002-8011-9137

1. Introduction

Environmental concerns that began in the United States in the early 19th century extend to Thoreau revealing the value of the beauty of untouched nature. In 1962, Rachel Carson's work named *Silent Spring* initiated a triggering effect on environmental problems. With these developments, the Green Movement has appeared in many ways in the USA, from production, consumption, purchasing to marketing, and politics. First, businesses have tried to differentiate themselves from environmental concerns. Subsequently, the media drew attention to the green issues in both their routine news and news on special topics. Some particular groups have started to emphasize the relationship between environmental concerns and consumption. Consumers have revealed their environmental concerns through actions such as participation in public opinion surveys, recycling activities, social media and using environmentally friendly products (Yıldız & Kırmızıbiber, 2019).

Environmental concerns have restructured the market and created a new market segment guided by environmentally friendly principles. In this way, consumers have sought to implement green actions such as reducing consumption, recycling, using renewable technologies, reducing waste, and promoting the purchase of green products (Ferraz et al., 2017).

Social media tools that emerged with Web 2.0 has allowed accessing many people at the same time. Thus, it enables individuals to create, publish, control, criticize, and interact online, as well as exchange experiences. In addition to expanding the range of action and increasing awareness of the individual, it also creates the opportunity to discuss a particular product or brand by enabling consumers to discuss, exchange ideas, and interact with each other. It has also become a tool for searching the most useful products by providing the most up-to-date data and information (Özçifçi, 2019). Thus, companies that make their products and production processes less harmful to the environment were able to communicate these changes to consumers. Given that, it is assumed that the increasing rate of those who want to consume in a more socially responsible manner in society will change the purchasing behaviors towards companies using environmental advertisements. In other words, socially responsible consumers see environmental products more

positively (Polonsky et al, 1997). Thus, many businesses understood the importance of acting in terms of social responsibility. However, manufacturers have not always met the demand for green products and services, so they have made unethical promotional initiatives, resulting in distrust of consumers. In this sense, while the importance of green marketing has increased, the phenomenon of greenwashing has become more and more common.

As greenwashing has been cited as a major cause of consumer skepticism and environmentally friendly claims towards corporate social responsibility (CSR), its prevalence threatens the effectiveness of organizations' bona fide CSR policies and the global development of more sustainable societies. Therefore, academic interest in the greenwash phenomenon is growing rapidly (Jong et al., 2018).

2. Greenwashing

Greenwashing was first introduced in 1986 by Jay Westerveld, who noticed the inconsistency when he asked his customers to reuse towels, claiming to have a water conservation strategy for a hotel without any environmental action (Netto et al., 2020).

Due to its versatile structure, there is no exact definition of greenwashing (Lyon & Montgomery, 2015). According to Lyon & Maxwell (2011), greenwashing is the selective disclosure of positive information about a company's environmental or social performance, while withholding negative information on these dimensions.

The Oxford English Dictionary (OED) defines 'greenwash' as 'disinformation disseminated by an organization to present an environmentally responsible public image' (www.oed.com).

According to Terra Choice, it is "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service" (TerraChoice, 2010).

While greenwashing describes the two main behaviors of not revealing negative information about the company's environmental performance and revealing positive information, this two-way behavior is called selective disclosure (Delmas & Burbano, 2011; Baum, 2012; Marquis et al., 2016; Lyon & Maxwell, 2011).

Delmas & Burbano (2011) defined as "poor environmental performance and positive communication about environmental performance".

Baum (2012), the act of disseminating disinformation to consumers regarding the environmental practices of a company or the environmental benefits of a product or service.

Lyon & Maxwell (2011) offer an even more precise definition: “Selective disclosure of positive information about a company’s environmental or social performance, without full disclosure of negative information on these dimensions, to create an overly positive corporate image”.

Marquis et al. (2016) define as “a symbolic strategy whereby firms seek to gain or maintain legitimacy by disproportionately revealing beneficial or relatively benign performance indicators to obscure their less impressive overall performance.”

Selective disclosure is becoming increasingly important for organizations to demonstrate greater responsibility and transparency when considering demands (Marquis et al., 2016).

However, some authors associate greenwashing with decoupling behavior (Siano et al., 2017; Guo et al., 2014). In this sense, according to Siano et al. (2017), “greenwashing tends to deflect attention to minor issues or lead creating “green talk” through statements aimed at satisfying stakeholder requirements in terms of sustainability, but without any concrete action (decoupling)”.

Guo et al, (2014) state that greenwashing is essentially decoupling behaviors that are symbolic environmental protection behaviors with no environmental protection behavior or failure to fulfill environmental protection commitments. At the same time, it distinguishes behaviors that alleviate public pressures and avoid conflict with external factors.

The idea of greenwashing is strongly linked to the ecological marketing (EM) concept. The main task of the marketing approach is to emphasize that the company is environmentally oriented and to attract attention. It also emphasizes the fact that the firm takes environmental issues into account in its development strategy. In other words, the firm ensures that the production methods (and the products themselves) are completely environmentally friendly and even contribute to processes that solve a specific environmental problem (Marciniak, 2009). In fact, no product has zero effect on the environment. Green product for businesses is a product based on expanding or protecting the natural environment by conserving energy and resources, reducing or eliminating waste and toxic (Ottman et al., 2006).

It is a broad umbrella term that covers various forms of misleading communication (Lyon & Montgomery, 2015). In this context, the greenwashing problem should be a concern for all businesses. As the number of businesses thought to be doing greenwashing increases, there is generally less trust in environmental claims (Yapraklı & Yıldız, 2018). The main problem with greenwashing is that it misleads consumers who make

environmentally friendly purchases and creates confusion about environmental issues (Koçer & Delice, 2016). Lack of accuracy and specificity of the claims made by many companies can harm the trust of the consumers. Therefore, the high number of environmental claims that do not reflect the truth negatively affect the trust in companies acting ethically in this regard (Netto et al, 2020). Explanations such as eco-friendly, additive-free and organic are written especially on the most prominent part of the packaging, creating a psychological sense of relaxation and confidence in the buyer. In this context, greenwashing is the introduction of all kinds of products in the market with expressions such as green, environmentally friendly, and harmless, or the psychological imposition of this on the audience with different elements used in the advertisement (Efendioğlu, 2012).

Greenwash is commonly understood as a charge against an activity of an organization, such as the production of specific things. Hence, it refers to interpreting an activity as more environmentally friendly than it actually is. However, it is also used for claiming that a societal system uses greenwashing to conceptualize itself incorrectly as green (Lippert, 2011).

When looking at greenwashing in terms of the psychology of consumers; perceived greenwashing is the suspicion of consumers to the contradiction between companies' environmental statements and what they do. However, Feinstein (2013) stated that making deceptive or ostensible claims in advertisements about being environmentalist is "greenwashing" (Yapraklı & Yıldız, 2018).

Bowen (2014), is concerned that the academic literature on greenwashing is limited to four assumptions: (1) it is focused on information disclosure decisions, (2) it is assumed to be a deliberate strategy, (3) it is conceived primarily as a corporate phenomenon, and (4) it is usually assumed to be beneficial for firms and detrimental to society. Therefore, she sees greenwash as "a specific subset of symbolic corporate environmentalism in which the changes are both 'merely symbolic' and deliberately so". Although Lyon & Montgomery (2015), agrees with most of Bowen's concerns, their review states that greenwash covers a range of phenomena that go far beyond the disclosure of information, and that greenwash can range from mild exaggeration to complete fabrication. They also found that the literature strongly suggests that what people get from communication is subjective and filtered by their mental formations, so greenwashing does not need to be deliberate. They stated that although greenwashing is generally seen as harmful, they agreed with Bowen that this may not always be completely bad for society and that with the increase of "green talk" it should clarify when the benefits outweigh the harms.

Lyon & Montgomery (2015) identified seven types of greenwashing as a result of their extensive literature review: Selective disclosure, empty green claims and policies, dubious certifications and labels, co-opted NGO endorsements / partnerships, ineffective public voluntary programs, misleading narrative and discourse, misleading visual imagery.

Netto et al, (2020), developed the main classification as "claim greenwashing" and "executorial greenwashing" at the company and product/service level. Most of the research has focused on claim greenwashing at the product/service level. Parguel et al, (2015) suggest that little research or regulation has been done on "executorial greenwashing", where executive elements such as images, sounds, symbols that evoke nature can mislead consumers as much as claim greenwashing. However "executorial greenwashing" is more difficult to deal with through self-regulation or government regulation than through the organization of lies or misleading claims. Indeed, the list of visuals or pictorial elements that can mislead consumers is endless, depending on the cultural background of each consumer, and it is impossible to offer a universal and definitive proposition. It is therefore essential to identify alternative ways of communicating environmental information and educating the market on greenwashing.

Greenwashing is an act of misleading consumers in the context of an organization's environmental practices (firm-level can be business level/size) or about the environmental benefits (product/service level/dimension) of a product or service. While General Electric's Ecomagination campaign highlights the environmental practices of the organization in advertisements. On the one hand, the Environmental Protection Agency (EPA) tackling the new clean air requirements using lobbying methods is an example of enterprise-level greenwashing. On the product/service level, greenwashing is Energy Star's different (incorrect) certification of refrigerators manufactured by LG. It was later determined that the 10 LG refrigerators that were awarded an ecolabel certificate for energy savings did not actually provide an energy-saving that deserves such certification (Delmas & Burbano, 2011).

The TerraChoice Group (2010) classifies product-level greenwashing as "seven sins" as follows:

Hidden Trade-Off: Labelling a product as environmentally friendly based on a small set of characteristics without paying attention to other important environmental issues.

Home Depot and Lowes encourage customers to do their part by offering on-site recycling for a variety of products, including compact fluorescent lights and plastic bags. Meanwhile, it continues to sell products

worth billions of dollars a year, such as paints that are loaded with toxic content and emit harmful fumes (www.theguardian.com).

No Proof: Claims made without verification with supporting information or a trusted third-party certificate.

Oil Company Chrevon has shown the public that its employees are protecting bears, butterflies, sea turtles, and all kinds of cute animals to show their commitment to the environment. But in the meantime, it was violating the Clean Air Act, the Clean Water Act, and spilling oil into wildlife shelters (www.idealism101).

In 1991, when the American chemical company DuPont made a big deal using double-hull tankers to protect against oil spills, the company turned out to be the largest corporate pollutant in the United States that year (www.idealism101).

Vagueness: Using terms that are too broad or poorly defined to be fully understood.

All-natural does not mean that the product is green. The arsenic, uranium, mercury, and formaldehyde contained in the products are natural substances, but they are toxic (www.ul.com).

Irrelevance: Real claims that are trivial or useless to the consumer.

Many companies often carry the word "No-CFC" on their products. However, CFC is a substance legally prohibited by the Montreal Protocol (www.ul.com).

Lesser of Two Evils: Claiming to be greener than other products in its category when the category as a whole may be environmentally unfriendly.

Another, often unnoticed form of greenwashing is the "greenery" of water bottles. The plastic water bottle's labels often feature colorful pictures of mountains, lakes, or wildlife. These companies claim that they are green and care about nature when producing single-use plastics that end up in our oceans and landfills where they will stay for hundreds of years (www.idealism101).

Nestle - spends millions of dollars to convince the public that their bottled water is beneficial not only for drinking but also for the planet. In 2008 Nestle Waters Canada published an advertisement claiming to be "Bottled water is the most environmentally responsible consumer product in the world.". Several Canadian groups filed a complaint against the company. Five years later, during Earth-Water Day 2013, the International Bottled Water Association announced that bottled water is the "face of positive change" as the industry uses less plastic in its bottles and relies more on recycled plastic. Sustainability promises aside, only

about 31% of plastic bottles are recycled, meaning that "positive change" generates millions of tons of garbage each year, most of which goes to landfills or the ocean.

Nestle's Arrowhead Water claimed that "Mother Nature is our muse" and stated that each of its 13 sources was monitored by their expert teams. In fact, this was promising until the resources were considered to be in California, which has been in a state of drought for five years. The company also bottles water in Arizona and Oregon, both of which are experiencing drought (www.theguardian.com).

Fibbing: Advertising something that is not true.

Among the ongoing concerns over unemployment concerns and energy sustainability in 2013, Westinghouse started an advertisement asking the question "did you know that nuclear power is the largest source of clean-air energy in the world?" The ad claimed to viewers that "their nuclear power plants provide cleaner air, create jobs, and help to sustain the communities in which they operate". However, two years ago Westinghouse was found by the Nuclear Regulatory Commission to conceal flaws in reactor designs and provide misinformation to regulators. However, in February 2016, another facility using Westinghouse reactors, New York's Indian Point, leaked radioactive material into the surrounding groundwater (www.theguardian.com).

In addition to aiming to produce fuel-efficient vehicles within the scope of the Think Blue Project (Think Blue), Volkswagen has planned to lead the world automobile market in terms of environmental awareness with the slogan of "a sustainable and environmentally friendly life". This project has been determined as one of the corporate sustainability targets to be realized between 2010-2018. VW claimed to adopt an environmentally friendly production approach by providing 25% less carbon dioxide emission along with fuel savings in VW cars. Aiming to include consumers within the scope of Blue Behavior in the Think Blue Project, VW called on consumers to choose the right vehicle in order to make a big difference by taking small steps in the name of sustainability. On September 17, 2015, it was determined by the American Environmental Protection Commission (EPA) that consumers were presented with false and misleading representations about the environmental benefits of the products that VW launched as green based on its corporate environmental marketing approach.

During the tests conducted for the measurement of emission in the vehicles produced by VW, the irregularity was revealed when it was understood that they used a fake software to emit less than the normal rate and that these vehicles emit 40 times more carbon compared to normal vehicles to ensure fuel efficiency. With this misleading software used in

vehicles produced between 2009 and 2015, the crisis, which emerged as a result of the realization that the vehicles that passed the tests emit more emissions than the accepted ones in order to provide fuel savings and driving ability, was described as a worldwide "environmental crisis" and received a great response. World press mentioned the "Think Blue" campaign, which VW conducted on behalf of social responsibility, as a green laundering campaign in which it used propaganda instead of providing objective and accurate information to target audiences. This situation increased the pressure of national, international institutions, organizations, and consumers on the company, and with every new negative news and development, the company's worldwide reputation was damaged, and the company suffered great economic losses. (Özdemir, et al., 2017).

Worshiping False Labels: Implying consumers that a product has gone through a legitimate green certification process, often with fake certificate labels.

Since 2001, SC Johnson has launched a labeling system called the "Green List" aimed at communicating its efforts to be environmentally friendly to consumers. S.C. Johnson was sued by Mr. Wayne Koh of California, who alleged it misled Windex products for misrepresenting them as environmentally friendly. In August 2011, SC Johnson agreed with Mr. Koh to change its logo more clearly (www.lexology.com).

In Turkey, green public (known as IETT) buses which have "environmentally friendly" phrase on their body, and cigarettes with seed in their butt and claimed to be a sapling when thrown on the ground are practices that will set an example for green laundering practices (Tarakçı & Göktaş, 2019).

Although there is no type of oil under the name of date oil in the Turkish Food Codex (www.resmigazete.gov.tr), some brands have palm oil expression on their product labels. The date tree is a type of palm, but palm oil and date oil are different products. Due to the widespread knowledge that palm oil is harmful and perception that dates are innocent and harmless, date oil is used instead of palm oil.

Markham et al. (2014) explained that the seven sins more precisely helped spot firm-based or product-based greenwash cases. Baum (2012) stated that the seven sins can show the main ways a company misleads consumers with environmental claims and uses these seven sins as a framework for advertising analysis. According to Antunes et al., (2015) the purpose of the seven sins is to discourage companies from implementing these green marketing strategies by giving consumers the information they should be careful about in their purchasing decisions (Netto et al, 2020).

TerraChoice (2010), reports that 95% of products that claim to be green in Canada and the US have committed at least one of these sins.

Scanlan (2017), proposed new sins on TerraChoice (2010) regarding the conceptualization of greenwashing: False hopes, fearmongering; broken promises, injustice, hazardous consequences, profits over people, and the environment. He stated that these sins have serious effects on the world.

Greenwashing, which is expressed as the use of false or misleading environmental claims, is the most common practice of firms and they use tactics such as spending more money on advertising environmental achievements rather than actually doing something or lobbying against environmental regulations that occur when green advertising is widely used and legislation is very low (Marciniak, 2009).

Terrachoice (2010), an environmental marketing firm, published a report in 2007 that examined the environmental claims of 1,018 products sold at "big box" retailers in the United States and Canada. The report concluded that all but one product had clearly false claims or that risk misleading consumers (Lyon and Maxwell, 2011).

As consumers become increasingly aware of the environmental and social impacts of the products they purchase, they increasingly prefer sustainable products. 66% of global consumers are willing to pay extra for green products, compared to 73% for millennials (Y generation).

Today, consumers can access much more information thanks to the Internet. Therefore, it requires organizations to verify their claims and hold them accountable when their claims do not match the facts. However, this does not mean that there is no greenwashing (www.idealism101.com). With Web 2.0, websites such as greenwashingindex.com enable users to view and rate even greenwashing samples posted by others (Bowen, 2014).

Companies have faced increasing pressure over the past decade to report more about their environmental impact. A growing number of stakeholders, including investors, consumers, governments, and corporate clients, are concerned that evaluating organizational performance requires a more holistic picture than financial indicators can provide, and are increasingly making efforts to persuade companies to disclose information about their environmental and social performance. As a result, the number of companies worldwide that voluntarily publish corporate environmental or sustainability reports has increased significantly. As of 2013, almost all of the top 100 companies in Japan, Malaysia, Indonesia, South Africa, Denmark, France, and the United Kingdom have published environmental reports and more than 86% of such companies in the United States (Marquis, et al., 2016).

Producers go green in order to attract the environmentally conscious segment and to promote the value of their products. To attract green consumers, companies often make environmentally-friendly claims that are indeed uncertain and sometimes false. As a result, “greenwashing” has unfortunately become an ordinary stereotypical attitude in the market (Özel, 2015).

3. Conclusion

In recent years, the sensitivity of consumers and investors to green products and environmentally sensitive companies has been increasing. Therefore, there has been a considerable increase in the number of products declared as green. The changing lifestyle of the consumer, increased awareness of harmful chemicals, increased income, increased concerns about environmental issues and the positive impact of natural products have led companies to turn this change into opportunities. Labels such as 'herbal', 'organic', and natural on products make consumers think that companies have green practices. Greenwashing has started to be seen frequently in marketing practices in the absence of overlap between the actual practices of companies trying to meet consumer demand for green products and those communicated to consumers.

Due to its multi-disciplinary nature, a general definition of greenwashing has not been accepted until now. Greenwashing can be classified into a complex range of options from product-level claims with environmental labeling to firm-level with nature-induced execution elements in sustainability reports. Therefore, the greenwash is in an unstable balance between expectations, messages, and perceptions (Netto et al., 2020).

While green initiatives can reflect positively on companies, greenwashing may have profound negative effects on consumer trust in companies and have serious consequences. Besides, uncertainty regarding legal legislation causes an increase in greenwashing practices.

Some companies are really green in the market. Therefore, legal regulations can protect green companies. In order for environmental practices not to turn into greenwashing, it is necessary to increase the efforts and information in this field by non-governmental organizations, media, and social media, the state, and other common-sense organizations of the society. Thus, the green suspicion of consumers about products and companies will decrease and therefore their purchase intention will increase.

References

- Baum, L. M. (2012). "It's Not Easy Being Green...Or Is It? A Content Analysis of Environmental Claims in Magazine Advertisements from the United States and United Kingdom", *Environmental Communication*, 6(4), 423-440.
- Bowen, F. (2014). *After greenwashing: Symbolic corporate environmentalism and society*. Cambridge, England: Cambridge University Press.
- Delmas M. and Burbano, V. C. (2011). "The drivers of greenwashing", *California Management Review*, 54(1), 64-87.
- Efendiođlu, E. (2012). Yeřil Aklama (Greenwashing) Nedir- Nasıl Yapılır? Seyahat Defteri. <https://seyahatdefteri.wordpress.com/2012/03/25/yesil-aklama-greenwashing-nedir-nasilyapilir/>, (08.07.2020).
- Ferraz, S. B., Buhamra, C., Laroche, M. and Veloso, A., R. (2017). "Green Products: A Cross-Cultural Study of Attitude, Intention and Purchase Behavior", *Mackenzie Management Review*, 18(5), 12-38.
- Guo, R., Tao, L., Yan, L. and Gao, P. (2014). "The effect path of greenwashing brand trust in Chinese microbiological industry from decoupling view", *BioTechnology an Indian Journal*, 10(7), 1827-1831.
- Jong, M. D. T., Karen M. Harkink, K. M. and Barth, S. (2018). "Making Green Stuff? Effects of Corporate Greenwashing on Consumers", *Journal of Business and Technical Communication*, 32(1), 77-112.
- Koçer L. L. and Delice, T. (2016). "Yeřil Reklamlara Yönelik Tutumların Çevresel Duyarlılıđa Etkisi: Çevresel Kaygının Aracılık Rolü", *Humanities Sciences (NWSAHS)*, 11(2):112-138.
- Lippert, I. (2011). Greenwashing. K. Wehr (Ed.), *Green Culture: An A-to-Z Guide*, pp. 421-429, Thousand Oaks: SAGE Publications, Inc.
- Lyon, T. P. and Maxwell, J. W. (2011). "Greenwash: Corporate Environmental Disclosure under Threat of Audit", *Journal of Economics & Management Strategy*, 20(1), 3-41.
- Lyon, T. P. and Montgomery, A. W. (2015). "The Means and End of Greenwash" *Organization & Environment*, 28(2), 223-249
- Marciniak, A. (2009), "Greenwashing as an Example of Ecological Marketing Misleading Practices", *Comparative Economic Research*, 12(1-2), 49-59.

- Marquis, C. Toffel, M. W. and Zhou, Y. (2019). “Scrutiny, Norms, and Selective Disclosure: A Global Study of Greenwashing”, *Organization Science*, 27(2), 483–504.
- Netto, S. V. F., Sobral, M. F. F., Ribeiro, A. R. B. and Soares, G. R. L. (2020). “Concepts and forms of greenwashing: a systematic review”, *Environmental Sciences Europe*, 32(9), 2-12.
- Ottman, J. A., Stafford, E. R. and Hartman, C. L. (2006). “Avoiding green marketing myopia”, *Environment*, 48(5), 22-36.
- Oxford English Dictionary (2012). <https://www.oed.com/>. (08.07.2020)
- Özçifçi, V. (2019). “Sosyal Medya Pazarlaması”, A. Kahraman and E. Güven (Edit), First Edition, *Yeni Nesil Pazarlama Yaklaşımları-Vaka Analizi İle-*, pp:275-290, Ankara: Gazi Kitabevi.
- Özel, A. P.(2015). “Çevresel Aktivizm, Halkla İlişkiler ve Yeşil Aklama Üzerine Kuramsal Bir Bakış”, *Selçuk İletişim*, 8(4), 73-89.
- Parguel, B., Benoit-Moreau, F. and Russell, C. A. (2015), “Can evoking nature in advertising mislead consumers? The power of ‘executional greenwashing’”, *International Journal of Advertising: The Review of Marketing Communications*, 34(1), 1-27.
- Polonsky, M. J., Carlson, L., Grove, S. and Kangun, N. (1997). “International environmental marketing claims: Real changes or simple posturing?”, *International Marketing Review*, 14, 218–232.
- Scanlan, S. J. (2017). “Framing fracking: scale-shifting and greenwashing risk in the oil and gas industry”, *Local Environment The International Journal of Justice and Sustainability*, 1-27.
- Siano, A., Vollero, A., Conte, F. and Amabile S.(2017). “More than words”: Expanding the taxonomy of greenwashing after the Volkswagen scandal”, *Journal of Business Research*, 71, 27–37.
- Tarakçı, İ. E., Göktaş, B. (2019). “Pazarlamanın Yeni Rengi: Yeşil Aklama”, *Third Sector Social Economic Review*, 54(3), 1095-1113.
- TerraChoice, (2010), Greenwashing Report. Retrieved from <http://sinsofgreenwashing.org/findings/greenwashing-report-2009>, (01.07.2020).
- Yapraklı, T. Ş. and Yıldız, T. (2018). “Yeşil Aklamanın Algılanan Risk, Kalite ve Memnuniyet Üzerindeki Etkisi”, *Kafkas Üniversitesi İktisadi ve İdari Bilimler Fakültesi*, 9(18), 359-378.
- Yıldız, E. and Kırmızıbiber, A. (2019). “Yeşil Aklamanın Yeşil Marka Değeri Üzerindeki Etkileri: Otomobil Markaları Üzerine Bir

Uygulama”, Gümüşhane Üniversitesi İletişim Fakültesi Elektronik Dergisi, 7(2), 566-584.

<https://idealism101.com/the-deceiving-art-of-greenwashing/>.
(05.07.2020).

<https://www.resmigazete.gov.tr/eskiler/2012/04/20120412-7.htm>.
(07.07.2020).

<https://www.theguardian.com/sustainablebusiness/2016/aug/20/greenwashing-environmentalism-lies-companies>. (05.07.2020).

<https://www.ul.com/insights/sins-greenwashing>. (05.07.2020).

<https://www.lexology.com/library/detail.aspx?g=aa25309e-e0c2-4db8-b0dd-3491e6f92e87>. (05.07.2020).

CHAPTER XV

INTERNATIONALNON-GOVERNMENTAL ORGANIZATIONS AND HUMAN RIGHTS A RESEARCH IN THE CITY OF IZMIR

Prof. Dr. Nesrin DEMİR* & Prof. Dr. Nezih Metin ÖZMUTAF**

*İzmir Katip Çelebi University, Izmir, Turkey
e-mail: nesrinrgs@gmail.com.tr, Orcid ID: 0000-0002-7337-9643

**İzmir Katip Çelebi University, Izmir, Turkey
e-mail: nezih.metin.ozmutaf@ikc.edu.tr, Orcid ID: 0000-0003-1330-409X

Introduction

As it is known, civil society, which represents the differences of the community and is important in maintaining the democratic system, has an important role in the empowerment of the members of the community, the spread of civil virtues, ensuring public consensus, and ensuring the participation of individuals in the administration.

Of course, it cannot be ignored how important a place NGOs occupy in the democratic system, which is a form of government based on the law where fundamental human rights and freedoms are guaranteed. This situation also shows that democratic values are demanded more at the national and international level and democratization efforts are widespread. Civil networks are undoubtedly very effective in democratizing society, preventing corruption in institutions, preventing embezzlement, increasing participation in society, and informing individuals through mass communication.

Continuing their activities as a tool and harmony of social solidarity, NGOs create an important bridge link of individuals to the state and fulfill an important task in maintaining the democratic system. The activities and efforts of NGOs have played an important role, especially after World War II, in human rights to gain a universal aspect as much as international organizations, which have been very important in terms of the development of human rights. Nowadays, in this environment where mass media communication has reached advanced dimensions and where the age of technology is breaking new grounds, NGOs have risen to a more effective position than international organizations and even governments in terms of raising awareness of social problems.

In this framework, with this study, the strategic orientation of international NGOs, which have missions of human rights, and their perceptions of members in this framework were revealed. In the context of strategic orientation, while the quality and quantity of human resources of NGOs are very important, it can also be stated here how essential the same

human resource is in determining the success level of the activities by taking part in the corporate philosophy, infrastructure and all kinds of applications in the context of strategic value. With this perspective, the relevant member perceptions were determined within the scope of this study.

1. International Non-Governmental Organizations

When the concept of civil society is examined in general, it is seen that the word "civil" is derived from the Latin word *civilis*. Considering the periods when the concept of civil society was first used, it is seen that it dates back to Ancient Greece and the Middle Ages. It is stated that this word was used for citizen and citizen life. The word "civilizing" means bringing a community to a more advanced contemporary level. In other words, civilization is used in the sense of being contemporary. With all these expressions, civil society emerges as a structure within the state but free from the intervention of the state (Karlson, 2002: 76, 99; Kaldor, 2003: 6).

In this context, it is out of the question for the civil society to be formed or established by the public authority. In other words, civil society is not a structure to be established with a legal arrangement. Concerning human rights, the following can be said first: There is a correlation between human rights and civil society. In other words, human rights are also developed in a developed civil society (Demir, 2018: 83). From the perspective of citizens, civil society can also be defined as an environment in which citizen power and resistance against any kind of monopoly and domination exist, or in which activities voluntarily organized are present. In this contemporary context, functions such as democracy, human rights, freedom of expression, defending one's rights, and creating pressure groups on decisions are a voluntary organization (Yıldırım, 2004: 30-32). Within this framework, civil society can be specified as the driving force of quality life in society with an orientation that includes equality, participation, and tolerance (Schwedler, 1997: 5).

Indeed, it would not be wrong to think that the first form of organization that comes to mind when the words "voluntary organization" is pronounced in any part of the world and any language will be non-governmental organizations (NGOs). "Volunteering" can be defined as an individual's taking part in activities that s/he believes to be right with his/her own free will to benefit his immediate and distant surroundings without expecting a financial benefit (Özmutaf, 2010: 3-4), and achieving this in the most ideal way with modest means (Drucker, 1995: 210). In this context, it is important to perceive and evaluate volunteerism as a strategic issue, a rational approach, trust, effort, decisive orientation, and effective use of time. (Ellis, 2002: 2; Siddal, 2000: 16). Volunteering activities, on

the other hand, are realized by various organizations with legal entities (associations, foundations, unions, chambers, etc.) (Kamat, 2003: 67-68; Fisher, 1999: 26-27).

When the social sciences literature is examined, it is a serious problem on how to define NGOs, which is a difficult and complex term to grasp. Despite these uncertainties and the limitations of their meanings, it is seen that they display an increasing quality as they become more important in terms of their roles and functions in the country administration and social life.

When grouping such agencies/organizations, various names are used such as non-governmental agencies/organizations, democratic mass organizations, voluntary agencies/organizations, voluntary sector, third sector, international non-state organizations, non-profit agencies/organizations, non-state actors/organizations, and non-governmental actors, etc. Although some of these denominations are used to refer to specialized civil society actors, most of them are used synonymously (Başlar, 2005: 11). Civil society area is an area where civil society actors exist within society. Before moving on to the functions of NGOs, which started to operate in the international arena immediately after World War II, when we look at their content from a conceptual perspective, first of all, the concept of organization is seen as a community formed by free individuals who do not aim to defend or pursue an ideal or belief, or to put it more explicitly, to achieve especially a non-commercial goal.

Since the concept of non-state is to be understood concerning the expression "public sphere", first of all, what kind of meaning publicity includes should be examined. Habermas expressed the sphere where activities between civil society and the state are carried out as "public sphere" (Habermas, 1996; Hass, 2004: 178-179; Susen, 2011: 44). According to Rappa, the public sphere is a physical sphere of human communication and interaction, a non-physical metaphorical sphere formed by human actions, a sphere where different forms of articulation of information exchange between the two parties and intellectual or non-intellectual debates occur, and a sphere where the planned or unplanned policies of states and non-state actors emerge (Rappa, 2002: 7).

While Habermas, who is one of the contemporary and most influential representatives of critical social theorists, mentions the fact that something must be "open to all" for it to be called public, he states that the term public is not limited to only common places open to general use, services, goods, facilities, and their arrangement. Stating the different meanings attributed to publicity in different situations, Habermas argues that another meaning will emerge in the use of the term "public" by another person and that a power of representation will arise from such situations in which public

approval is included in "publicity." Also, the most common uses of the term publicity as "concerning the public, openness, announcing/publishing which expresses the public who show reaction or are aware of what is going on" according to Habermas refer to its semantic shift and expansion. In such a topic, the subject is the "people" who form the public (Habermas, 2000: 57). Other institutions related to publicity are some central state organs and some media organs such as the press that serves the communication of the public.

According to Habermas, society has emerged with the official institutions representing the state as a public authority on the one hand, and with the "civil society", which is seen as the private economic relations sphere that grows under the wings of the public authority, on the other hand. The public sphere as defined by Habermas is the ground where individuals come together as a result of the distinction between the authority of the state and civil society, the regulation of the state, and the problems that arise in the relations of individuals (Habermas: 173-175). This concept is also effective in the correct understanding of the public opinion, which is one of the indispensable pillars of contemporary democracies.

Besides, the public sphere can exist only in a developed civil society and a liberal state under rule of law. The reason for this is that the public sphere is a communication structure sprouting in the world of life and that public communication comes to being rationally only through non-governmental organizations. Another reason is that although the actors of the public sphere are rooted in the world of life due to their institutions and communicative structure, their fields of action, goals, and strategies are not limited to the world of life. Opinions, beliefs, and arguments found in the public sphere directly target public authorities (Habermas: 173-175). In summary, according to Habermas, the public sphere is equivalent to communication, dialogue, and negotiation in civil society.

Non-governmental organizations are not, obviously, part of the state apparatus. However, they may try to influence the formation of state policies, and unlike private law legal entities, they are composed of individuals who are organized around the same purpose and who do not directly benefit themselves.

It should be said that these organizations stand at a point above the parties and the political views they represent due to their positions in the political spectrum. One of the main functions of these organizations is to contribute functionally to the formation of a pluralistic society. Civil society is considered as an area of social relations that are not directly regulated by the state, but that creates its dynamic. For this reason, it is used to include concepts such as democratization, human rights, political,

social, and cultural pluralism, participation in administration and decision-making, and power-sharing due to its connotations (Doğan, 2002: 239). Non-governmental organizations take their place in the social system within this general framework as autonomous and voluntary social organizations that have started to affect all areas of life.

Many NGOs also claim to function as a "global conscience" that represents broad public interests that are beyond the sphere of activity of individual states or that states have habitually ignored. While not democratically elected, they sometimes help new norms to develop by directly applying pressure on governments or leading businessmen to change policies, or indirectly by changing the established perception of the public. In terms of power resources, these new groups rarely have hard power, but it can be said that the information revolution allows them to greatly increase their soft power. In the current situation, governments now have to share the scene with actors who can use the information to increase their soft power and can directly or indirectly exert pressure on governments by mobilizing their masses (Nye, Jr, and Welch, 2013: 405-406). It can be said that there was an increasing interest in non-state actors in general and non-governmental organizations in the post-Cold War years, and this interest has gained significant momentum, especially since the early 2000s.

Generally speaking, while the population of approximately 40 of the UN member states is less than one million, members of transnational networks of large international NGOs and transborder action groups are expressed in millions.

Space and time spared in the media in the last decade reflect the growth of these organizations; the frequency of the term " non-governmental organization " or " NGO " has increased 17 times on the media since 1992. The mainstream media interest in international NGOs such as Human Rights Watch, Amnesty International, International Red Cross, Greenpeace, Doctors Without Borders has grown exponentially. As the information revolution lowers the cost of global communication, barriers to their entry into world politics are decreasing. For example, in the 10 days following Human Rights Watch's release of the "World Report 2003", which harshly criticized the US government for its stance in the fight against terrorism, 288 newspapers and magazines published articles on the organization (Nye, Jr., and Welch: 406). Undoubtedly, one of the most important issues for NGOs is that they can work independently from states and other organizations and institutions. To put it more clearly, the role of civil society in the country should be recognized, and civil society actors should be able to act independently and defend their ideas, even if they are

incompatible with public authorities. Besides, they depend only on membership fees and donations for their revenues.

When the problems faced by civil society actors are analyzed, it can be seen that since civil society actors oppose the views, policies, and actions of the government in the country they are in, they may be left in situations that hinder their work at local, national, regional and international levels, belittle them, and aim to reverse the impact of their legitimate activities. It is seen that such obstacles can include depriving civil society actors of their freedom and independence or can be in the form of harassment, intimidation, and retaliation (Demir: 57).

Again, the freedom and independence of civil society actors can be limited by the laws and regulations applied in their society. For example, there may be restrictions on their activities or their registration, or restrictions on international funding of associations, or restrictions on groups working in the field of human rights. Apart from this, there may be limitations on financial resources (international sources), and the laws regulating the freedom of peaceful assembly, association, and expression contain discriminatory expressions and may have negative effects on some groups.

2. International NGOs and Human Rights

The role of civil society actors is to bring issues important for the society to the agenda and to carry out activities to solve problems. To exemplify, these activities include the fight against poverty, corruption, and economic inequality, responding to needs in humanitarian crises, including armed conflicts, supporting the rule of law and accountability, enhancing public freedoms, protecting the environment, and combating all kinds of discrimination, etc.

In this context, NGOs can work nationally, regionally, and internationally. From this point of view, it should be said that as the field of civil society is the space that civil society actors occupy within the society; at the same time, this area is the environment and framework in which civil society operates, and the relations between civil society actors, the state, the private sector and society (Demir: 86).

NGOs operate in different fields. Different fields of activity may come to the fore compared to others regarding the international problems that arise in some periods. Among the many agencies or organizations operating as NGOs for human rights in the international arena, the most prominent ones are Human Rights Watch (HRW), Amnesty International (AI), Doctors Without Borders (MSF), International Committee of the Red Cross (ICRC), Oxfam International, etc. The field of human rights emerges

as an area in which the activity constantly develops and the scope expands compared to other fields of activity.

Human Rights Watch is the largest human rights organization based in the USA. It discloses human rights violations to the international community by documenting human rights violations in over 70 countries, drawing media attention to violations, and lobbying governments and organizations to exercise diplomatic pressure on governments violating human rights. Since 2001, the International Federation of Human Rights has entered into action areas that will further develop and strengthen existing human rights organizations, especially established after the Cold War. Reaching out to civilians after armed conflicts, fighting against AIDS, microcredit enterprise, helping street children, crisis prevention measures, etc. constitute its most important fields of activity (<http://www.hrw.org>, 22.08.2020)

Human rights are the most active and well-known field of action for politicians, journalists, and researchers due to humanitarian aid. This field of activity includes legal aid and financial assistance to those exposed to ill-treatment during armed conflicts, whether international or not or, in the context of dictatorships or authoritarian regimes, to the victims of ill-treatment. For example, Amnesty International is a global organization operating in more than 150 countries and territories with more than 7 million members and supporters. It must be said that the establishment of AI again contributed greatly to the internationalization of human rights. The organization has embarked on a struggle to defend and develop human rights with the contribution of theorists working in this field. It is an organization in which the defense of thought criminals and the struggle for civil economic and cultural rights is intensely addressed (<http://www.amnesty.org>, 23.08.2020).

In the international arena, depending on the mission of the organization, people from all over the world who have common goals with their society and environment can get organized, and these organizations develop and grow. The most important factor in this growth is the initiators of the relevant movement, and the corporate philosophy constitutes an important guide while creating such structures. For example, "December 5 International Volunteers Day" annually makes this call: "Come, oh volunteer, wherever you are in the world!" The UN declared the 5th of December as "International Volunteers Day for Economic and Social Development" with a resolution taken in 1985. December 5 International Volunteers Day is celebrated every year in many countries from Afghanistan to Zambia with various activities (EDAM, 2005: 61).

Within the framework of these activities, volunteers work together on hunger, epidemics, women's rights, the environment, and other issues that

"keep civil society alive." To achieve these goals, various units/offices are operating both at regional, national, and international levels, especially in developed countries. These offices, which provide various services, are divided into categories and operate. For example, while young volunteers carry out activities such as working as assistants in various educational organizations, helping to develop websites, etc., adult volunteers, on the other hand, perform activities such as repairing the homes of people in need, distributing food, and mentoring/guiding young people (Ryfman, 2004: 96).

A. The Purpose of the Study

The main purpose of the study is to determine the contributions of NGOs with human rights missions to strategic activities within the scope of member perceptions. In general, institutions have written policies and strategies that are determined concerning their activities. The existence of policies and strategies identified of an institution reveals what that institution will do and how. As it is known, the strategy is seen as a structure consisting of the totality of means and methods that will bring the institution or organization to the vision it wants to achieve, and it has a dynamic structure.

Policies and strategies are created by taking into account the environmental conditions, stakeholders, competencies of the institution, and other institutions working professionally in the field. Besides, policies and strategies are advertised and documented in line within themselves and with the corporate philosophy. The organization announces its policies and strategies through tools that are compatible with its philosophy and structure. In this framework, it was aimed to evaluate NGOs with human rights missions in the context of Izmir.

B. Data Collection Tools

The questionnaire form created within the scope of the research consists of two parts. In the first part, some dimensions are required to be ranked in order of importance in terms of priority and human rights within the scope of the independent variables of the research such as age, gender, education status, duty, duration of experience, and basic issues that the NGO focuses on in practice.

In the second part, 19 statements are assumed to make significant contributions to human rights within the framework of strategic orientation. For statistical evaluations, on a 5-point Likert-type scale, the statements were assigned values of 1 for strongly disagree, 2 for disagree, 3 for moderately agree, 4 for agree, and 5 for strongly agree. The 19 statements were grouped under 3 factors as a result of factor analysis.

C. Data Collection and Analysis

The questionnaire form used within the scope of the research was applied to 214 individuals in the context of 5 NGOs engaged in human rights activities in Izmir province between June 2019 and February 2020. SPSS software was used for statistical analyses. Factor analysis, single-sample t-test, independent two-sample t-test, correlation analysis, and structural equation analysis were performed within the scope of the research.

D. Basic Hypotheses of the Research

Answers were sought within the scope of four basic hypotheses in the research. The basic hypotheses of the research are listed below.

H₁: Within the framework of strategic management ... makes significant contributions to human rights.

H₂: Participants perceive that the... factor (infrastructure, corporate philosophy, or application) is important.

H₃: There is a positive linear relationship between the factors (infrastructure, corporate philosophy, or application).

H₄: There is a perception difference in terms of gender factors (infrastructure, corporate philosophy, or application).

H₅: There is a positive interaction between corporate philosophy, applications, and infrastructure.

IV. Findings

A. Socio-Demographic Findings

The mean age and standard deviation of the individuals ($n = 214$) included in the study were 45.6 ± 12.00 . The mean age and standard deviation were 42.9 ± 11.32 for female individuals and 48.8 ± 12.06 for male individuals.

Of the participants who declared their age, 72.4% ($n = 152$) were university graduates, 21.9% ($n = 46$) were high school graduates, and 5.7% ($n = 12$) had primary-secondary education. Seven participants did not answer this question.

Of the participants, 12.4% ($n = 27$) were in the manager group, and 87.1% ($n = 189$) were in the other (non-manager) group. A participant did not answer this question.

75.6% of the participants ($n = 164$) had 9 years or less and 13.8% ($n = 30$) had 10 years or more experience. Twenty-three individuals did not answer this question.

B. Findings on NGOs and Human Rights

In the study, the participants were asked to rank the main issues on which the NGO they took part in focused on in practice in terms of priority. According to the perceptions of the participants, a ranking has emerged in the form of making strategic contributions, monitoring the situation of human rights, and running campaigns in descending order. However, the percentages obtained were very close (Table 1). Therefore, when the application is considered, it can be interpreted that there was an equivalent approach perception for all three main areas in general.

Table 1. Main Issues That NGO Focuses on in Practice

Main Issues	Responses	
	n	%
Monitoring the situation of human rights	202	33.3
Running campaigns	200	33.0
Making strategic contributions	204	33.7
Total Marking	606	100

On the other hand, the participants were asked to rank six main issues in terms of human rights in order of priority. According to the perceptions of the participants, a ranking has emerged as women's and/or children's rights, human rights advocacy, rights of human rights defenders, refugee/asylum seeker, and disabled rights in order of importance in descending order. The percentages obtained here were also very close (Table 2).

Table 2. Order of Priority Issues in terms of Human Rights within the Scope of NGO Activities

Priority Issues in terms of Human Rights	Responses	
	n	%
Refugee, asylum seeker	208	16.4
Human rights advocacy	214	16.8
Rights of human rights defenders	212	16,7
Women's rights	216	17.0
Child rights	216	17.0
Disabled rights	206	16.2
Total Marking	1272	100

C. Reliability of the Measurement Tool

The 19 statements in the second part of the questionnaire were collected under 3 factors as a result of the explanatory factor analysis conducted within the scope of principal components analysis. The Kaiser-Meyer-Olkin value was found to be 0.890. As a result of Bartlett's Test of Sphericity, the null hypothesis (H0: correlation matrix is a unit matrix) was rejected ($\chi^2_{171} = 3023.243$, $p = 0.000$). The diagonal values of the anti-image correlation matrix varied between the values of 0.930-0.812. Within

the scope of these three findings, it was determined that the structure of 19 statements was suitable for factor analysis (Table 3). As a result of the explanatory analysis, 3 factors were formed. The factors explained the total variance by 71.207%. The first factor explained the total variance by 33.359%, the second factor by 19.976%, and the third factor by 17.872%. The overall Cronbach's alpha value of the three-factor structure was 0.956. According to this finding, it was determined that the factors pointed out by 19 statements explained the subject at a very high level. On the other hand, Cronbach's alpha values were consistent at all levels (Table 3).

The three-factor structure formed as a result of the factor analysis was named according to the statements contained in each factor. In this context, Factor 1 was named as infrastructure, Factor 2 as institutional philosophy, and Factor 3 as an application (Table 3).

Table 3. Factors and Reliability

Within the framework of the strategic orientation... makes significant contributions to human rights.	Factor Name	Factors			Cronbach's Alpha Scores	
		1	2	3	General = .956	
Providing functionality in the application	Infrastructure	.834	.246	.355	.933	
Development of platforms		.813	.197	.312	.936	
Ensuring social solidarity		.809	.199	.256	.937	
Determining strategies (ways to achieve the goals) in a participatory way		.725	.329	.119	.940	
Providing members with training for the target audience		.710	.409	.295	.936	
Developing a non-ideological (human-focused) perspective		.705	.246	.260	.939	
Conducting studies for legal regulations		.652	.314	.364	.940	
Ensuring effective leadership		.607	.317	.295	.943	
Conducting media-oriented studies		.603	.435	.312	.937	
Flexible determination of strategies		.525	.519	.240	.940	
Developing a corporate partner (national, international) relations		.520	.408	.391	.942	
The adoption of the corporate philosophy by the members		Corporate Philosophy	.124	.877	.170	.862
Determining the corporate philosophy (mission, vision, values, and principles) in a participatory way	.341		.782	.138	.792	
Ensuring that the corporate philosophy is perceived correctly by stakeholders	.456		.726	.074	.810	
Improving funding opportunities	Application	.028	.295	.826	.820	
Creating tolerance for differences		.420	.033	.766	.777	
Not acting in a populist way		.445	.016	.630	.804	
Ensuring efficiency in the functioning of the public administration		.430	.277	.604	.803	
Developing infrastructure facilities		.447	.364	.571	.786	

D. Findings on the Statements

H₁ hypothesis (in the framework of strategic management... makes significant contributions to human rights) was accepted for all 19 statements. In other words, the participants perceived that each statement made significant contributions to human rights within the framework of the strategic orientation (Table 4).

Table 4. T-Test within the Scope of the Statements

Within the framework of the strategic orientation... makes significant contributions to human rights.	$\bar{x} \pm s$	One-Sample t-test (Test Value $3 \leq \mu$)	
		t	p
Providing functionality in the application	4.2 ± .70	26.663	.000
Development of platforms	4.1 ± .68	25.465	.000
Ensuring social solidarity	4.2 ± .66	27.422	.000
Determining strategies (ways to achieve the goals) in a participatory way	4.1 ± .71	22.673	.000
Providing members with training for the target audience	4.1 ± .84	19.114	.000
Developing a non-ideological (human-focused) perspective	4.2 ± .72	26.184	.000
Conducting studies for legal regulations	4.1 ± .74	23.228	.000
Ensuring effective leadership	3.9 ± .90	15.739	.000
Conducting media-oriented studies	4.1 ± .92	18.535	.000
Flexible determination of strategies	4.1 ± .72	22.306	.000
Developing corporate partner (national, international) relations	4.1 ± .84	19.188	.000
The adoption of the corporate philosophy by the members	4.3 ± .59	32.619	.000
Determining the corporate philosophy (mission, vision, values, and principles) in a participatory way	4.3 ± .67	28.094	.000
Ensuring that the corporate philosophy is perceived correctly by stakeholders	4.1 ± .72	23.341	.000
Improving funding opportunities	3.6 ± 1.17	8.180	.000
Creating equality for differences	4.1 ± .81	20.904	.000
Not acting in a populist way	4.13 ± .77	22.082	.000
Ensuring efficiency in the functioning of the public administration	4.1 ± .79	20.906	.000
Developing infrastructure facilities	3.9 ± .96	13.562	.000

E. Findings Regarding Factors and Structural Equation

H_2 hypothesis (participants perceive that the... factor is important) was accepted for each factor. In other words, each of the infrastructure, corporate philosophy, and application factors include subjects that make significant contributions to human rights within the framework of strategic orientation according to the participants (Table 5).

Table 5. Single Sample t-Test within the Scope of the Factors

Factor	$\bar{x} \pm s$	One-Sample t-test (Test Value $3 \leq \mu$)	
		t	p
Infrastructure	4.1 ± .60	28.400	.000
Corporate Philosophy	4.2 ± .59	31.178	.000
Application	4.0 ± .70	20.990	.000

H₃ hypothesis (there is a positive linear relationship between the factors) was accepted in all of the bilateral relationships (existence of linear change) between factors. Besides, there was a high level and positive correlation (change together) between "infrastructure and corporate philosophy factors" and between "infrastructure and application factors." A moderate and positive relationship (change together) was determined between the "application and corporate philosophy factors" (Table 6). In other words, giving importance to each factor in terms of human rights within the framework of strategic orientation in the application may lead to positive results within the scope of other factors. That is, the contributions to be made within the scope of each factor will relatively create synergistic effects in terms of human rights within the framework of strategic orientation.

Table 6. Correlation Between Factors

Factor		Infrastructure	Corporate Philosophy
Corporate Philosophy	r	.630**	-
	p	.000	-
Application	r	.740**	.470**
	p	.000	.000

** . Correlation significance level 0.01 (two-way).

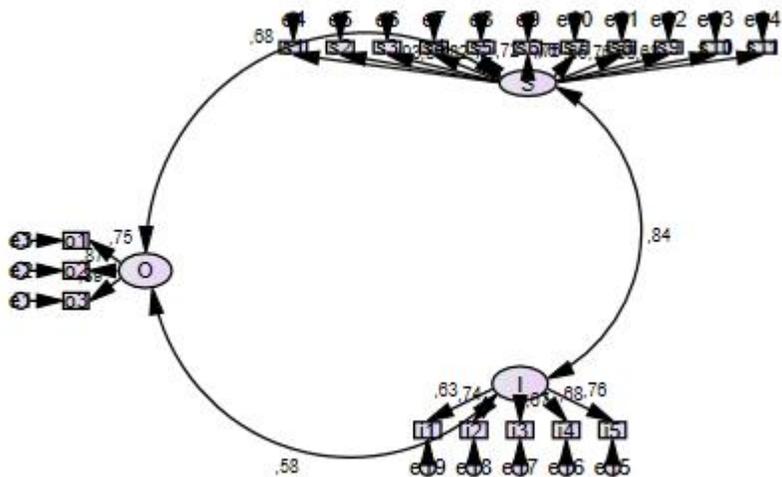
H₄ hypothesis (there is a perception difference in terms of factors by gender) was not accepted for all three factors (Table 7). In other words, perceptions do not differ in terms of the gender of the participants within the scope of the infrastructure, corporate philosophy, and application factors.

Table 7. Factors and Gender

Factor	Gender	n	$\bar{x} \pm s$	Two-Sample t-Test	
				t	p
Infrastructure	Female	118	4.1 ± .55	.124	.901
	Male	98	4.1 ± .65		
Corporate Philosophy	Female	118	4.2 ± .56	.613	.541
	Male	98	4.2 ± .63		
Application	Female	118	4.0 ± .67	.999	.319
	Male	98	3.9 ± .74		

As a result of the structural equation model analysis, **the H₅** hypothesis (there is a positive interaction between corporate philosophy, applications, and infrastructure) was accepted ($p < 0.05$). For corporate philosophy (o: organizational / institutional philosophy) - infrastructure (s: substructure) $\beta=0.68$ was found, for corporate philosophy - applications (i: implementations) $\beta=0.58$ was found, and for applications - infrastructure $\beta=0.84$ was found. These values revealed that the interaction between corporate philosophy, applications, and infrastructure was at a high level. CMIN / DF = 2.063, GFI = 0.928, NFI = 0.912, CFI = 0.910 and RMSEA = 0.078 values showed that the fit in the model was acceptable (Figure 1).

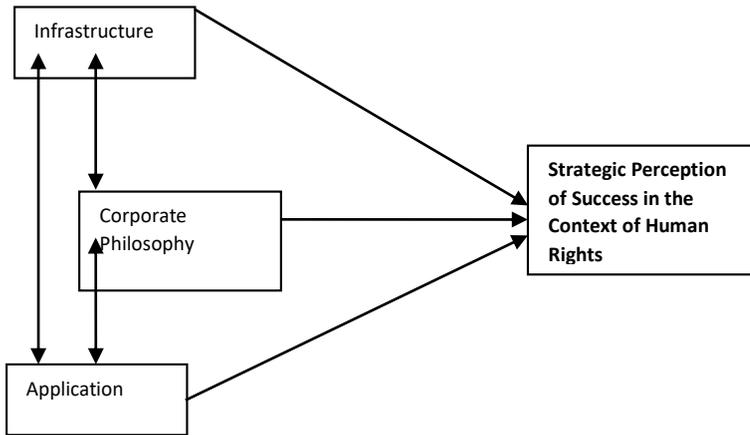
Figure 1. Structural Equation Diagram



GENERAL EVALUATION WITHIN THE SCOPE OF THE FINDINGS

Within the scope of NGOs with contemporary human rights missions, success can be achieved with the corporate philosophy, infrastructure, and applications of the NGO, as it was concluded as a result of the research on strategic-dimensional thoughts and practices that are at the center of administrative success. In this context, the interaction in Figure 2 can be demonstrated based on the findings in Figure 1 and Table 4-5-6.

Figure 2. Strategic Outcome Model for NGOs with Human Rights Missions



As can be seen in Figure 2, it can be stated that a basic framework for human rights was put forward within the scope of the corporate philosophy. In this context, it can be stated that human rights missions, visions for human rights, and values and principles within the scope of human rights have an umbrella function in strategic success. In the international arena, depending on the mission of the organization, people from all over the world who have common goals with their society and environment can get organized, and these organizations develop and grow. The most important factor in this growth is the initiators of the relevant movement, and the corporate philosophy constitutes an important guide while creating such structures. In this framework, it is stated in the literature that not only what should be done but also the corporate philosophies and qualities of NGOs are included in the strategies of NGOs as a message (Kaplan, 2001: 358). With this orientation, NGOs can gain new volunteers while focusing on people and human values in their activities (Inglis and Cleave, 2006: 86).

On the other hand, as seen in the model in Figure 2, the importance attached to the infrastructure activities of the NGO in a strategic dimension

is also a necessary orientation for its success. Besides, by keeping the corporate philosophy of the NGO as a roof structure, the importance it attaches to strategy, people, law, social solidarity, leadership, members, and their development, stakeholders, platforms, media, and functionality also significantly affects its strategic success. When the literature is reviewed, it is emphasized that the credibility of the internal and external environment of the NGO in a holistic strategic framework, its positive image, and ideal access to various opportunities are of importance (Laidner – Kylander et al., 2007: 254). Besides, it is clear that when NGOs communicate with both internal and external environments within a strategic framework, their success will increase (Friedman and Phillips, 2004: 196-197). It is emphasized in the literature, NGOs are based on corporate philosophies in their activities and relationships; in other words, they do not go beyond it ethically (Courtney, 2001: 112), they have relationships legally and consistently (Balsler and McCluskey, 2005: 296, 298), and they attach importance to image and sustainability (Chatterjee and Rai, 2018: 400).

In the third basic scope seen in Figure'2, it can be stated that applications within the framework of corporate philosophy and infrastructure are important in the success of the strategic dimension. Naturally, although the financial framework is not of primary importance for an NGO oriented towards human rights, it is important for the success of the activities. Besides, it is stated that volunteer activities have a formal nature in terms of being within the legal framework and an informal nature in terms of realization through a free will (Oster, 1995: 73-74; Grossman and Furano, 2002: 8,12), and that financial dimension is pleasant but cannot be equivalent of important informal qualities, goals, and targets for the NGO (Ellis, 2002: 2). The financial dimension is important for the ideal realization of administrative activities within the scope of missions (Herman and Renz, 2008: 401-403). In other words, although the financial dimension is not at the center, it is also important for the development of human rights in a strategic context. Besides, it can be stated that the egalitarian approach is of fundamental importance in practices and the development of human rights. In this context, addressing permanent and rational approaches that take the human as its subject rather than populist approaches is another very important framework. It is also a necessary framework to ensure the effectiveness of NGO activities regarding human rights in public administration. While public institutions and organizations are stakeholders of NGOs on the one hand, they can also support beneficial activities on the other hand. On the other hand, development activities for infrastructure facilities for all kinds of activities in practice should be considered in practice within this framework. It is stated in the literature that when the stakeholders of the NGOs are considered as the institutions and organizations of the state, NGOs provide benefits by strengthening

the state and directing it towards the solution of vital problems by showing superior performance with much more modest means (Holl and Midgeley, 1998: 103. -105).

In this context, in face-to-face surveys conducted specifically on human rights in İzmir province, interviews were held with human rights associations, disabled rights associations, and health unions, and members and employees who wanted to express their opinions apart from the questionnaire questions were interviewed. Accordingly, members of the association stated that they are an institution that makes evaluations after receiving individual applications regarding individual complaints, and then report violations of rights after corresponding with the public administration, and then share the results with the domestic and international public opinion and sometimes make press statements on the issue.

Besides, they mentioned that since the region is a transit route for refugees, they are implementing activities that ensure that refugees are closely followed and what is happening in the repatriation centers is revealed. They expressed that they are working in a sharing manner with local NGOs and democratic forces in the regions where their branches are located, they are making efforts to ensure that basic human rights (respect for life) prevail within the framework of international law, and they are trying to highlight the concept of "right to peace." Also, a concept they emphasized strongly was the concept of "volunteerism." It was observed that there was an emphasis that as NGOs are organizations independent of the state, they worked voluntarily in other regions of Turkey as well. It is emphasized in the literature that NGOs and their volunteers exist mainly for the mission of helping, developing human relations, minimizing damage and injustice in society (Yanay and Yanay, 2008: 66).

CONCLUSION

NGOs, also known as non-state actors, have gained a very strong position in the field of human rights, as in other fields, by engaging in remarkable activities, especially in this age. NGOs funded through different sources, donations, special funds, etc. continue their activities through forums and projects in many countries, and contribute greatly to the development of human rights with activities such as emphasizing the regulations regarding human rights and raising awareness on this issue, drawing attention to the issue, and creating public opinion. In the final analysis, NGOs, whatever name they are called, now need to be considered very important entities in the context of making effective a principle-based form of virtue, that have become necessary for the security of the relations of all actors involved in international relations.

With this study, it was revealed as a result of investigating their members' perception in the context of strategic orientation that international NGOs cover the missions, which are the reasons for their existence, all their processes, their activities in the processes, the decisions made in the processes, applications, and audits as an umbrella and care about them. According to the results of the study, for international NGOs, corporate philosophy, infrastructure, and all kinds of applications are issues that positively affect each other in the context of being strategic. Participants emphasized that making strategic contributions was of primary importance. All major human rights issues such as women, children, the disabled, human rights advocacy, rights of human rights defenders, refugees, and asylum seekers should be perceived strategically and reflected onto all administrative processes of international NGOs.

References

- Balser, D., and McClusky, J. (2005). "Managing Stakeholder Relationship and Nonprofit Organization Effectiveness " *Nonprofit Management & Leadership*, 15 (3), pp. 295-315.
- Başlar, Kemal. (2005). *Non-Governmental Organizations in International Law - Global Civil Society in the Post-Westphalia Process*, USAK Publications, Ankara.
- Chatterjee, A., and Rai, A. (2018). Strategic Philanthropy and Its Challenges in India: A Multiple Case Study of Grantmaking Organizations. *Nonprofit Management and Leadership*, 28 (3),
- Courtney, R. (2001). *Strategic Management for Voluntary Nonprofit Organizations*, Florence, USA.
- Demir, Nesrin. (2018). *Protection of Human Rights in the International Arena*, Ideal Kültür Publishing, Istanbul.
- Doğan, İlyas. (2002). *Civil Society in Liberal and Totalitarian Thought Tradition*, Alfa Publications, Istanbul.
- Drucker, F. Peter. (1995). *Management For Future*, Transl: Fikret Üçcan, Türkiye İş Bankası Publications, Istanbul
- EDAM, (2005). *Manual for Civil Societies*, Kaknüs Publications, Istanbul.
- Ellis, Susan J. (2002). *Preparing For The Volunteer's First Day*, <http://www.energizeinc.com/hot/02mar.html>, (Accessed on 10.04.2006).
- Fisher, Julie. (1999). *International Networking –The Role of Southern NGOs-*, Editor: Cooperrider, David, and Dutton, Jane E., Sage Publications, California, USA.

- FRIEDMAN, Andrew and Philips, (2004)".Mary, Balancing Strategy and Accountability A Model for the Governance of Professional Associations", *Nonprofit Management & Leadership*, 15(2), pp. 196-197.
- Grossman, Jean Baldwin, and Furano, Kathryn. (2002). *Making The Most of Volunteers*, P/PV Brief.
- Habermas, J. (1996). *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*, Polity Press, Cambridge, UK,
- Hass, H. (2004). "The Public Sphere as a Sphere of Publics: Rethinking Habermas, Jurgen. (2000). "Theory of the Public Sphere " *Journal of Communication*, (March), International Communication Association, pp. 178-179.
- Herman, Robert D., and Renz David O. (2008). *Advancing Nonprofit Organizational Effectiveness Research and Theory Nine Theses*, *Nonprofit Management & Leadership*, 18 (4), pp. 401-403.
- Holl, Anthony, and Midgeley, James. (1998). *Development Policies: Sociological Perspective*, Manchester University Press., Manchester, USA.
- Inglis, Sue, and Cleave, Shirley. (2006). *A Scale to Assess Board Member Motivations in Nonprofit Organizations*, *Nonprofit Management & Leadership*, 17 (1), pp. 83–101.
- Kamat, Sangeeta. (2003). *NGOs and the New Democracy*, Harvard International Review, USA.
- Karlson, Nils. (2002). *The State of State*, Transaction Publishers, USA.
- Kaldor, Mary. (2003). *Civil Society and Accountability*, *Journal of Human Development*, 4 (1), pp. 6-12.
- Nye, Jr. Joseph S. & David A. Welch. (2011). *Understanding Global Conflict and Cooperation*, (trans. Renan Akman), Türkiye İş Bankası Kültür Publications, Istanbul.
- Laidler-Kylander, Nathalie, Quelch, John A. Simonin, Bernard L. (2007). *Building And Valuing Global Brands in The Nonprofit Sector*, *Nonprofit Management & Leadership*, 17 (3), 254.
- Oster, Sharon, (1995). *Strategic Management For Nonprofit Organizations*, USA: Oxford University Press.
- Özmutaf, Nezih Metin. (2010). *Evaluation of Volunteer Performance in Non-Governmental Organizations-Management Model Proposal*, Birleşik Publishing, Izmir.
- Ryfman, Philippe. (2006). *Non-Governmental Organizations* (trans. İsmail Yerguz), İletişim Publications, Istanbul.

- Schwedler, Jillian, . (1997). *Civil Society and the Study of Middle East Politics, Toward Civil Society in the Middle East*, Lynne Rienner Publishers, Colorado, USA, 1997.
- Siddall, Jillian. (2010). *Managing Volunteers: A Good Practice Guide*, [www.westcd.ie / .../ Managing% 20Volunteers / Managing% 20Volunteers% 20 Practice% 20Guide.pdf.](http://www.westcd.ie/.../Managing%20Volunteers/Managing%20Volunteers%20Practice%20Guide.pdf), (Accessed on 11.01.2010).
- Susen, Simon. (2011). Critical notes on Habermas's Theory of The Public Sphere, *Sociological Analysis*, 5, pp. 37--62.
- Yanay, VG., and Yanay, N. (2008). "The Decline of Motivation? From Commitment To Dropping Out of Volunteering ", *Nonprofit Management & Leadership*, 9 (1), pp. 65-78.
- Yıldırım, Ibrahim. (2004). *Democracy, Non-Governmental Organizations, and Governance*, Seçkin Pub., Ankara.

Internet Access Resources

<http://www.hrw.org>. Access: (14.07.2020).

<http://www.amnesty.org>. Access: (16.07.2020)

CHAPTER XVI

CAN CULTURE EFFECT SAFETY BEHAVIOR? AN EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN ORGANIZATIONAL CULTURE AND SAFETY CULTURE¹

Dr. Burcu AKDENİZ

Kütahya Dumlupınar University, Kütahya, Turkey
e-mail: burcu.akdeniz@dpu.edu.tr, Orcid ID: 0000-0002-3547-8069

1. Introduction

Despite the technological developments aimed at preventing accidents at workplace and legal sanctions getting stricter day by day, occupational accident rates do not decrease in parallel with these efforts, especially in developing countries. One of the important factors causing this problem is human error resulting from unsafe behavior. Changing intentional and unintentional unsafe behavior into voluntary safe behavior is a challenging task which necessitates a strong and positive safety culture compatible with the culture of the company.

Safety behavior, safety culture and organizational culture are interconnected subjects that are usually studied separately. This paper however is based on the idea that in order to improve safety behavior, it is necessary to establish well rooted positive safety culture. Moreover, understanding the general culture of the organization and its dominant characteristics would help to define and develop its safety culture. When these three subjects come together, it would be possible to permanently solve behavior problems that result in human caused accidents in workplaces.

It is generally accepted that culture plays an important role in shaping behavior of people. Koçel (2011) defines culture as an accumulation of learnt and shared values, beliefs, behavior patterns and the meaningful symbols. He distinguishes between the national culture as macro- upper culture and organizational culture as micro-subculture. Organizational culture regulates the behavior patterns in view of what is right or wrong, the valuable aspects of life, legal acts and many more topics (Koçel, 2011).

Every organization is shaped by the culture of the country it is

¹ This paper is derived from the Ph. D. Dissertation by Burcu Akdeniz entitled “An Analysis of the Relationship Between Organizational Culture and Safety Culture in View of Occupational Health and Safety: A Study at a Mining Enterprise” supervised by Assoc. Prof. Dr. Ceren Giderler at Department of Business Administration, DPU, Turkey. A version of it was presented at The 8th PAR International Leadership Conference PILC, 29-30 April 2019, Opatija, Croatia.

established in together with the culture of the sector it belongs to and the culture initiated by its founders and directors. The cultural characteristics of an organization have their roots in the basic values and perceptions shared by its members and are reflected in behavior, working methods, communication styles, traditions, procedures, routine practices and the inter-individual and intragroup relationships. Safety culture, in this context, defines the shared point of view concerning occupational health and safety (OHS) issues, priority degree of safety at work, how the responsibility of safety is shared and how the problems concerning safety are solved in an organization.

This study aims at designing a tangible method to figure out the existing organizational and safety cultures of an institution, determine the strengths and weaknesses of it in terms of the employees' perception and creating better circumstances in which safety behavior can be realized.

In the following sections first, the concepts of organizational culture, safety culture and safety behavior will be defined and explained. Second, results of an empirical study will be presented.

2. Literature overview

In order to understand the reasons underlying unsafe behavior in workplaces that cause occupational accidents, it is essential to get the insight of the culture of the organization. The aspect of culture that shapes safety behavior is safety culture. However, to understand safety culture better, it is necessary to analyze the overall organizational culture. In this section first, the concepts of culture, organizational and safety culture, safety behavior will be explained.

2.1. The Concept of culture

During a period of time, the accumulation of the output produced by a society within efforts of meeting their needs form their culture. Therefore, it is possible to explain the culture of a society with their manufacturing methods and social relationships. Taylor (1871) defines culture as "...that complex whole which includes knowledge, beliefs, arts, morals, law, customs and any other capabilities and habits acquired by a human as member of a society". The four basic variables that shape culture are the society, humans, cultural context and activities of learning (Çeçen, 1985, p. 114). According to Schein (2004, p. 36) culture and leadership are "two sides of the coin". Leadership is the source of the beliefs and values that are used by a group for dealing with its internal and external problems. If the leader's values and beliefs work, and continue to work, the leader's assumptions gradually become shared assumptions.

Schein (2004), describes culture in three levels: artifacts, espoused beliefs and values, underlying assumptions. These levels range from the

very tangible phenomenon that we can see and feel to the deeply embedded, unconscious, basic assumptions which constitute the essence of culture. The various adopted beliefs, values, norms, and rules of behavior within these layers help the group members describe their culture. The term “basic assumptions” refer to the items located in the deepest levels. Unlike values which are open to discussion as one can either agree or disagree with, basic assumptions are taken for granted by the group members and they are not open to negotiation, so much that any misbehavior that contradict with basic assumptions cause an individual to be dismissed and excluded from the group. Artifacts are the tangible elements of culture which are perceived through our senses such as buildings, office structures, logos, emblems, language, myths, ceremonies, clothing style and uniforms. Routine behavior patterns are also included at this level. Shared values are the elements of the culture that are stated orally or in writing such as policies, strategies, aims and targets and management styles (Schein, 2004).

2.2. Organizational culture

Organizational culture is basically defined as “the way in which members of an organization relate to each other, their work and the outside world in comparison to other organizations” (www.hofstede-insights.com, 2019). Güçlü (2003) defines organizational culture as a system composed of norms, behavioral patterns, values, beliefs and habits that shape all members’ behavior within an organization. Culture gives individuals an idea of what to do and how to do it. In other words, organizational culture represents the dominant values and beliefs that shape organization’s members’ thoughts and behavior (Güçlü, 2003, p. 148).

Basic characteristics of organizational culture can be listed as follows (Köse, Tetik and Ercan, 2001, p. 227-228):

- Organizational culture is based on the values shared by the members of the company.
- It defines the working methods and procedures in the company.
- It personalizes companies and distinguishes them from each other.
- It is composed of the dominant and shared assumptions, perceptions, and beliefs and is reflected among employees with symbolic meanings, myths, language, behaviors, slogans etc.
- It affects organizational success.
- The senior management and the leaders have strong influence on organizational culture.

- It is learnt and acquired by the members of the organization and should be shared by them.
- Although it is not a written agreement it is deeply rooted in an organization member's mindset, conscience and memory.
- It is possible to observe organizational culture in regularly repeated behavior patterns.

2.3. Safety culture

Safety culture is the aspect of the organizational culture that represents features of an organization which influence the behavior and attitudes which increase or decrease safety risks (Guldenmund: 2000). Safety culture aims at reflecting the priority of safety in all aspects of life, thus increasing the frequency of safe behavior and eliminating unsafe behavior, consequently reaching high levels of safety performance (Akdeniz, 2018). Guldenmund (2010) defines three basic components of safety culture that are essential for a desired level of safety performance and culture. These interdependent components which altogether shape safety behavior are structure, culture and processes. Structure stands for the authority, responsibilities and interaction among the members of the organization. Culture consists of basic assumptions and tacit judgements. Processes are all the activities performed all over the organization. These processes are evaluated at three levels: first, basic outputs of the organization; second, management and quality assurance and third, formation of policies and strategies (Guldenmund, 2010). This approach is named safety triangle which is presented in Figure 1 below.

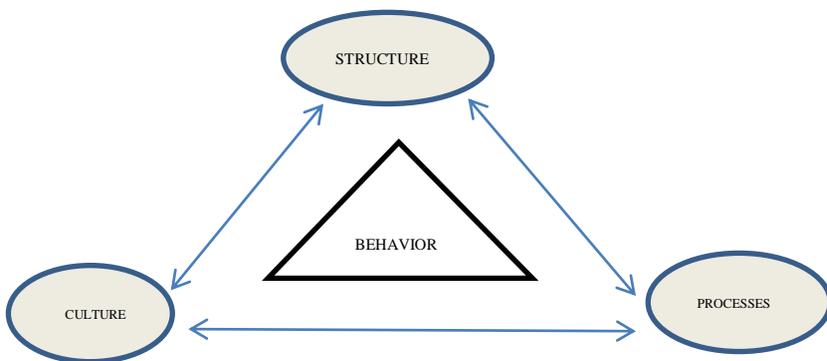


Fig. 1. Safety culture triangle. Source: Guldenmund (2010), “(Mis)understanding Safety Culture and Its Relationship to Safety Management”, p. 147

Saujani (2016) sets forth five basic principles of reaching world class safety culture. These principles are (1) management's safety commitment, (2) employees' commitment to OHS efforts, (3) data collection system, (4) integration of the system and (5) participation of the employees in general. In order to realize these factors, the most important tool is leadership and commitment of the managers. Together with the managers' leading role in shaping the organizational culture, managers should keep in mind that they play a leading role in creating a strong safety culture. They should have internalized the fact that the money to be spent for occupational health and safety efforts would pay back financially together with reduction of workplace accidents.

European Union ICSI- Institute for an industrial safety culture organized a workshop named "Leadership in Safety: Industrial Practice, Working Group Leadership in year 2011. The working group was composed of scholars, EU Occupational Health and Safety Committee representatives and delegates from the industry. They concluded that safety leadership which is a role to be played by the managers in a company should not be underestimated and they stated that (ICSI, 2011):

- The most important factor that influences the worker behavior is the attitude of the management;
- Managers play a critical role in balancing the risks and benefits in safety issues and others;
- The responsibility of safety at a workplace is not only upon the OHS specialists.

As a result, organizational culture shapes safety culture and safety culture has a deep impact on safety behavior. The managers in an organization play the leading role in shaping the culture. Their values, attitudes and approach to safety would inevitably affect the safety culture and thus safety behavior of the employees.

2.4. Safety behavior

Safety behavior is one of the important aspects of safety culture. Some recent researches carried out in the field of OHS revealed that most of the workplace accidents take place because of the unsafe behavior of the employees. Therefore, it is a widely accepted fact that in order to decrease the frequency of workplace accidents unsafe behavior should be eliminated. To this end, the conventional methods of safety trainings, strict discipline methods such as punishment and prohibitions are employed in general (Cooper, 2001).

Safe and unsafe behaviors are two basic concepts of behavior- based safety approach which are used for understanding and explaining the reasons of workplace accidents. Dursun and Keser (2014) define safe

behavior as appropriate use of personal protective equipment, obeying the safety policies and procedures designed for decreasing risks of injury and potential hazards and similar behavior. Safety behavior is classified as safety compliance and safety participation. Safety compliance stands for the behavior that complies with safety rules, regulations and procedures within the organization, while safety participation represents voluntary participation by the employees to all safety activities such as safety trainings and meetings. (Dursun and Keser, 2014).

Geller (2005) discriminates between knowingly at-risk behavior and unknowingly at-risk behavior. Unknowingly-at risk behavior is caused by either inadequate training or inattentiveness and can be detected through observation. This kind of unsafe behavior is possibly corrected through feedback, trainings and rewards. However, it is not so easy to change knowingly at-risk behavior as in this case the individual calculates the risks and ignores the safety precautions deliberately. Therefore, in the first case educative and supportive interventions can change unknowingly at-risk behavior into knowingly safe behavior. On the other hand, in order to solve the problem in the second case the motivations of the individual need to be determined and in addition to the interventions in the first case, motivational intervention is needed (Geller, 2005). However, it should be kept in mind that behavior is not possibly developed independently from the external factors. Most worker behavior is an outcome of the work culture. It is not right to presume behavior is a cause of an accident on its own. Rather, behavior is one of many contributing factors to an accident, together with management factors, environmental and engineering factors, cultural factors, and even person-states. The human side of safety is complex and dynamic (Geller, 2012).

One of the obstacles to realizing safety behavior is habits which are formed within culture and socialization process. However well planned the safety procedures and rules are, human behavior may cause a “short cut” anytime anywhere. People focus on the important tasks while they do other routine tasks automatically as habitual work (Page-Bottorff, 2016). Within the culture of the organization, if safe behavior is embedded in the employees’ habits there is possibly a positive safety culture. However, if unsafe behavior is preferred when they are under stress or there is a deadline to keep this means importance of safety is not internalized by the workers and the culture of the company does not cultivate safe habits.

3. The Relationship between organizational culture and safety culture

In literature, there is a number of studies evaluating companies’ and other institution’s safety cultures and organizational cultures. These studies are searching for the relationship of organizational culture with many

aspects of the organizations such as job satisfaction, mobbing, organizational citizenship or the relationship of safety culture with safety performance, safety behavior, accident rates or demographical qualities of the employees. This study aims at approaching the subject of safety culture, which is critically influential in formation of safety behavior within the framework of the organizational culture types.

Saldana et al (2012) conducted a research study at a nuclear power plant to show how to improve the safety culture by acting on organizational culture styles. They conducted a survey using the safety culture questionnaire based on the five characteristics established by the International Atomic Energy Agency (IAEA) and the Organizational Culture Inventory (OCI) to assess organizational culture. The study revealed statistically significant relationships between organizational culture styles and safety culture. They concluded that constructive organizational culture styles have the greatest influence on safety culture. In contrast, the defensive styles do not exhibit a clear relationship with safety culture. Detailed studies of each OCI style revealed some specific actions which help enhance or hinder the safety culture (Saldana, Herrero, Otero, Llorente, 2012).

With a similar approach, this present study aims at determining the relationship of safety culture dimensions with organizational culture types defined by Organizational Culture Assessment Tool- OCAI based on Kim and Cameron's Competing Values Framework.

Noort et al (2016) stated that although the relationship between national culture and safety culture received relatively little attention in the occupational psychology literature, there is a need to better theorize how national culture might influence safety culture. Moreover, it is necessary to consider implications of this for safety culture assessments. In case employees' safety-related beliefs and practices are influenced by national culture, this would indicate that safety culture data may reflect both aspects of safety management and the social norms and beliefs of the country where employees are based. As a result, they focused on questions over how safety culture data from different countries can be compared to identify problems in safety management and opportunities for learning and they developed a theoretical framework for how national culture might influence safety culture. Focusing on Hofstede's uncertainty avoidance (UA) index, they conducted a survey study of 13,616 Air Traffic Management employees in 21 European countries and found a negative association between safety culture and national norm data for UA. They determined influence of national tendencies for UA upon attitudes and practices for managing safety like anxiety on risk; reliance on protocols; concerns over reporting incidents; openness to different perspectives. The study concluded that the relationship between UA and safety culture might

have implications for international safety culture assessments (Noort, Reader, Shorrock and Kirwan, 2016).



Fig. 2. Onion of safety behavior within layers of culture

It is proposed here that some organizational culture types are correlated with some certain dimensions of safety culture. If the dominant organizational culture features and types are determined for a company, it would be possible to foresee the strong and weak dimensions of its safety culture and determine the causes of unsafe behavior that result in accidents and injuries. So, the safety behavior onion (Figure 2) proposed by the author here aims at describing the culture factor that shapes safety behavior, keeping in mind that culture is not the only factor that causes unsafe behavior but it is a strong and deeply embedded one within our lives. Although the effect of national culture is not included within the scope of this very paper, an approach based on comparing different national cultures is deemed to be worth considering in further studies.

The organizational culture literature is rich in terms of models and approaches. Some of them are aimed at explaining culture such as Parson's AGIL Model, Ouchi's Culture Z Model and Schein Model while some others are for classifying culture types such as Denison Model, Byars Model and Quinn & Cameron's Competing Values Model. There are also many scales for determining safety culture, and usually some of them are put together for deriving an appropriate scale for the target organization type and the aim of the research thereof. In this study, as an organizational culture model, Queen and Cameron's (1999) Competing Values Framework, which is composed of four dimensions, was chosen. In order to define the safety culture of the enterprise, Dursun's (2012) safety culture assessment tool which is composed of 8 dimensions was used.

3.1. Competing values framework andOCAI

In their search for explaining organizational cultures Cameron and Quinn first formed a list of thirty-nine indicators of effectiveness for organizations. Then, they found two polarities by statistical analyses that make the difference in terms of organizational effectiveness. Organizations either choose “Internal focus and integration” or “External focus and differentiation” or “Stability and control” or “Flexibility and discretion”. It is not possible to have both polarities for one hundred percent at the same time. Therefore, they are called competing values. Considering these two dimensions in a matrix with four quadrants the Competing Values Framework was designed. As seen in Figure 4, these four quadrants correspond with four Organizational Culture Types that differ strongly on these two dimensions or four values (Cameron & and Quinn, 2006).

The resulting culture types can be explained as follows (Cameron & and Quinn, 2006):

Clan Culture: This organization has basically a friendly environment. People share many things and it feels like a large family. The leaders and the managers are considered to be mentors or even father figures. What holds the organization together is loyalty and tradition. Involvement matters a lot. The organization cares about long-term development of human resource and employees are attached to each other by morals. Success is based on answering the needs of the clients. Teamwork, participation, and consensus are promoted.

Leader: facilitator, mentor, team builder

Values: Commitment, communication, development

Effectiveness is based on: Human resource development and participation

Improvement Strategy: Empowerment, team building, employee involvement, human resource development, open communication.

Adhocracy Culture: This organization is a dynamic and creative work place. Employees take reasonable risks for success. Leaders are supposed to be innovators and risk takers. The main values that keep the employees together are experiments and innovation. The long-term goal for the organization is to get bigger and create new resources. Success is defined with availability of new products or services. Most importantly individual initiative and freedom are supported.

Leader: Innovator, entrepreneur, visionary

Values: Innovative outputs, transformation, agility

Effectiveness is based on: Innovativeness, vision and new resources

Improvement Strategy: Surprise and delight, creating new standards,

anticipating needs, continuous improvement, finding creative solutions.

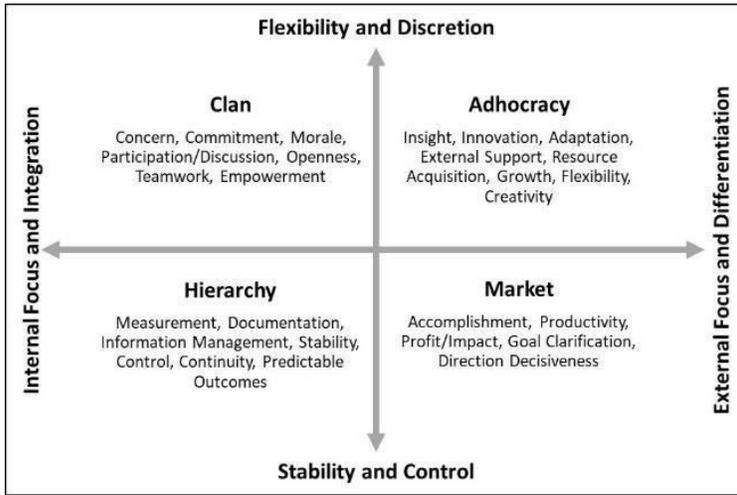


Fig. 3. Culture types in Competing Values Framework, Source: Wozir and Yurtkoru (2017)

Market Culture: This organization is based on results where finishing work is the most important part of procedures. People care about competition and they focus on goals. Leaders are supposed to be hard drivers, producers, and rivals. They are tough and their expectations are high. The factor that keeps the organization together is the importance of winning. The most important values are reputation and success. Long-term targets are rivalry and reaching goals. Success is defined by market penetration, stock, competitive prices and market leadership. The style of the organization is based on competition.

Leader: Hard driver, competitor, producer

Values: Market share, goal achievement, profitability

Effectiveness is based on: Aggressively competing and focusing on customers

Improvement Strategy: Measuring client preferences, improving productivity, creating external partnerships, enhancing competitiveness, involving customers and suppliers.

Hierarchy Culture: This is a kind of organization with the most formalized and structured working environment. The tasks to be done and how to do them is decided by procedures. Leaders and managers are defined by their efficiency-based coordination and ability of organization. The most important value is keeping the organization functioning flawlessly. The main factors that keep the organization together are formal rules and policies. The long-term goals are stability and efficient and

flawless execution of tasks. Success is defined by trust, smooth planning, and low costs. The personnel management based on work security and predictability. Quality improvement strategy is composed of error detection, measurement, process control, systematic problem solving and quality tools.

Leader: Coordinator, monitor, organizer

Values: Efficiency, timeliness, consistency, and uniformity

Effectiveness is based on: Control and efficiency with capable processes

Improvement Strategy: Error detection, measuring, process control, systematic problem solving, quality tools

3.2. Dimensions of safety culture

Eight basic safety culture dimensions were determined by Dursun (2012) through literature review and a qualitative research study. Thus, a safety culture tool was designed. These dimensions are as follows:

1. *Managers' safety commitment*: This dimension explains the perception concerning the managers' attitude and efforts for improving occupational safety and health conditions around the organization. This dimension represents the safety leadership role played by the managers. If this level of safety culture is high, it is possible to talk about strong safety leadership in the organization.
2. *Priority of safety*: This dimension evaluates the employees' perception concerning priority of safety for the management and the organization as a whole. If the workers are convinced that the management genuinely cares about safety, they would behave accordingly and take safety more seriously.
3. *Safety communication*: This dimension evaluates quality and effectiveness of the existing communication channels and methods concerning safety issues in the organization. If the communication capacity is adequate, in other words, if the employees are able to share their concerns, comments and demands in both formal and informal ways with the management, there is a positive safety culture.
4. *Safety training*: This dimension explains the effectiveness and adequacy of safety training given to the employees. It evaluates their perception of the quality of the trainings. This is another positive aspect of safety culture.
5. *Safety awareness and competency*: This dimension explains the employees' awareness level of the safety risks of their work and their self-confidence in terms of dealing with these risks. It is a

positive aspect of safety culture.

6. *Employees' safety involvement*: This dimension explains the employees' voluntary rule-governed behavior and willingness to play a role in shaping a safe workplace. This is a positive aspect of safety culture.
7. *Reporting culture*: This dimension is concerned with reporting of occupational accidents and near misses to the management. It covers both formal and informal reporting habits and is a positive aspect of safety culture.
8. *Fatalism*: This dimension represents the employees' personal beliefs concerning safety risks and accidents. Their superstitions or religious ideas on occupational accidents and their faith in destiny play a role in formation of their approach to inevitability of accidents. This is a negative aspect of safety culture: the higher the fatalism level the poorer the safety culture.

4. Methodology

The dependent variable of the study is safety culture and the independent variable is organizational culture. The study was performed using the OCAI organizational culture scale by Cameron and Quin (2009) and a safety culture survey tool developed by Dursun (2012) and ten demographical questions. The four organizational culture types are Clan, Adhocracy, Market and Hierarchy, and the dimensions of safety culture are Managers' safety commitment and priority of safety, Safety training and communication, Employees' involvement, Safety awareness and competency, Fatalism and Reporting culture.

The survey was performed in a state-owned large coal mine institution located in Kütahya province. Considering the large number of employees of the institution, which was about 1800 people at that time, a sample of 333 people was needed due to 10% error margin and 5% significance level (Baş 2001, p. 46). Therefore, in order to increase reliability, 1000 survey forms were distributed among members of the whole institution employed in each department. Only 704 forms were returned. After eliminating the empty and incomplete forms a total of 529 forms were included in the analyses. The data was entered to SPSS 18 program and analyses were initiated. Following the determination of percentages concerning demographical features of the participants, correlation and regression analyses were performed in order to determine the relationship between the organizational culture dimensions and safety culture dimensions. The safety culture assessment tool was originally composed of 8 safety culture dimensions. However, as the dimensions of managers' safety commitment and priority of safety came together as one dimension and the dimensions

of safety training and safety communication came together as one dimension the factor analyses revealed a total of 6 dimensions for the chosen population in this study.

5. Results and discussion

The data collected were entered to SPSS 18 and the relationship between variables were analyzed through first correlation then linear regression analyses.

The effect of organizational culture dimensions on the dimensions of safety culture was examined using linear regression analyses. Due to the high correlations among the independent variables, variance inflation factor (VIF) were checked prior to analyses. The highest value was 5.86. Moreover, Durbin-Watson coefficients were calculated.

Table 1 The relationship between the dimension of “Managers’ safety commitment and priority of safety” and organizational culture types

Managers’ safety commitment and priority of safety	R^2	$Adj. R^2$	$F_{(4, 513)}$	β	t
Clan	.50	.50	128.50***	.31	4.76***
Adhocracy				-.10	-1.40
Market				.05	.74
Hierarchy				.48	9.13***

*** $p < .001$, ** $p < .01$, * $p < .05$.

As seen in Table 1, the dimension of managers’ safety commitment and priority of safety significantly and positively predicts Clan ($\beta=.31$) and Hierarchy ($\beta=.48$) cultures and the independent variables included in the analysis explain 50% of total variance.

Table 2 The relationship between the dimension of “Safety training and communication” and organizational culture types

Safety Training and Communication	R^2	$Adj. R^2$	$F_{(4, 513)}$	β	t
Clan	.41	.41	90.24***	.22	3.18**
Adhocracy				-.05	-.62
Market				.12	1.55
Hierarchy				.40	6.90***

*** $p < .001$, ** $p < .01$, * $p < .05$.

The findings related to safety communication and education follows a similar pattern. Accordingly, Clan ($\beta=.22$) and Hierarchy ($\beta=.40$) cultures significantly and positively predict the dependent variable and the independent variables included in the analysis explain 41% of the total variance.

Table 3 The relationship between the dimension of “Safety Awareness and competency” and organizational culture types

Safety Awareness and Competency	R^2	$Adj. R^2$	$F_{(4, 513)}$	β	t
Clan	.17	.16	25.51***	.086	1.03
Adhocracy				-.10	-1.03
Market				.17	1.88
Hierarchy				.28	4.01***

*** $p < .001$, ** $p < .01$, * $p < .05$.

As seen in Table 3, the regression analysis conducted for safety awareness and competency reveal that only Hierarchy ($\beta=.28$) culture significantly and positively predicts the dependent variable and the independent variables explain 17% of the total variance.

Table 4 The relationship between the dimension of “Employees’ involvement” and organizational culture types

Employees’ Involvement	<i>R</i> ²	<i>Adj. R</i> ²	<i>F</i> (4, 513)	<i>β</i>	<i>t</i>
Clan	.24	.24	40.60	.03	.40
Adhocracy				.33	3.58***
Market				.03	.39
Hierarchy				.12	1.91

*** $p < .001$, ** $p < .01$, * $p < .05$.

As seen in Table 4, the regression analysis results for employees involvement show that only Adhocracy ($\beta=.33$) culture significantly and positively predicts the dependent variable and the dependent variables explain 24% of the variance.

Table 5 The relationship between the dimension of “Fatalism” and organizational culture types

Fatalism	<i>R</i> ²	<i>Adj. R</i> ²	<i>F</i> (4, 513)	<i>β</i>	<i>t</i>
Clan	.05	.04	6.14	-.12	-1.32
Adhocracy				.18	1.69
Market				.21	2.17*
Hierarchy				-.17	-2.37*

*** $p < .001$, ** $p < .01$, * $p < .05$.

As seen in Table 5, the regression analyses concerning fatalism reveal that while Market ($\beta=.21$) culture positively predicts the dependent variable, Hierarchy ($\beta= -.17$) culture significantly and negatively predicts the dependent variable. Independent variables explain 5% of the variance.

Table 6 The relationship between the dimension of “Reporting culture” and organizational culture types

Reporting Culture	<i>R</i> ²	<i>Adj. R</i> ²	<i>F</i> (4, 513)	<i>β</i>	<i>t</i>
Clan	.17	.17	26.52	.15	1.77
Adhocracy				-.06	-.63
Market				.20	2.28*
Hierarchy				.16	2.28*

*** $p < .001$, ** $p < .01$, * $p < .05$.

The fact that the dimensions of Managers’ safety commitment and Priority of safety came together as one dimension in this study reveals that participants consider safety as responsibility of the managers and if they

do not perceive safety as a priority, the employees will not, either. This fact underlines the importance of the role of safety leadership for the managers.

As for the role played by organizational culture types in creating an effective safety culture the relationship of the dependent and the independent variable should be evaluated.

Firstly, Hierarchy type of organizational culture was determined to be the best type as it is positively related with 4 out of 5 positive dimensions of safety culture. It was also negatively related with the only negative dimension of safety culture, which is Fatalism. The only positive dimension which was not affected by Hierarchy is Employees' involvement. It can be concluded that as long as necessary steps are taken in a hierarchical organization in order to realize contribution and involvement of all the employees in safety decisions and designing of the safety procedures, the best conditions to create a positive safety culture would be available.

Secondly, the Clan type of organizational culture was determined to be in positive relationship with Managers' safety commitment and priority of safety dimension and Safety training and communication dimension. This result is compatible with the role played by the managers in a clan type organization. In such organizations the managers are the leaders and mentors to be followed. Thus, if they perceive safety as a priority, the employees will do the same. Safety communication, which is not possibly thought separately from safety training by the participants, is best facilitated in a clan type organization. It can be concluded that the close relationships which are informal to some extent facilitate effective safety communication.

As for the Market type of organizational culture, it was determined that it is positively related with Reporting culture and Fatalism dimensions. Reporting culture of an organization includes both formal and informal reporting of accidents and near-misses. Formal reporting is predetermined by the rules and procedures and have their place in hierarchical system. However, informal reporting is sometimes more crucial as it is faster, and it includes extra information which would not be available for the management unless the employees are eager to report by themselves. This result suggests that informal communication is facilitated by the market type of organizational culture. Considering the fact that Fatalism is a negative dimension of safety culture, and the analysis result suggesting that it is positively related with the Market type, it is possible to presume that in a private sector coal- mine where Market dimension is dominant, safety might be less important than competing with the rivals and reaching the goals. This is not advisable in terms of OHS principles.

Finally, Adhocracy type of organizational culture was determined to be related only with the Employees' involvement dimension. As a matter of fact, this type of organizational culture mostly refers to financing sector companies and businesses with low-risk office-based environment, commonly based on services such as advertising. On the other hand, in this type of organizational culture employees are normally granted a considerable extend of autonomy and freedom of speech. This facilitates involvement of all the employees within the decision-making process concerning safety issues.

Consequently, remembering that an organization does not possibly have only one dominant culture type but usually all these four dimensions in varying strengths, an ideal combination of them having the most dominant one as the hierarchy type of organizational culture would be ideal for creating a strong and positive safety culture.

6. Conclusion

The first limitation of this study is that it was conducted for one sector at one organization. Thus, more studies in different organizations in the same sector and later for other organizations of different sectors would contribute to more concrete conclusions. It is also planned to enlarge this research to include organizations of the same sector in different countries so as to understand the effect of national culture on safety culture and safety behavior.

This research study aims at approaching the problem of unsafe behavior in workplaces from a cultural perspective and underlining the importance of safety leadership role to be played by the managers in organizations. Organizational culture is a complex structure which is not easy to describe or reshape. However, once it is interpreted with its strengths and weaknesses it is possible to draw a roadmap to reshape it with the desired features with the effort of the management and contribution of all employees. This is neither easy nor a short time process but once it is achieved, the help of the strong and positive safety culture in creating much safer workplaces would be incredible, and this time it would last for a long time independently from the changes in the management personnel and employees around the organization. Safety behavior can be improved making use of various tools. Creating a positive safety culture in an organization would create the context where it is possible to shape and endure intentionally and unintentionally safe behavior without resorting to strict rules and punishment.

References

- Baş, T. (2001). Anket [Survey]. Seçkin Yayıncılık, Ankara.
- Cameron, K. S. & Quinn, R. E. (1999). Diagnosing and Changing Organizational Culture, New York: Addison-Wesley.
- Cameron, K. S. & Quinn, R. E. (2006). Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework. Revised Edition San Francisco: The Jossey- Boss: Business and Management Series.
- Cooper, M. D. (2001). Improving Safety Culture: A Practical Guide, Applied Behavioral Sciences, Hull.
- Cecen, A. (1985). Kültür Yönetimi [Managing Culture]. *Amme İdaresi Dergisi*, 18/ 2, 113-140.
- Dursun, S. (2012). İş Güvenliği Kültürü [Occupational Safety Culture], Beta, İstanbul.
- Dursun, S. and Keser, A. (2014). İş güvenliği farkındalığı ve iş güvenliği davranışları arasındaki ilişkilerin araştırılması: uygulamalı bir araştırma [An Empirical study on the relationship between occupational safety awareness and safety behavior], *Çalışma İlişkileri Dergisi*, 5/ 2, 1-9.
- Geller, E. S. (2005). Behavior-based safety and occupational risk management, *Behavior Modification*, 29/ 3, May 2005, 539-561, Sage Publications.
- Geller, E. S. (2012). It's not so simple: Understand the human Dynamics of worker safety, *Industrial Safety and Hygiene News*, 54- 55.
- Guldenmund, F. W. (2000). The nature of safety culture: a review of theory and research, *Safety Science*, 34, 215-257.
- Guldenmund, F. W. (2010). (Mis)understanding safety culture and its relationship to safety management, *Risk Analysis*, 30/ 10, 1466-1480.
- Güçlü, N. (2003). Örgüt Kültürü [Organizational Culture], Gazi Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 4/ 3, 147-158.
- ICSI The Institute for an Industrial Safety Culture (2011). Leadership in Safety: Industrial Practice, Working Group Leadership in Safety Report, France.
- Koçel, T. (2011). İşletme Yöneticiliği [Managing a Business], Beta, İstanbul.
- Köse, S., Tetik S. and Ercan, C. (2001). Örgüt kültürünü oluşturan faktörler [The factors that form organizational culture]. *Yönetim ve Ekonomi*, 7/1, 219-242.

- Noort, M. C., Reader T. W., Shorrock S. and Kirwan B. (2016). The relationship between national culture and safety culture: Implications for international safety culture assessments, *Journal of Occupational and Organizational Psychology*, 89, 515–538.
- Page-Bottorff, T. (2016). The habit of safety: Forming, changing, and reinforcing key behaviors. *Professional Safety*, 42-43, Retrieved from: www.asse.org, 11.04.2016.
- Saldana, M. A. M., Herrero, S. G., Otero, A. T. and Llorente, J. M. G. (2012). Relation between organizational culture styles and safety culture, Conference Paper: Advances in Safety, Reliability and Risk Management - Proceedings of the European Safety and Reliability Conference, ESREL 2011, Project: Measuring and improving Safety Culture through discussion groups.
- Saujani, M. (2016). How to cultivate a world-class safety culture: actively engaging employees using the five pillars of safety, Create Space Independent Publishing Platform, California, US.
- Schein, E. H. (2004). *Organizational Culture and Leadership*, Jossey-Bass, San Francisco, US.
- Wozir, F. M. and Yurtkoru, E. S. (2017). Organizational culture and intentions towards types of whistleblowing: the case of Turkey and Ethiopia. *Research Journal of Business and Management (RJBM)*, 4, Issue 4, 527-539.
- <https://www.ishn.com/articles/94814-understand-the-human-dynamics-of-worker-safety>
- <http://www.ocai-online.com/about-the-Organizational-Culture-Assessment-Instrument-OCAI/Organizational-Culture-Types>
- <https://www.hofstede-insights.com/models/organisational-culture/>

CHAPTER XVII

SYSTEMIC FINANCIAL RISK COMPONENTS IN MACRO-PRUDENTIAL POLICIES AND STRUCTURAL DISCREPANCY IMPACTS IN THE EU

Prof. Dr. Ahmet Niyazi ÖZKER

Bandırma Onyedi Eylül University, Faculty of Economics and
Administrative Sciences, 10200-Turkey
e-mail: niyaziozker@yahoo.com, Orcid ID: 0000-0001-5313-246X.

1. Introduction

Systemic risk concept as related to macro-prudential policies, which are emphasized in the macroeconomic alterations and effective financial process, emerges as a universal financial phenomenon in the EU. This phenomenon, which also means important structural dynamics with high impact levels in the formulation of financial balance policies, also expresses an impact level of macro-prudential policies that also perform the financial control function to a large extent. In other words, it is a set of structural approaches in which the foreign financial shocks are included in the process to reveal the financial imbalances and causes of the EU countries more clearly. The attempts to overcome the financial instability caused by the EU countries, especially after the 2009 global financial crisis, with regulatory policies across the EU, has revealed the primary purpose of financial systemic risk analysis. In this context, systemic financial risks are a group of policy analyzes that need to be identified as a common policy set, despite the different fiscal balances of the countries, and to have an analysis-effect and percussion within the framework of macro-prudential policies. Systemic risk analyzes require some analytical-qualitative data, including macro-stress models.

In particular, a clear data analysis and structural models established within this framework and market information directly related to EU financial transactions constitute the building ages of financial systemic risk analyzes. In terms of macro-prudential policies, it is possible to consider the EU systemic financial risk analysis, within the framework of a four-stage approach, also taking into account its political implementations and analysis stages (Systemic Risk Board, 2019-a: 15). The first of these is the determination of endogenous and exogenous effect dynamics directly related to financial shocks and the common imbalance dynamics of systemic financial risks. The second is the existence of models that address early detection and detection in the detection of possible systemic financial crises and ensuring their positional effectiveness within the scope of macro-prudential policies. Thirdly, to ensure the effective position of these systemic financial risk dynamics in macro-prudential policies, the factors

that weaken the economic and financial target effects are removed from the political instability process. Fourthly, it is aimed to analyze the probable prevalence of systemic financial risks and possible future impact levels of the macro-stress models created. However, the establishment of systemic risk analyzes in this form within the framework of prudential macro policies within the EU aims to identify the triggering external phenomena of financial risks as well as to evaluate the indications after possible financial crises (European Central Bank, 2009: 141).

2. Identification of Systemic Risks, and Location of Risk Components in Macro-Prudential Policies

The evaluation of systemic financial risk components with structural policies and all possible impact values in the financial process has indisputable importance in terms of analyzing and directing the economic and financial deviations process as well as increasing the effectiveness of the EU financial policies. But, also systemic risk evaluations can put forth systemic risk analysis related to the other common adverse negative impact on the systemic deviations that prevent measure the optimal sustainability distribution for the financial systems. These structural approaches are meaningfully sensitive intended to especially exogenous shocks due to the common current monetary. Therefore, systemic risks should be considered in the macro-prudential policies as related to structural dynamics aiming for fiscal dynamics (Claessens and Kose, 2013: 13-14).

As mentioned before, it is important to define the systemic risk components and to put forth their structural positions in terms of financial joint financial transactions in the identification of systemic financial risks. Therefore, it is seen that systemic risks require process integrity in which total financial shocks are evaluated together with the policies put forward to solve financial imbalances (Pierluigi and Sondermann, 2018: 7). In this context, it is possible to mention three main factors that define the structural position of systemic risks in the process:

- **Determination of The Joint Dynamics that Enable Systemic Financial Risks to Continue on The Financial System:** Financial-based systemic risks are those that structurally affect the downstream macro balances and have a high risk of contamination. This situation makes it necessary to question the sub-structural dynamics that trigger financial risks. These trigger risk components can be exogenous as well as intrinsic-endogenous. Besides, besides having a unique systematic basis of a systemic risk process, it also has a sequential and simultaneous structure. In this context, it can be said that the impact scale related to the structural spread of financial risks resulted from systematic integrity ((Pierluigi and Sondermann, 2018: 11). On the other hand, the relationship of the risk components

with the corporate structure also makes it necessary to question the risk components with their corporate sub-dynamics. In this respect, it is seen that the definition of systemic financial risk components as a structural whole is more meaningful than its unique structure.

- **Determination of Impact Dynamics in the Scope of Common Financial Policies in Solving the Intended Financial Imbalances:** Systemic Financial Risk Components gain their level of impact on balances with their corporate functional effects. Therefore, corporate integrity requires a whole set of structural dynamics in question in overcoming financial imbalances. On the other hand, besides corporate monitoring and evaluations, corporate projection and recycling are also very important in monitoring the risk process. In terms of determining corporate dynamics, this process is also an institutional policy recommendation process where possible risk alerts are frequently brought to the agenda. Because, after such an institutional identification and evaluation process, action plans of macro-prudential policies are formed and each institution implements this process with its own internal policy dynamics. In addition, the institutional dynamics defined for overcoming the financial imbalances that are subject to systemic risks provide an important framework for the emergence of different analytical corporate models (Cabral et al., 2019: 27).
- **Clarification of the Position of Risk Dynamics in the Evaluation of Integrated Financial Shocks within Macro-Prudential Policies:** Financial deviations and shocks that arise after systemic risks are holistic shocks in terms of the nature of their impact levels. This feature of systemic risks is also a significant reason why macro policies are subject to structural integrity and prudential macro policies. The clarity of the risk components in macro-prudential policies also makes the structural impact levels of these dynamics significant. Differences in practice among macro-financial policies are often seen as an important reason for systemic financial risks. In this respect, the level of influence of financial deviations the clarity of systemic risk components within the scope of prudential policies increases, and these gain meaning with the location of the components that form systemic dynamics (Ford, 2019: 368-369). In this respect, clarifying the analyzes obtained in macro-stress test models with clear systemic risk components has an important place in creating risk scenarios and macro-prudential models for the next stages (Systemic Risk Board, 2019-b: 19).

3. Institutional Position and Structural Origin of Systemic Financial Risk Components in EU

It can be said that the most important institutional source of financial systemic risks in the EU is the banks and the practices in the EU member countries. Increased asset losses of banks after the 2009 global financial crisis have caused more loss in the financial assets of EU banks. This phenomenon has taken an important place in the process as a systemic financial institution in which the financial vulnerability has increased until the present days. This phenomenon, which also constitutes a Financial Security deficit, also features a financial impact component that extends to other institutional transactions for the EU. In terms of systemic corporate risks, this process, in which the financial risk correlation values increased before the corporate in the risk group, was also a process in which interest rates increased for EU banks (Mojon, 2000: 12).

3.1. Financial Systemic Dynamics and Its Effect Levels that Affect The Risk Cycle in The EU

In this respect, the evolving nature of systemic financial risks after 2009 also has imposed the necessity of overseeing and controlling corporate key points such as EU banks within the scope of macro-prudential policies. This means, in another aspect, arrangements for structural changes and developments within the scope of macro-prudential policies, and these arrangements mean the control and surveillance of possible risks that may result from the shift of financial activities to other sectors other than banks. Therefore, it has emerged as an imperative that systemic financial risks are monitored under the institutional origin but continuously in different areas. Indeed, studies on systemic financial risk analysis revealed that after the global financial crisis of 2009, the institutional financial function efficiency among EU banks decreased, and institutional risks increased between banks. Moreover, these interbank systemic risk formations also serve as an important risk transmission channel when we consider derivative, second markets (González et al., 37). It is also important to reveal which common financial risks and shocks banks may be exposed to in terms of institutional causes of systemic financial risks.

At this point, the rationale for decision-makers to analyze systemic financial risks is to emphasize adaptations to institutional stability within the scope of macro-prudential policies and to establish more stable corporate-partner financing policies. Besides, the common systemic risk channels of the banks operating within the EU reveal important common points in the institutional analysis of financial risks. In this context, the impact level of systemic risk components in the EU consists of analyzes of macro-prudential policies that combine a large number of indicators, especially banks. Financial plans include macroeconomic indicators such

as market variables, as well as crucial systemic risk variables such as debts and credit variables and non-bank variables. The increasing negative impact level of the banking sector after the 2009 financial crisis after the financial crisis has also been the reason for conventional corporate analysis. Again, in this framework, systemic financial variability values in Eurozone are observed to be reasonable and moderate. In this regard, it can be said that monitoring the effect level of the components of systemic financial risks is often more meaningful in Eurozone. As a systemic financial risk component, the position and variability of changes in bond and stock prices in the Eurozone, including total loans, are essential in this respect (Bondt, 2002: 5). However, the position of other non-bank corporate systemic risk components is also necessary and meaningful throughout this process. In Chart1 below, the course of the elements of the financial cycle, which is the subject of systemic financial risks in the EU, can be watched.



Sources: European Central Bank (2019), Statics Paper Series: Macro-Prudential Database, No. 32, Frank am Main: European Central Bank, December 2019, p. 22.

Graphic 1. Periodic Financial Changes in EU Financial Sectors and Dynamics

As appeared on the Graphic 1, it is observed that the adaptations regarding the financial functions of banks from time to time increase systemic financial risks, and the important reason for this situation is explained by the decision-makers' divergence from rational institutional approaches for macro-prudential policies. It can be said that the systemic financial risk elements in the EU are mainly due to loans realized by banks and other financial institutions. Indeed, after the global crisis of 2009, it is seen that banks' credit finance portfolios had significant instability until 2019. Besides, this process, which subjects to different financial policies implemented by the European Central Bank, as effective in terms of

systemic risks also reveals a structure in which mutual funds. In terms of systemic financial risks, this process can also be defined as a process where applications such as insurance transactions and pension funds constitute the least risk factor. In this context, it becomes clear that the primary component affecting systemic financial risks is credit applications affecting liquidity processes (Carletti and Leonello, 2016: 5).

Undoubtedly, the weighted position of loan demands of borrower countries in this process is indisputably the most dominant influence factor. Indeed, it is quite meaningful that the EU countries where systemic risks are quite high, and especially the EU countries in Eurozone are also the most indebted countries. Again, within this framework, it can be also said that the contradictions between the level of development of EU countries in the Eurozone and their credit demands caused significant fluctuations in financial stability in the post-2009 period and created significant disruptive effects.

Also, the extent to which the EU financial markets are affected by these liquidity processes and are subject to institutional, systemic risks are within the scope of qualifying as an essential risk factor for the Eurozone. In this respect, the existence of open optional financial transactions in the financial markets poses significant systemic problems in the control of the financial transactions as a whole by the European Central Bank. In this context, institutional difficulties in controlling secondary financial markets, especially for the Eurozone, also have also revealed significant deviations in the analysis of systemic risks. It is also necessary to touch upon the positive institutional impact of this phenomenon, which we have highlighted based on systemic risks.

The shifting of the systemic risks out of the financial sector created by the European Central Bank to the other sectors, and other banks after the 2009 global financial crisis caused the institutional, systemic financial risk coefficient for the European Central Bank to decrease. This positive fact has also provided an essential rationale for sustaining European Central Bank investments after the financial crisis. On the other hand, this phenomenon has made the scope of macro-prudential policies even more sensitive to possible liquidity risks after increases in asset portfolios, with increased institutional resilience against systemic risks (European Systemic Risk Board, 2020: 7).

3.2. Institutional and Non-Institutional systemic risk factors, and Its Cyclical-Range in the Euro Area

The fact that systemic financial risks follow a more striking process, especially for Euro Area, necessitates that the institutions in Euro Area should be questioned about their impact position in terms of systemic risks. In determining the necessary institutional effectiveness in terms of

systemic risks for the Eurozone, it is required to consider the institutional structure as financial institutions that are treated as banks and financial institutions that are traded outside the bank. This distinction is also an approach that reveals the impact level and diversity of banks and non-bank financial institutions in terms of systemic risks. Considering that the primary targets of the banks in the systemic risk process are to protect the target profit limits, it appears that banks are institutionally more sensitive to macro-prudential policies against the risks arising from the possible liquidity increase (Bank for International Settlement, 2016: 7).

Although this approach to reducing systemic financial risks has created a reduction in costs as approximately 7 percent of bank loan costs in the last period, it has not had a significant impact on corporate risk factors. In this context, it should be emphasized that the financial cycle in the Euro Area has a significant impact scale on institutional and non-institutional financial functions. It is understood that the financial cycle of 19 countries in the Euro Area experienced significant deviations after the 2009 financial crisis and systemic financial risks increased significantly in 2009 and after. In this process, in which systemic risks increase, undoubtedly, non-institutional financial markets as well as institutional finance structures have important effects on these deviations after 2009 (European Central Bank, 2020: 23).

The financial risks posed by these fluctuations regarding this financial cycle in the Euro Area have not ensured a stable structure, like the 2008 financial location previously, especially for the corporate financial stability even in 2019. These unstable fluctuations, which are an expression of all financial markets in the Euro Area, namely corporate financial structures and non-corporate financial structures, reveal a process in which systemic risk factors become more evident as a result effect for all markets.

In this context, it is aimed to create a critical systemic risk control mechanism by including risk factors for applications such as bank risk, discriminatory pricing, and portfolio compression in macro-prudential policies in non-institutional financial markets. Graphic 2 shows these changes in the Euro Area after 2000 regarding the financial cycle.



Source: European Central Bank (2019), Statics Paper Series: Macro-Prudential Database, No. 32. Frankfurt am Main: European Central Bank, December 2019, p. 11.

Graphic 2. Financial Cyclical-Range in the Euro Area and Possible Forecast Range of Systemic Risks

Changes in the financial cycle, which are subject to systemic risks in the Euro Area, have created striking effects on the basis of institutional traded financial units in 19 countries. The main reason for this is that financial institutions are primarily traded on the basis of Euro currency and they are directly affected by each risk change process in the currency with the increasing systemic risk scale of other countries. In this regard, the level of influence of non-institutional financial markets as well as the institutional structure linked to the financial change cycle is an important discussion topic in terms of systemic risks in the process. The common phenomenon of financial risk for all EU members outside the Euro Area contains systemic risk factors for corporate and non-institutional common finance units.

In particular, the systemic risk increases arising from the institutional characteristics of banks, on the other hand, the association of non-institutional markets with the process necessitates that financial markets are emphasized with all common systemic risk factors (Trichet, 2009). First of all, as a corporate financial structure, increasing credit costs of banks against systemic risks constitute an essential item of organizational risk factors. On the other hand, it appears that the fact that all financial costs of banks are subject to typical costs with their interbank position is an important corporate risk factor. However, as a systemic risk factor, it is understood that these costs related to the short-term decrease of corporate financial costs do not have a positive effect on long-term systemic risk factors as a systemic risk factor. Really, especially after the 2009 financial crisis, the position of credit costs, which cannot be controlled at the

institutional level, has also become an important institutional risk factor for the European Central Bank.

It can be shown that the second important risk factor at the institutional level is that the banks are not able to comply with the institutional liquidity increases regarding the increasing liquidity level. In other words, banks have significant difficulties in adapting to the interest rates that change with liquidity increases in the markets as institutional provisions. This fact, meaningful with the results of the financial analysis in the short term, has not given in very meaningful analytical results in the medium and long term. This structural position, which weakened the institutional impact on the markets, led to a significant loss of institutional effectiveness of banks in EU financial markets, especially after 2014. Undoubtedly, this situation has weakened the position of national banks regarding the EU countries institutionally against the European Central Bank and put the required reserve rates into a significant deviation process on the basis of institutions.

Another issue in terms of corporate systemic financial risks is the financial functions of banks, which are an institutional important structure, that cannot adapt to capital movements. Increases in the changing capital movements in bonds and credit volumes have shown inconsistencies regarding the social interest rates for the EU recently. Despite the increased capital demand, the weak structure of corporate bank supports can turn into an important financial risk factor especially in countries with high credit debt limits such as Italy. This situation also made it difficult for banks to provide a corporate-market-compatible bond credit in the short-term and also caused the corporate risk factors to feel more severe by the markets. On the other hand, this fact, which also makes institutional financial control of capital movements significantly tricky, has increased the scale of the joint risk of systemic risks reflected on the markets (PwC, 2015: 14).

However, the position of institutional, systemic risk factors, as well as non-institutional risk factors that constitute systemic financial risk factors, is also crucial for the EU. The primary reason for this is that systemic risk factors within the EU are caused by non-institutional financial functions rather than institutional ones. There is a widespread view that systemic risk factors in the EU often come from non-institutional risk components for financial instability. This approach is completely outside the traditional banking approach, and such a financial crisis perception has led to the production of non-institutional risk policies within the scope of the European Central Bank. Also, it appears that the structure of macro-prudential policies, which includes non-institutional risk analyzes, is handled within the scope of the European Systemic Risk Board (ESBR), with its approaches that also analyze the structure of the global financial crisis.

One of the main non-institutional financial risk factors is that the increasing values of mortgage loans after taking them as securities increased financial vulnerabilities in financial markets by causing excessive borrowings. This situation weakened the struggle of money market funds with the crisis, especially after the global crisis, and increased the risk factor impact values of the fund-forming units such as insurance companies outside the institutional structure. In this context, money market funds have found a place in the process as a systemic financial risk factor that is the cause of the systemic financial vulnerability and is out of corporate standards. In other words, these financial units other than banks have contributed to the spread of systemic financial risks (European Central Bank, 2007: 128). Monitoring systemic potential risks and difficulty estimating the possible flexibility of systemic risks in the medium and long term led to the expansion of the non-institutional financial system outside the institutional structure like banks in the EU.

The tendency of the EU Capital Markets Union towards more market financing has led to further growth of this structure against corporate banks, create an essential systemic financial risk factor by bringing the transfer process away from an effective structure to the use of financial resources (Voellmy, 2019: 16-17). Namely, this non-institutional structure has caused different market impacts other than different distribution standards, revealing a critical non-standard systemic risk factor. Borrowing short-term high rates from the non-institutional markets cause firms' short-term fire sales and relying on these funds creates an increased systemic crisis factor, which causes the flexibility in the markets to decrease further. This situation leads to increased market liquidity and systemic risks for non-institutional finance units. Although the presence of a leverage effect on the markets provided by credit growth strengthens the financial cycle in the markets, non-institutional short-term insecure borrowings cause the risk coefficient of the system to increase (International Monetary Fund, 2019: 29).

This structure of non-institutional risks for the EU as the European Central Bank's focused efforts in managing risks, and effectively allocating funds have led to taking place market conditions as non-standardized macro-prudential policies. In cases where insurance companies, which are non-institutional financial institutions, have an important location in the markets, the increase in real estate increases, and investment revenues related to them increases the systemic risks arising from overvaluations in the markets. This structure, where insurance companies often turn into a loanable funds market, is a process in which market interests and capital market investments are also negatively affected. The increasing debt burden and incompatibility of emerging markets with liquidity processes in this process also constitute a significant cause of systemic risks due to

non-institutional reasons. Besides, the fact that illiquid assets form an investment portfolio of more than half in non-institutional markets turns into an important risk factor as a result of significant deviations in the formation of liquidity buffers in the markets. It appears that the potential inevitable global risk factors have further increased in the Euro Area as a result of rising market assets risked, especially within the scope of non-institutional financial transactions encountered in the Euro Area. The transformation of derivative markets within the EU into a more inclusive structure causes non-institutional financial transactions to take a more central position. In other words, derivative - or secondary - markets, in which credit, commodity, and equity transactions, including interest rates and foreign currency derivatives, are also the subject of macro-prudential policies in the EU.

4. Systemic Financial Risk Tools and Impact Mechanism in Macro-Prudential Policies

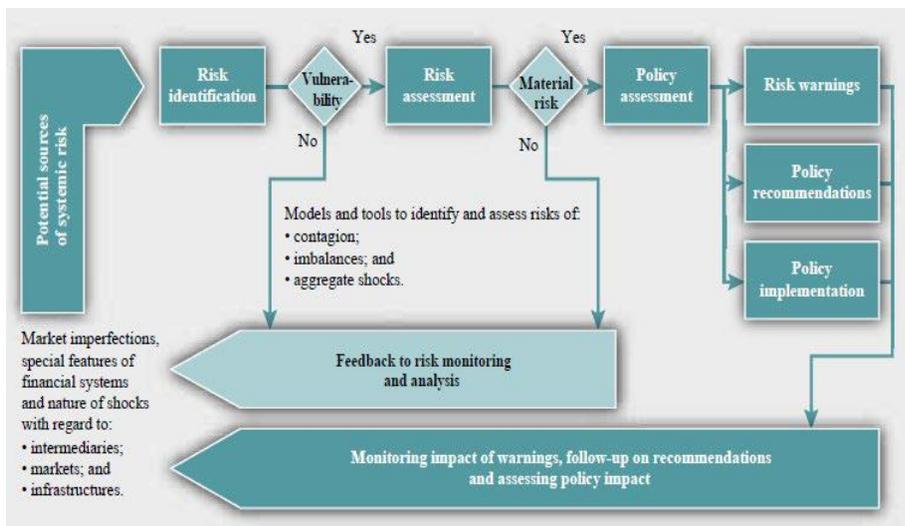
The fact that derivatives markets related to the institutional origin of systemic financial risks are not the primary subject of macro-prudential policies and that they function in an uncontrollable process emerges as a factor that directly affects corporate systemic financial risks. In this framework, these secondary markets, which are out of the institutional surveillance-control mechanism, also cause significant financial shocks in evaluating banks' assets. Future predictions and identification of systemic financial risks also reveal a process that is in line with the structural internal dynamics of macro-prudential policies, especially for establishing an early crisis warning infrastructure.

4.1. The Location of Systemic Financial Instruments in Macro-Prudential Policies

The position of risk components in macro-prudential policies reveals a meaningful structure with the presence of endogenous and exogenous effect dynamics, which can be called a systemic risk cube, in risk models. In this context, the mutual interaction with financial intermediaries, financial markets, and financial infrastructures for the identification and analysis of systemic financial risks also reveals the structural dynamics of macro-prudential policies. Therefore, within the scope of prudential policies, the level of the future impact of systemic risk instruments for analysis and stable targets reveals a systemic structure primarily related to risk warning effectiveness and immediately after the political evaluation effectiveness.

Macro-prudential policies are non-traditional periodic policies for the financial risk process (Eroğlu and Kara, 2017: 64). At this point, it should be emphasized that the institution that will be actively involved in the process is the European Central Bank and that it is inevitable to take part

in the process with regulatory policies for the systemic financial risks. Therefore, in this process, the EU Central Bank aims to reduce the problematic destabilizing nature of valuation shocks and fire-sales resulting from similarities in asset portfolios through macro-prudential policies, with a financial function efficiency based on more stable financial resources. Therefore, the systemic financial risk instruments connected with the prudential macro policies for the EU should be emphasized that are shaped as non-traditional policies taking place in this process. We can say that macro-prudential policies for the EU are primarily aimed at slowing credit growth by using systemic risk tools. In this context, the position of systemic financial risk instruments such as social interest rates and liquidity control for price stability purposes reveals the functional mechanisms of prudential policies. Figure 1 shows the functional location of systemic financial risk instruments as related to macro-prudential policies for the EU.



Source: European Central Bank (2010), *Financial Stability Review*, Frankfurt am Mine: European Central Bank, June 2010, p. 139.

Figure 1. The Operative Location of Systemic Financial Risk Instruments in Macro-Prudential Policies

As seen in Figure 1, it can be said that in macro-prudential policies, systemic risk tools come to the fore with the determination of policy objectives for determining potential sources of risk. In the same process, the position of risk dynamics with fiscal and monetary policies is clarified in defining financial risks. In the case of a possible financial security gap, the process that starts with risk assessment continues with the risk warning and alternative policies warning process with the impact of systemic financial instruments in the process. As systemic risk instruments, we can state that these systemic risk components-instruments have a place in the

process by controlling liquidity control, reducing loan demand by adjusting interest rates, and rearranging reserve limits options. Besides, the functional effectiveness of systemic financial risks is also important even if there is no financial security gap. This also functions in the possible spread or persistence of financial risks and balancing total credit shocks. This process, in which the infrastructure problems of the financial environment are also on the agenda, aims to provide the control mechanism of the crises that may occur by monitoring and evaluating the recycling of the results. In other words, in conclusion, systemic risk components contribute to a position where potential risk warnings are assessed at this stage, where the impact levels of the prudent policies related to the process in question and market infrastructures are restructured in this regard. Also,

It should be emphasized again that the primary aim of the EU within the framework of macro-prudential policies is to reduce the negative effects of excessive exchange volatility on capital through financial systemic components on financial stability. Strengthening the foreign currency options transactions of the EU Central Bank and making the liquidity processes necessary flexibility is also a primary goal in this regard (Hartmann and Smets, 2018: 17-18). Here, the systemic risk component is the Reserve Limits Option Mechanisms before financial institutions and this concept has significant political applications effectivity by the EU Central Bank. When we consider this approach in the scope of systemic risk dynamics for the EU Central Bank, it would not be wrong to consider this dynamic as an automatic financial impact stabilizer.

It can also be said that preventing extreme foreign currency volatility against the Euro currency and decreasing the sensitivity of EU loans to capital demands and exchanges constitute the primary purpose here in terms of prudential policies. In this context, it is observed that after the risk analysis of the systemic risk instruments of the European Central Bank, the loan policy is going to narrow the "Interest Corridor" to prevent possible financial crises through a serious liquidity control mechanism (European Central Bank, 2011: 11). This fact, which makes it also necessary to increase the institutional effectiveness of financial business models, related to bank functions, has revealed the inevitable need for corporate risk sharing, including shadow banks in the EU, for better surveillance and evaluation of systemic risk based on institutions (Bank for International Settlements, 2018: 68-69).

In addition, the effective use of transaction deposits owned by EU banks and the banks' accounting for corporate derivatives financial operations in detail has an important place in the institutional analysis of systemic risk analyzes. A process without this situation is an institutional systemic risk cause without rational use of data. This point, which also constitutes an important criterion for the establishment of corporate international

cooperation for the EU, aim at a ground that broadens the institutional surveillance-analysis spectrum of systemic risks and expresses the institutional grounds of systemic financial risks in macro-prudential policies.

4.2. The Discussed Functionality of Macro-Prudential Policies intended for Systemic Risks in the EU

The functional effectiveness of macro-prudential policies towards systemic risks varies according to the pre and post-implementation of these policies. The primary purpose of these policies is the establishment of a meaningful database in the creation of macro policies and ensuring the effectiveness of credit flow policies in line with the target monetary policies. Risk identification analysis and making decisions about the possible effectiveness of this phenomenon with institutions are also within the scope of these priorities. Besides, the addition of indicators of foreign bank assets for the analysis of macro-prudential policies is included in the process as an important rationale for the consolidated banking approach on an EU basis. In this context, it is aimed to create a typical calibration of macro-prudential policies by creating a *Financial Crisis Base* in the European Countries under the EU.

Again, in this context, the inclusion of the start and end dates of financial crises into political analyzes and a detailed classification are the factors that determine the pre-implementation content that will increase the functionality of macro-prudential policies. Estimation of the duration of a possible crisis process and its inclusion in systemic crisis models are also considered necessary for the effective content of macro-prudential policies. On the other hand, it is emphasized that the clarification of debt and credit flow channels for macro-prudential policies within the macro-political framework is also important for establishing political integrity based on Consolidated Banking Data carried out by the European Central Bank. It should be noted that the effectiveness of macro policies, which are the subject of debates within the scope of the EU, is within the framework of Credit Growth Rates, Current Account Balance, Reserve Option Mechanisms, and European Central Bank Reserve.

The fact that more credit growth rates are in practice for countries with worse current account balances has created a plan where European Central Bank reserve options are often discussed. It is necessary to emphasize two critical points of this phenomenon that we emphasize in terms of discussions, which are connected with macro-prudential policies. The first of these is the Financial Quality Problem regarding the financing of countries with current account deficit problems based on EU credit policies; the second is the capital adequacy ratio or the position of capital limits, which can execute the banking sector of the European Central Bank

through macro-prudential policies. In this context, when it is considered as general political integrity, the emergence of systemic financial risk analysis in macro-prudential policies involves the include five important risk dynamics: Money Market, Banking, Bond-Stock, and Foreign Exchange Markets (Çamlıca, 2015: 142). It can be explained by the fact that the interest rate corridor is influential in monetary policies and the predominant point of the fact that the interest rate corridor is included in macro-prudential policies is the stability of economic policies as well as more preferential financial stability policies priority.

The ongoing uncertainty in the global markets after the crisis in 2009 further increased the phased fluctuations related to interest rates in loan applications. This situation caused the interest rates of the European Central Bank, which is the subject of discussion in terms of macro-prudential policies, to take place in the process in a different position from the market rates. In this context, interest rate corridor policy is seen as the most controversial cause of deviation in prudential policies for macro-prudential policies. Besides, it is seen that the financial expectations for the short-term effects of financial stability policies in macro-prudential policies are more controversial. In other words, it can be said that the stability factor expected from a short-term interest rate corridor policy in macro-prudential policies is a subject of further discussion. The Interest Corridor phenomenon applied within the scope of the European Central Bank is far from being a single rate interest rate application in practice.

In other words, three different interest rates are applied by the European Central Bank in the interest rate corridor and the upper limit of the interest rate corridor refers to the interest paid by the banks of the EU member countries to the European Central Bank (European Central Bank, 2011: 19). In case of the opposite of this situation, that is, if these member countries want to evaluate the funds collected by EU member countries from the market on the basis of the European Central Bank, the interest rate in practice constitutes the lower band. The acceptance of the interest rate, which is the average of these two interest bands in terms of macro-prudential policies, in systemic financial risk analysis, is an important discussion topic in terms of the functional effectiveness of the policies.

Therefore, by increasing the functional effectiveness of average market interest rates in macro-prudential policies, it is also aimed to affect the Interest corridor implemented by the European Central Bank that aims to put forth to create an automatic stabilizer effect on systemic financial risks in the short term. The necessity of structural adjustment between liquidity changes and this change in interest rates arises from this point in order to increase the functional effectiveness of macro-prudential policies. It is also worth noting that other EU countries with lower income limits compared to other EU countries, and especially those in the Euro Area, have also

shaped short-term stability expectations from macro-prudential policies through these financial policies (Floreani and Habib, 2018: 240-241). This functionality of macro-prudential policies in the context of monetary policies against systemic financial risks is based on the principle that the European Central Bank is the only liquidity provider under the Union (Rochet, 2008: 47). The European Central Bank, which is the sole responsible for the liquidity-related payment systems within the EU and especially in the Euro-Area, has to put forward the monetary transmission mechanisms by addressing the stability dynamics of macro-prudential policies.

This systemic cohesion has decreased in the recent period as macro-prudential applications that cause more systemic financial deviations. This requirement, on the other hand, means a set of fiscal policies that are compatible with the price stability policies of the EU member states. In this context, it appears that macro-prudential policies are subject to practices that will weaken the monetary policy effectiveness from time to time in overcoming systemic financial risks for the EU. This structural contradiction also causes a situation that makes the relationship between price stability and targeted financial stability even more fragile. This fact, which is an important discussion topic for the EU, has also introduced to the short-term solution policies on inflation prevention in many countries.

This process as intended to the Euro Area, in which macroeconomic stability cannot be considered apart from financial stability, aimed to also establish a mechanism for price stability with a positive effect through the decrease of risk premiums added to interest rates in macro-prudential. However, the often changing position of macro-prudential policies after the 2009 global financial crisis has revealed that it has not sufficient to overcome systemic financial risks by itself as only macro-prudential policies. Because the functional effectiveness of macro-prudential strategies requires macro policies that are shaped based on monetary policies in terms of qualification. On the other hand, this phenomenon also strengthened the argument that the inadequacies in controlling non-institutional financial units had also a significant impact on the emergence of the systemic financial crisis linked to liquidity policies (Chandavarkar, 1985: 135-136).

Nevertheless, another important aspect of the discussions regarding the functional effectiveness of macro-prudential policies in overcoming systemic financial risks is the implementation process of these policies. It appears that the process of implementation, which creates different effects at each stage for the non-institutional structure of the systemic risks as well as the institutional as well as the functional effectiveness of these policies, especially on the capital mobility within the EU. Another point is the structural position in the application, which is far from being a whole of

policies, which is continuous in terms of the functional effectiveness of macro-prudential strategies. In terms of stability policies, macro-prudential policies are considered as medium-term policies regarding their widespread use. This phenomenon, which is the subject of discussion for functional effectiveness, is an essential topic of controversy, particularly between the European Central Bank stabilization policies and market practices for capital movements. Reducing systemic risks for banks leads to a loss of functional effectiveness of the policies between the expectations of capital movements and institutional goals, as it is based on decreasing the rate of increase of loans distributed under the European Central Bank.

5. Conclusion

Systemic financial risk dynamics in the EU put forth in a structure to shape based on credit-liquidity policies and gains clarity and functional efficiency with the dynamics of monetary policy practices in a corporate and non-institutional financial transactions process. Risk dynamics for EU countries also shape financial balance expectations as a result of changes in liquidity processes according to the financial change cycle. It appears that the flexibility of the EU money market balances against possible systemic risks also provides a significant level of influence in a collective process where money policies and financial stability policies gain effectiveness. However, these dynamics, which directly affect the risk policies of credit institutions, also constitute the policy tools in ensuring the target effectiveness of macro-prudential policies. Besides, it also appears that macro-prudential policies are meaningful with the harmony of interest policies and capital market policies, which are included in practice within the scope of liquidity regulation policies. The level of influence of macro-prudential policies also has functional effectiveness in implementing institutional quality policies, but it also requires an institutional-quality analysis of non-institutional financial market transactions. Therefore, it is observed that the macro-prudential policies of the European Central Bank are shaped based on this control regarding the process and primarily address the stabilization policies for systemic crises within this framework. However, it is not likely to mention the absolute impact of the European Central Bank's risk definition approaches and the institutional framework in financial vulnerability determinations on systemic risks after the 2009 crisis. However, it is understood that the inadequacies of the 2009 global financial crisis analyses conducted primarily by the European Central Bank for the Euro Area caused significant deviations in the functional effectiveness of macro-prudential policies as well. Due to macro-prudential operational delays in the European Central Bank's taking necessary measures, it has been inevitable for some EU countries to enter a negative process in achieving their

financial stability targets. Systemic financial risk definitions that do not comply with the institutional structure of EU countries with low income in the definition of systemic financial risks within the scope of macro-prudential policies have led to the questioning of the functional effectiveness of these policies especially in the Euro Area because of the different implementations due to the adoption and implementation of these policies as a common whole. This negative process, which is a result of the differences in the functional impact level of macro-prudential policies, as a result of the different Interest Corridor, has also turned into a higher negative structural financial phenomenon. This fact has led to increasing the further increase in the current account deficit positions of some EU countries in recent years because of further increasing to borrow from the European Central Bank.

References

- BANK FOR INTERNATIONAL SETTLEMENT (2016), *Macro-Prudential Policy*, BIS Papers No 86, Basel: Bank for International Settlements Monetary and Economic Department, September 2016.
- BANK FOR INTERNATIONAL SETTLEMENTS (2018), *Structural Changes in Banking after the Crisis*, CGFS Papers No. 60, Basel: Bank for International Settlements Committee on the Global Financial System, January 2018.
- BINDSEIL, Ulrich and Juliusz JABŁECKI (2011), *The Optimal Width of The Central Bank Standing Facilities Corridor And Banks' Day-To-Day Liquidity Management*, European Central Bank Working Paper Series, No. 1350, June 2011.
- BONDT, Gabe De (2002), *Euro Area Corporate Debt Securities Market: First Empirical Evidence*, European Central Bank Working Paper No. 164, Frankfurt am Main: European Central Bank, August 2018.
- CABRAL, Inês; Carsten DETKEN, John FELL, Jérôme HENRY, Paul HIEBERT, Sujit KAPADIA, Sergio Nicoletti ALTIMARI, Fátima PIRES and Carmelo SALLES (2019), *Macprudential Policy at The ECB: Institutional Framework, Strategy, Analytical Tools and Policies*, Vítor Constâncio (Ed.), Occasional Paper Series, No. 227, Frankfurt am Main: European Central Bank, July 2018.
- CARLETTI, Elena and Agnese LEONELLO (2016), *Credit Market Competition and Liquidity Crises*, European Central Bank Working Series No. 1932, Frankfurt am Main: European Central Bank, July 2016.
- ÇAMLICA, Ferhat (2015), *Avrupa Merkez Bankası Ve Finansal İstikrar*, Basılmamış Doktora Tezi, Ankara: Ankara Üniversitesi Sosyal

- Bilimler Enstitüsü Avrupa Birliği ve Uluslararası Ekonomik İlişkiler Anabilim Dalı, 2015.
- CHANDAVARKAR, Anand G. (1985), “The Non-Institutional Financial Sector in Developing Countries: Macroeconomic Implications for Savings Policies”, *Savings and Development*, 9(2), pp. 129-141.
- CLAESSENS, Stijn and M. Ayhan KÖSE (2013), *Financial Crises: Explanations, Types, and Implications*, IMF Working Paper WP/13/28, Washington D.C.: International Monetary Fund (IMF), 2013.
- EROĞLU, Nadir and Funda KARA (2017), “Makro İhtiyati Para Politikası Araçları ve Türkiye Uygulaması Üzerine Genel Bir Bakış”, *İşletme ve Finans Çalışmaları Dergisi*, 6(2), pp. 60-69.
- EUROPEAN CENTRAL BANK (2007), *Risk Measurement and Systemic Risk*, Fourth Joint Central Bank Research Conference 8-9 November 2005, Frankfurt am Main: European Central Bank Co-Operation with The Committee on The Global Financial System, April 2007.
- EUROPEAN CENTRAL BANK (2009), *Financial Stability Review*, Frankfurt am Main: European Central Bank, December 2009.
- EUROPEAN CENTRAL BANK (2010), *Financial Stability Review*, Frankfurt am Main: European Central Bank, June 2010.
- EUROPEAN CENTRAL BANK (2011), *The Monetary Policy of The ECB*, Frankfurt am Main: European Central Bank, December 2011.
- EUROPEAN CENTRAL BANK (2019), *Statics Paper Series: Macro-Prudential Database*, No. 32, Frankfurt am Main: European Central Bank, December 2019.
- EUROPEAN CENTRAL BANK (2020), *Financial Integration and Structure in the Euro Area*, Frankfurt: European Central Bank, March 2020.
- EUROPEAN SYSTEMIC RISK BOARD (2019-a), *A Review of Macro Prudential Policy in the EU in 2018*, Frankfurt: European Systemic Risk Board, April 2019.
- EUROPEAN SYSTEMIC RISK BOARD (2019-b), *Features of a Macroprudential Stance: Initial Considerations*, Frankfurt: European Systemic Risk Board, April 2019.
- EUROPEAN SYSTEMIC RISK BOARD (2020), *Recommendation of The European Systemic Risk Board of 6 May 2020 on Liquidity Risks in Investment Funds*, ESRB/2020/4, Frankfurt am Main: European Systemic Risk Board, May 2020.

- FLOREANI, Vincent Arthure and Maurizio Michael HABIB (2018), “The Euro Area Bias and The Role of Financial Centers”, *International Journal of Finance & Economics*, 23(3), pp. 233-256.
- FORD, David N. (2019), “A System Dynamics Glossary”, *System Dynamics Review*, 35(4), October/December 2019, pp. 369-379.
- GONZÁLEZ, Luís Otero; Luís Ignacio Rodríguez GIL, Sara Fernández LÓPEZ and María Milagros Vivel BÚA (2012), “Determinants of Credit Risk Derivatives use by the European Banking Industry”, *Journal of Money, Investment and Banking*, 25, pp. 36-58.
- HARTMANN, Philipp and Frank SMETS (2018), “The European Central Bank’s Monetary Policy During Its First 20 Years”, *Brookings Papers on Economic Activity*, Fall 2018, pp. 1-118.
- INTERNATIONAL MONETARY FUND (2019), *Global Financial Stability Report: Vulnerabilities in A Maturing Credit Cycle*, Washington D.C.: International Monetary Fund (IMF), April 2019.
- MOJON, Benoit (2000), *Financial Structure and The Interest Rate Channel of ECB Monetary Policy*, European Central Bank Working Paper No. 40, Frankfurt am Main: European Central Bank, November 2000.
- PIERLUIGI, Beatrice and David SONDERMANN (2018), *Macroeconomic Imbalances in The Euro Area: Where Do We Stand?*, Occasional Paper Series, No. 211, Frankfurt am Main: European Central Bank, June 2018.
- PwC (2015), *Global Financial Markets Liquidity Study*, London: PwC (Price Waterhouse Coopers), August 2015.
- ROCHET, Jean Charles (2008), “Liquidity Regulation and The Lender of Last Resort”, *Financial Stability Review-Banque de France*, 11, February 2008, pp. 45-52.
- TRICHET, Jean-Claude (2009), *Systemic Risk: Clare Distinguished Lecture in Economics and Public Policy*, https://www.ecb.europa.eu/press/key/date/2009/html/sp091210_1.en.html (Accessed 28.07.2020).
- VOELLMY, Lukas (2019), *Shadow Banking and Financial Stability Under Limited Deposit Insurance*, European Systemic Risk Board Working Paper Series, No. 105, Frankfurt: European Systemic Risk Board, December 2019.

CHAPTER XVIII

THE CASUAL LINK BETWEEN INFLATION AND BUDGET DEFICIT IN THE G7 COUNTRIES

Asst. Prof. Dr. Fatih AKÇAY* &
Assoc. Prof. Dr. Sevinç YARAŞIR TÛLÛMCE**

* Pamukkale University, Denizli, Turkey
e-mail: fakcay@pau.edu.tr, Orcid ID: 0000-0001-8542-1127

** Pamukkale University, Denizli, Turkey
e-mail: syarasir@pau.edu.tr , Orcid ID: 0000-0003-0198-5545

1. Introduction

Inflation and budget deficits are among the main economic problems, especially in developing countries. While inflation refers to the continuous increase in the level of prices, budget deficits mean that public sector expenditures are higher than their revenues. Decision makers use some economic policies to handle both problems. Generally, within the framework of economic approaches, inflation is associated with monetary policy and budget deficits are associated with fiscal policies. However, the fact that each economic approach has a different perspective on inflation makes differences in investigating the relationship between inflation and budget deficits. The essence of the differences is how budget deficits are financed. At this point, traditional approaches have put forward some assumptions about whether fiscal policy or monetary policy is more dominant. Until today, concentrations on monetary policy have continued in the concept of inflation. However, new approaches reveal that fiscal policy is as effective as monetary policy in the inflation process. These new approaches include the Unpleasant Monetarist Arithmetic approach and the Fiscal Theory of the Price Level (FTPL) approach.

The basis of the Unpleasant Monetarist Approach is that budget deficit financing by borrowing has more inflationary consequences than monetary financing. This argument suggests that if governments avoid from implementing monetary policy at first in order to finance budget deficits, this may cause a more inflationary economy in the long run. Because, if the borrowing opportunity of governments disappears, monetization becomes inevitable. In the FTPL approach, it is claimed that fiscal policies are as effective as monetary policy on the price level. This approach assumes that inflation has some direct and indirect relationships with fiscal policy and fiscal variables. Therefore, the effects of fiscal and monetary policies on inflation are still under discussion.

Although the theoretical foundations and discussions of the relationship between inflation and budget deficits are explained through economic approaches, whether these variables affect each other is important not only

for economists but also for politicians. Therefore, determining the relationship in solving these two problems, which are among macro imbalances, guides the economic policies. Because the existence of inflation results in a decrease on tax revenues. The decrease in tax revenues causes budget deficits. This effect of inflation on budget deficits is called as “Tanzi effect” in the literature. In this framework, the theoretical basis of the Tanzi effect is based on the causality relationship between inflation and budget deficits. Therefore, the higher the inflation is, the greater the real loss in tax revenues is. However, in this relationship, there may be unidirectional causality or a bidirectional causality. As a matter of fact, inflation can trigger budget deficits, and budget deficits can increase inflation through monetization.

This chapter of book examines the casual relationship between inflation and budget deficit for G7 countries over the period 1995-2019 by using yearly data. We apply the bootstrap panel Granger causality approach of Konya (2006). In the first part of the study, the theoretical framework of the relationship between budget deficits and inflation is given, and Tanzi effect is discussed. After that, the literature review, empirical analysis and findings for G7 countries are included.

2. Theoretical framework of the relationship between budget deficits and inflation

The existence of inflation and chronic budget deficits in countries brings along many economic, social and political problems. Today, the existence and extent of the causality between inflation and budget deficits is explained in relation to monetary and fiscal policies. One of the reasons for the high inflation experienced in developing countries is seen as public financial imbalances (budget deficits). In this context, the interaction between the two variables depends on how budget deficits are financed. The effect of financing the budget deficits by monetizing or borrowing on inflation is a matter of controversy in terms of economic doctrines.

Perspectives of economic approaches towards inflation vary from past to present. Classical economists explain inflation with Quantity Theory of Money, Keynesians with expansionary fiscal policies within the scope of aggregate demand elements, and Monetarists with monetary growth. According to the monetarists, budget deficits and monetary growth are the main reasons of inflation. Because monetary authorities tend to increase the money supply with the upward pressure of government budget deficits on interest rates. This increase occurs when the monetary authorities control interest rates instead of the money supply. For these reasons, high deficits encourage high money supply and create inflation. The monetarist propositions actually refer to the following two criteria. First, high budget deficits cause rapid increase in money supply. Second, the excessive

growth of the money supply contributes to higher inflation. (Giannaros and Kolluri, 1985: 401-402).

In addition to traditional economic approaches, new approaches have recently emerged regarding the effect of the price level. These approaches include the Unpleasant Monetarist Approach and FTPL approaches. In this approach, Sargent and Wallace (1981) approaches the relationship between inflation and budget deficits in terms of borrowing. If the financing of the budget deficit arising from the implementation of fiscal policies through borrowing causes high interest rates, the monetary authority cannot control inflation indefinitely. The inability of the monetary authority to control inflation stems from the arithmetic of the restrictions that the monetary authority adheres to. Hence, financing budget deficits through borrowing ultimately results in additional inflation. The main claim of the approach is that monetary policy cannot control inflation permanently (Sargent and Wallace, 1981: 1-2). According to Sargent and Wallace, financing of budget deficits by borrowing compared to monetary financing creates more inflation in the economy.

FTPL reveals that fiscal policy is as effective on inflation as monetary policy. This approach focuses on the price level determined by financial variables. This approach is also called as a Non-Ricardian Fiscal Policy because it rejects the Ricardian Approach. In this approach, if there is a budget deficit, people increase their total demand by considering the increase in wealth. As a result, budget deficits become inflationary and monetary authorities do not play a role in this process. (Mehrra and Behzadi Soufiani, 2015: 9-109). FTPL reveals that the price level can be affected by fiscal policy and that the Ricardian Equivalence Theorem is not always valid. In a Non-Ricardian model, fiscal and monetary policies are determined externally by the government. The increase in debt also creates a positive wealth effect on individuals and causes inflation with the increase in total demand (Lin and Chu, 2013: 217).

There are some differences in the perspectives of economic approaches on the relationship between inflation and budget deficits. The basis of these differences stems from their different perceptions of the causes of inflation and the methods they suggest for financing budget deficits. However, in today's approaches, inflation is associated not only with monetary policies but also with fiscal policies.

In sum, the essence of the effect of the relationship between inflation and budget deficits on the price level is the discussion of the dominance of monetary and fiscal policy. At this point, the real problem is how monetary and fiscal policies affect inflation. In this perspective, the relationship between budget deficits and inflation and the resolution of the policies to

be implemented increase the importance of the issue in the economics literature.

3. Inflation and budget deficits: tanzi effect

The effect of inflation on the budget balance depends on the net value of the effect of inflation on taxes and public spending. The effects of inflation on tax revenues and expenditures are subject to various studies. However, studies generally focus on whether inflation increases or decreases budget deficits. The fact that inflation creates a decrease in the real value of tax revenues and reveals budget deficits is called the “Tanzi (Olivera-Tanzi) effect”.

The Tanzi effect actually refers to the financial dimension of inflation. As the inflation rate increases, the state can obtain more tax revenues through inflation tax. Later, when the inflation rate continues to increase, the share of tax revenues in the national income decreases and inflation can cause budget deficits (Tiwari et al., 2015: 358). According to Tanzi (1978), this effect is common in developing countries due to tax collection lags. Inflation in a country has three effects depending on the characteristics of the tax system in that country. These are i) an increase in real tax revenues ii) a decrease in tax revenues iii) the probability that tax revenues will not affect the real value.

Whether the Tanzi effect works strongly or not depends on the price elasticity and characteristics of the tax system. However, the lower the progressivity of all tax types is, the lower the income elasticity of the taxes that will be affected by the price increase. The second important issue is related to the high share of indirect taxes in total tax revenues. The last one is related to whether measures are taken against price increases in tax systems. These measures are; increasing the tax rates, increasing the earnings and revenues that need to be taxed in parallel with the increase in the inflation rate, including the increasing tariff structure in the tax system, shortening the statutory lag in tax payments, increasing the penalties for delayed tax payments, indexing the tax bases and strengthening the tax administration. (Anusic and Svaljek, 1996: 78; Şen, 2003: 2).

Due to the length of tax collection lags in developing countries, the existence of the Tanzi effect prevails. If there is low inflation in economies, there may be no incentive to index taxes and reduce tax gaps. On the contrary, when inflation is high, the incentives for indexing and closing gaps are strong. In this context, regulations are made in countries to avoid loss of tax revenues. The regulations continue even if inflation tends to decrease. There is also the absence of a positive relationship between inflation and budget deficit in countries with high inflation accordingly (Cardoso, 1998: 623). The opposite can also be true. In periods of inflation, budget deficits increase with the decrease in tax revenues, while the

decrease in inflation may result in an increase in tax revenues and a budget surplus may be given.

As a result, inflation under the Tanzi effect tax revenues decline due to the elasticity of the tax systems as well as lags in tax collection. At this point, the decrease in revenues, which constitute a part of the budget balance, increases the budget deficits. In terms of economic policies, the causality relationship between inflation and budget deficits is a critical phenomenon in determining the policies to be preferred. For decision-makers, the existence of Tanzi effect helps in the selection of policy instruments in combating inflation and ensuring the balance of income and expenses.

4. Literature review

Studies on inflation in the literature focus upon the causes, results and macro-level effects of inflation. However, studies on the relationship between tax revenues and budget deficits within the scope of the effects of inflation on public finance reveal important findings regarding fiscal policies. The number of empirical studies on the existence of the Tanzi effect is quite a few in the empirical literature.

Among the studies where Tanzi effect was analyzed on a single country basis are Tanzi (1978) for Argentina, Oladipo and Akinbobola (2011) for Nigeria, Narayan et al. (2006) for Fiji, Alavirad (2003) for Iran, also for Turkey; Metin (1998), Kesbiç et al. (2004), Gunaydin (2004), Oktayer (2010) etc. Among the studies in which country groups are analyzed, Neyaptı (2003) for 54 developed and less developed countries, Lin and Chu (2013) for 91 countries, Fischer et al. (2002) for 94 countries, Kamacı et al. (2017) for G7, Habibullah et al. (2011) for 13 Asian countries, Catao and Terrones (2005) for 107 countries, Tiwari et al. (2015) for 9 EU countries, Vieira (2000) for 6 EU countries, etc.

Apart from the mentioned studies, there are some studies in the literature that provide evidence that the Tanzi effect is not valid. Among the studies rejecting the Tanzi effect, Karras (1994) for 32 countries, Egeli (1999) for 23 countries, Abdioğlu and Terzi (2009) for Turkey, etc. can be given as examples.

Tiwari et al. (2015) analyze the relationship between budget deficits and inflation for 9 EU countries between 1990-2013 with quarterly data by applying bootstrap causality and Granger causality tests. The study findings reveal the existence of a Granger causality running from inflation to budget deficits for France and Belgium in the long run. According to Bootstrap causality, there is no causality between inflation and budget deficits. Karras (1994) reveals that the central government deficit is not

inflationary with the panel data analysis method in 32 developed and developing countries between the years 1950 and 1980.

Lin and Chu (2013) analyze the relationship between budget deficits and inflation in the time period of 1960-2006 for 91 countries using panel data method. It is among empirical evidence that fiscal deficits are inflationary in high and medium inflation economies, and that deficits are less inflationary in low inflation countries. Fischer et al. (2002) examines the relationship between monetary increase and fiscal deficits for 94 developing countries, for the time period of 1960-1995 by using panel data method. Findings reveal that budget deficits have significant positive effects on inflation. In periods of high inflation, budget deficits move in the same direction with inflation. In countries with low inflation, the relationship between budget deficit and inflation is weak.

Catao and Terrones (2005) investigated the short and long-term effects of the relationship between inflation and budget deficits in 107 countries in the period 1960-2001 with panel data analysis. The existence of the positive relationship between budget deficits and inflation in developing and high inflation countries, and the absence of this relationship in developed and low inflation countries are among the findings. Barnhart and Darrat (1988) are analyzed the relationship between inflation and budget deficit with data from 1960: 1-1984: 4 in 7 OECD countries with Granger causality. Although, the existence of a long-term positive relationship between variables in countries is denied, it is also included in the study that the monetary and fiscal policies of each country are determined independently. However, it is among other findings that budget deficits cause inflation only in Italy and the USA, and this existing relationship becomes insignificant in the long term.

On the other hand, Neyapti (2003) study tested the relationship between the inflation budget deficit between the years 1970 and 1989 for 54 industrialized and developing countries with panel data analysis. Study emphasizes that the budget deficits in developing countries caused inflation. Kamacı et al. (2017) uses panel data analysis in the G7 countries for the 1995-2014 period, and for Turkey time series method implemented for the time period of 1965-2015. In addition, Granger causality test was applied in the study for both country groups. For both Turkey and G7, the presence of unidirectional causality from inflation to the budget deficit is one of the most important consequences. In addition, it is stated that the Tanzi effect is valid in addition to the cointegration relationship for the budget deficit and inflation variables.

5. Data, methodology and findings

In this study, annual data over 1995-2018 is used for G6¹ countries (Canada, France, Germany, Italy United Kingdom, United States). General government deficit as a percentage of GDP and inflation (annual % change) data is obtained from the OECD data base and World Bank (2020) World Development Indicators data base, respectively.

In panel data analysis, cross-sectional dependency and slope heterogeneity across members of panel are two important issues that need to be tested before the investigation of causality relations (Kar vd., 2011: 688; Durusu-Ciftci, 2019: 8).

Cross-sectional dependency is based on the assumption that a macroeconomic shock in any of the panel members affects all units of the panel. In other words, it means that all members have the same degree of shock exposure. The test estimations will have substantial bias and size distortions when cross-sectional dependency is ignored (Pesaran, 2006). Therefore, before proceeding to econometric analysis, it should be examined whether there is any effect between units (Menyah et al., 2014: 389). Cross-sectional dependency is based on Lagrange Multiplier test, which was first introduced to the literature by Breusch and Pagan (1980):

$$CD_{BP} = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{p}_{ij}^2 \quad (1)$$

where \hat{p}_{ij}^2 is the estimated correlation coefficients among the residuals obtained from the OLS estimator. With the null hypothesis of the test, the cross-sectional independency is tested and assumes that the test has a chi-square asymptotic distribution with $N(N-1)/2$ degrees of freedom when N (number of cross-sections) is constant and (time period) $T \rightarrow \infty$. This test is not applicable where $N \rightarrow \infty$ (Nazlıoğlu et al., 2011: 6618). However, Pesaran (2004) uses Lagrange Multiplier statistics for the cross section and develops CD_{LM} test, which can be used in large T and N , to solve the mentioned problem:

$$CD_{LM} = \sqrt{\frac{1}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^N (T \hat{p}_{ij}^2 - 1) \quad (2)$$

Under the null hypothesis of no cross-sectional dependency, when $T \rightarrow \infty$ and $N \rightarrow \infty$, it is assumed that the test has an asymptotic distribution. Although, in cases where N is larger than T , substantial size distortions may occur, it is likely to give biased results (Guloglu and Ivrendi, 2010: 384). For this reason, Pesaran (2004) developed the CD test that can be used in the case of $N > T$.

¹ Since Japan's budget deficit data is not complete in OECD data base, the analysis was conducted for 6 countries.

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j+1}^N (T \hat{\rho}_{ij}^2 - 1) \quad (3)$$

The null hypothesis of this test shows that there is no cross-sectional dependency between series. Unlike the CD_{LM} test, the CD test is based on the sum of the correlation coefficients among the cross-section residuals (Guloglu and Ivrendi, 2010: 384).

Table 1. Results for Cross-sectional dependency tests

<i>Fiscal Indicator</i>	CD _{BP}		CD _{LM}		CD	
	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.
Tax revenue	490.59***	0.000	72.46***	0.000	22.14***	0.000
Government Expenditure	506.03***	0.000	74.84***	0.000	22.49***	0.000
Budget Deficit	122.92***	0.000	19.71***	0.000	10.30***	0.000

*** Indicates rejection of the null hypothesis at 1 percent level of significance. CD_{BP}, CD_{LM}, and CD are the cross-sectional dependence test of Breusch and Pagan (1980) and Pesaran (2004), respectively.

Cross-sectional dependency test results are reported in Table 1. According to test results (CD_{BP}, CD_{LM}, CD), the null of no cross-sectional dependence (H_0 hypothesis) across the panel members rejected at the %1 significance level, and the strong evidence of cross-sectional dependency is obtained. In other words, it shows that a shock that occurs in any of the countries included in the analysis may affect others. In this case, the policies implemented in other countries should be taken into consideration by policy makers. So that, the bootstrap panel Granger causality approach of Konya (2006) is more appropriate in the presence of cross-sectional dependency and slope heterogeneity among the 6 developed countries. Such an analysis provides an opportunity to capture the different casual linkages among the variable of interests across the G7 countries.

5.1. Panel granger causality analysis

Causality relationship is defined as the past behavior of one variable (X) affecting the future values of another variable (Y). As mentioned in preliminary analysis of methodology, in order to test Granger causality among the variables in panel data, two conditions must first be tested (Kar et al., 2011: 688). Unlike other causality analyzes, the mentioned method does not require the stationary condition of the series, and it is also based on the SUR estimator introduced by Zeller (1962). The sets of equations are not VAR system. (Konya, 2006: 981-2).

Firstly, the sets of equation are estimated using the SUR method can be written as follows:

$$BD_{1t} = \alpha_{1,1} + \sum_{i=1}^{IBD_1} \beta_{1,1,i} BD_{1,t-i} + \sum_{i=1}^{INF_1} \delta_{1,1,i} INF_{k,1,t-i} + \varepsilon_{1,1,t}$$

$$\begin{aligned}
BD_{2t} &= \alpha_{1,2} + \sum_{i=1}^{lBD_1} \beta_{1,2,i} BD_{2,t-i} + \sum_{i=1}^{lINF_1} \delta_{1,2,i} INF_{k,2,t-i} + \varepsilon_{1,2,t} \\
&\vdots \\
BD_{Nt} &= \alpha_{1,N} + \sum_{i=1}^{lBD_1} \beta_{1,N,i} BD_{N,t-i} + \sum_{i=1}^{lINF_1} \delta_{1,N,i} INF_{k,N,t-i} + \varepsilon_{1,N,t} \quad (4)
\end{aligned}$$

and

$$\begin{aligned}
INF_{1t} &= \alpha_{2,1} + \sum_{i=1}^{lBD_2} \beta_{2,1,i} INF_{1,t-i} + \sum_{i=1}^{lINF_2} \delta_{2,1,i} BD_{k,1,t-i} + \varepsilon_{2,1,t} \\
INF_{2t} &= \alpha_{2,2} + \sum_{i=1}^{lBD_2} \beta_{2,2,i} INF_{2,t-i} + \sum_{i=1}^{lINF_2} \delta_{2,2,i} BD_{k,2,t-i} + \varepsilon_{2,2,t} \\
&\vdots \\
INF_{Nt} &= \alpha_{2,N} + \sum_{i=1}^{lBD_2} \beta_{2,N,i} INF_{N,t-i} + \sum_{i=1}^{lINF_2} \delta_{2,N,i} BD_{k,N,t-i} + \varepsilon_{2,N,t} \quad (5)
\end{aligned}$$

where BD denotes the budget deficit and INF represents the inflation. N is the number of panel members ($j = 1, \dots, N$), t is the time period ($j = 1, \dots, T$), and l is the lag length. There are four possible causality chains between budget deficit and inflation for country j: (i) There exists a one-way Granger causality running from BD to INF if not all $\delta_{1,j,i}$ s are zero, but all $\beta_{2,j,i}$ s are zero. (ii) There exists a one-way Granger causality running from INF to BD if all $\delta_{1,j,i}$ s are zero, but not all $\beta_{2,j,i}$ s are zero. (iii) There exists is two-way Granger causality between INF and BD if neither all $\delta_{1,j,i}$ s nor all $\beta_{2,j,i}$ s are zero. (iv) There is not a Granger causality between INF and BD if all $\delta_{1,j,i}$ s and $\beta_{2,j,i}$ s are zero.

Table 2. Results of bootstrap panel causality between inflation and budget deficit

Countries	H ₀ : Inflation does not cause Budget Deficit				H ₀ : Budget deficit does not cause Inflation			
	Wald Stat.	Bootstrap critical values			Wald Stat.	Bootstrap critical values		
		1%	5%	10%		1%	5%	10%
Canada	0.050	13.487	7.881	5.532	2.598	13.087	6.950	4.759
France	2.633	10.962	6.742	5.064	0.003	13.326	7.488	5.235
Germany	0.050	7.029	3.736	2.549	1.468	13.795	7.506	5.131
Italy	4.539	12.639	7.470	5.585	0.154	24.452	14.822	11.007
UK	7.459**	11.971	7.217	5.026	4.746	18.239	11.358	8.762
US	0.001	8.717	4.570	3.163	3.034	15.992	8.386	5.508

Note: Bootstrap critical values are based on 10,000 replications. *, **, and *** indicate the rejection of the null hypothesis at the 10, 5, and 1 percent levels of

significance, respectively. Maximum number of lags are set to 4 and the optimum combinations are selected which minimize the Schwarz Bayesian Criterion.

Table 2 shows the results for panel granger causality analysis between inflation and budget deficit. The findings indicate that a one-way Granger causality runs from inflation to budget deficit in only the UK. On the other hand neutral relationship holds for all other developed countries. This interesting result indicates that the nexus between budget deficit and inflation should be examined in more depth for these countries. In that respect, we proceed our analysis by investigating the relationship between tax revenue and inflation and the relationship between government expenditure and inflation. Results from these tests are presented in following tables 3 and 4.

Table 3. Results of bootstrap panel causality between inflation and tax revenue

Countries	H ₀ : Inflation does not cause Tax revenue				H ₀ : Tax revenue does not cause Inflation			
	Wald Stat.	Bootstrap critical values			Wald Stat.	Bootstrap critical values		
		1%	5%	10%		1%	5%	10%
Canada	0.059	9.147	4.847	3.220	2.037	16.563	9.048	6.229
France	2.974	7.462	4.093	2.838	2.724	16.899	8.978	6.056
Germany	1.069	9.736	5.223	3.691	0.420	15.085	7.620	5.215
Italy	1.059	11.285	6.622	4.831	0.072	10.649	5.411	3.776
Japan	1.870	22.032	13.964	10.814	2.751	24.924	14.443	10.759
UK	5.291*	13.512	7.293	4.913	0.026	10.078	5.455	3.778
US	0.384	15.575	9.166	6.988	1.526	23.026	12.758	9.024

Note: Bootstrap critical values are based on 10,000 replications. *, **, and *** indicate the rejection of the null hypothesis at the 10, 5, and 1 percent levels of significance, respectively.

Table 4. Results of bootstrap panel causality between inflation and government expenditures

Countries	H ₀ : Inflation does not cause Government expenditure				H ₀ : Government expenditure does not cause Inflation			
	Wald Stat.	Bootstrap critical values			Wald Stat.	Bootstrap critical values		
		1%	5%	10%		1%	5%	10%
Canada	1.946	22.457	13.459	10.231	1.883	17.976	9.147	6.185
France	13.018**	13.916	8.811	6.718	1.644	20.456	10.434	6.925
Germany	15.697	34.654	23.049	18.332	0.694	23.733	12.495	8.764

Italy	6.475*	10.870	6.600	4.965	2.204	17.874	11.676	9.167
Japan	0.945	13.710	7.420	5.079	0.268	10.165	5.259	3.526
UK	0.283	13.721	8.290	6.163	2.715	10.175	5.558	3.934
US	0.701	7.869	4.393	2.985	2.394	20.486	10.991	7.480

Note: Bootstrap critical values are based on 10,000 replications. *, **, and *** indicate the rejection of the null hypothesis at the 10, 5, and 1 percent levels of significance, respectively.

The results for the causality relationship between tax revenue and inflation show a one-way causality running from inflation to tax revenue for only the UK. However, the findings for the causality nexus between government expenditures and inflation demonstrates that a one-way causality running from inflation to government expenditures is found for France and Italy. For the remaining four countries, there is no causality running in any direction which implies none of them has prediction power on another.

6. Conclusion and discussion

Inflation has negative effects on both societies and decision makers. Inflation is associated with many economic and social factors. In the context of public finance, the relationship between inflation and budget balance is very important. Public revenues and expenditures constitute the budget balance. If public expenditures exceed revenues then budget deficit exists. The relationship between inflation and budget deficit is one of the issues that concerns both economists and politicians. The relationship between the two variables has been the subject of theoretical and empirical studies for years.

The Tanzi effect is explained by the positive relationship between inflation and budget deficits. The fact that inflation decreased tax revenues in real terms due to lags of tax collection and increased budget deficits is the result of the Tanzi effect. However, in the literature, besides the effect of budget deficits on inflation, the effect of inflation on budget deficits is also surveyed. Empirical studies have found evidence of positive or negative relationships between budget deficit and inflation. In addition to one-way causality, bidirectional causality relationships are also expressed in some studies. On the other hand, besides the existence of causality from inflation to budget deficits, there are also findings of causality from budget deficits to inflation. This situation give rise to discussions about which variable is the cause of each other. Depending on the financing of the budget deficits, it is usual for inflation to increase budget deficits as well as trigger inflation. Because inflation can lead to budget deficits by reducing tax revenues, and it can also reduce the willingness of taxpayers to pay taxes by making it difficult for taxpayers to pay. In this regard, inflation is one of the situations expected to be the cause of budget deficits.

However, there is not a consensus on the relationship between inflation and budget deficits in empirical studies. This is because the different countries, methods and periods examined in the studies and also the development levels of the countries and the differences in their tax systems effect the existing of consensus.

In this study, empirical analysis of the relationship between inflation and budget deficit for the years 1995-2019 in the G7 countries is tested by using bootstrap panel causality method of Konya (2006). The results of the causality tests show that a causality between variables does not seem to be appear for 5 developed countries except UK. However, a one-way causality from inflation to budget deficits is observed in UK. Inflation will effect budget deficits either through taxes or public spending. For this reason, inflation and tax revenue-government expenditure casual relationship is reported in our study. According to the test results, while there is causal relationship between inflation and tax revenue, no causality relationship has been found between public expenditure and inflation in UK. Within the scope of the Tanzi effect, the causality finding obtained can be interpreted as inflation in the UK causes budget deficits by reducing real tax revenues. On the other hand, the increase in tax burdens as a result of economic difficulties caused by inflation can also reduce tax revenues.

References

- Abdioğlu Z., Terzi H. (2009). “Enflasyon ve Bütçe Açıkları İlişkisi: Tanzi ve Patinkin Etkisi”, *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, Cilt: 23/2, 195-211.
- Alavirad, A. (2003) “The Effect of Inflation on Government Revenue and Expenditure: The Case of the Islamic Republic of Iran”, *OPEC Review*, 27(4), 331-341.
- Anusic, Z., Svaljek, S. (1996). “Olivera-Tanzi Effect: Theory and It’s Manifestation in the Croatian Stabilization Programme”, 73-102, <https://hrcak.srce.hr/file/9669>, (09.05.2020).
- Barnhart, S. W., Darrat, A. F. (1988). “Budget deficits, money growth and causality: Further OECD evidence,” *Journal of International Money and Finance*, Elsevier, vol. 7(2), June, 231-242.
- Breusch, T., Pagan, A. (1980). “The Lagrange multiplier test and its application to model specifications in econometrics”, *Reviews of Economics Studies*, 47, 239–253.
- Cardoso, E. (1998) “Virtual Deficits and the Patinkin Effect”, *IMF Staff Papers*, 45(4), 619-646.
- Catao, L. A. V., Terrones M. E. (2005). “Fiscal Deficits and Inflation”, *Journal of Monetary Economics*, 52(3), 529-554.

- Durusu-Ciftci, D. (2019). International trade and energy interactions in the G7 countries, *Dynamics of Globalization at the Crossroads of Economics* 1, 101-116, DOI: 10.3726/b16335.
- Egeli, H. (1999). "Gelişmekte Olan Ülkelerde Bütçe Açıkları", *Süleyman Demirel Üniversitesi İİBF Dergisi*, 4, 1-14.
- Fischer, S., Sahay, R., Végh, C. (2002). "Modern Hyper- and High Inflation", *Journal of Economic Literature*, 40(3), 837-880.
- Giannaros, D. S., Kolluri, B. R. (1985). "Deficit Spending, Money and Inflation: Some International Empirical Evidence", *Journal of Macroeconomics*, 7(3), 401-417.
- Guloglu, B., Ivrendi, M. (2010). "Output fluctuations: transitory or permanent? the case of Latin America", *Applied Economics Letters*, 17:4. 381-386, DOI: 10.1080/13504850701735880.
- Günaydın İ. (2004). "Bütçe Açıkları Enflasyonist Midir? Türkiye Üzerine Bir İnceleme", *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, Cilt:6, Sayı:1, 158-181.
- Habibullah, M. S., Cheah, C., Baharom, A.H. (2011). "Budget Deficits and Inflation in Thirteen Asian Developing Countries" *International Journal of Business and Social Science*, 2(9), 192-204.
- Kamacı, A., Ceyhan, A. S., Peçe, M. A. (2017). "Bütçe Açığı ve Enflasyon İlişkisi: G7 Ülkeleri ve Türkiye Örneği", *Uluslararası Sosyal Araştırmalar Kongresi (USAK'17)*, 20-22 Nisan, İstanbul, 202-211.
- Kar, M., Nazlioglu, S., Agir, H. (2011). "Financial development and economic growth nexus in the MENA countries: bootstrap panel granger causality analysis", *Economic Modelling*, 28(1-2), 685-693.
- Karras, G. (1994). "Macroeconomics Effects of Budget Deficit: Further International Evidence", *Journal of International Money and Finance*, 13(2), 190-210.
- Kesbiç C.Y., Baldemir E., Bakımlı E. (2004). "Bütçe Açıkları ile Parasal Büyüme ve Enflasyon Arasındaki İlişki: Türkiye için Bir Model Denemesi", *Yönetim ve Ekonomi Dergisi*, Cilt: 11, Sayı: 2, 27-39.
- Konya, L. (2006). "Exports and growth: granger causality analysis on OECD countries with a panel data approach", *Economic Modelling*, 23, 978-992.
- Lin, H., Chu, H. (2013). "Are Fiscal Deficits Inflationary?", *Journal of International Money and Finance*, 32(C), 214-233.

- Mehrara, M., Behzadi Soufiani, M. (2015). "The Threshold Impact of Fiscal and Monetary Policies on İnkflation: Threshold Model Approach", *Journal of Money and Economy*, 10(4), 1-27.
- Menyah, K., Nazlioglu, S., Wolde-Rufael, Y. (2014). "Financial development, trade openness and economic growth in African countries: New insights from a panel causality approach", *Economic Modelling*, 37, 386–394.
- Metin K. (1998). "The Relationship between Inflation and the Budget Deficit in Turkey", *Journal of Business and Economic Statistics*, 16(4), 412- 422.
- Narayan, P. K., Narayan, S., Prasad, A. D. (2006). "Modeling the Relationship between Budget Deficit, Money Supply and Inflation in Fiji", *Pasific Economic Bulletin*, 21(2), 103-116.
- Nazlioglu, S., Lebe, F., Kayhan, S. (2011). "Nuclear energy consumption and economic growth in OECD countries: Cross-sectionally dependent heterogeneous panel causality analysis", *Energy Policy*, 39, 6615–6621.
- Neyaptı, B. (2003). "Budget Deficits and Inflation: The Roles of Central Bank Independence and Financial Market Development", *Contemporary Economic Policy*, 21(4), 458-475.
- Oktayer, A. (2010). "Türkiye’de Bütçe Açığı, Para Arzı ve Enflasyon İlişkisi", *Maliye Dergisi*, Sayı: 158, 431-447.
- Oladipo, S.O., Akinbobola, T.O. (2011). "Budget Deficit and Inflation in Nigeria: A Casual Relationship", *Journal of Emergin Trends in Economics and Management Sciences*, 2(1), 1-8.
- Pesaran, M.H. (2004). "General diagnostic tests for cross section dependence in panels", CESifo Working Paper 1229. IZA Discussion Paper, 1240.
- Pesaran, M.H. (2006). "Estimation and inference in large heterogeneous panel with a multifactor error structure", *Econometrica*, 74(4), 967–1012.
- Sargent, T.J., Wallace, N. (1981). "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis Quarterly Review*, 5(3), 1–17.
- Şen, H. (2003). "Olivera - Tanzi Etkisi: Türkiye Üzerine Ampirik Bir Çalışma", *Maliye Dergisi*, Sayı: 143, 30-57.
- Tanzi, V. (1978). "Inflation, Real Tax Revenue, and the Case for Inflationary Finance: Theory with an Application to Argentina", *IMF Staff Papers*, 25, 417-451.

- Tiwari, A. T, Bolat, S., Koçbulut, Ö. (2015). “Revisit the Budget Deficits and Inflation: Evidence from Time and Frequency Domain Analyses”, *Theoretical Economics Letters*, 5(3), 357-369.
- Vieria, C. (2000). “Are Fiscal Deficits Inflationary? Evidence for EU”, *Economic Research Paper*, No. 00/7, 1-16.

CHAPTER XIX

ANTIDOTE TO CORRUPTION IN TURKISH PUBLIC ADMINISTRATION: ETHICAL VALUES¹

Assoc. Prof. Hakan İNANKUL

First Grade Police Superintendent, General Directorate of Police, Turkey
e-mail: hakaninankul@hotmail.com, Orcid ID: 0000-0002-0837-8572

1. Introduction

Corruption has a broader meaning than the concept of malpractice. That is to say, taking bribes is a malpractice and also a form of corruption. In other words, every deviation in the administration in order to achieve monetary or non-monetary goals is an illegal malpractice and every malpractice is a form of corruption. Each deviation behavior, on the other hand, is to leave legal practice, enter into illegal business and transactions, privilege someone, etc. It includes immoral and legal affairs and transactions (Çevikbaş, 2006: 373, Bilgin, 2003: 35-36.).

The concept of corruption is used in the literature in two different meanings as political and administrative corruption. It is possible to define the use of public power regarding political issues in violation of legal regulations by considering the interests in the process of policy making, as political corruption, and illegal use of public authority on administrative affairs and transactions by public officials in return for benefit. Although the concept of corruption is discussed under such two headings in the literature, this concept is used in social life and the application is mostly used to cover the wrong attitudes and attitudes of public personnel (Şayan and Kışlalı, 2004: 32-33).

Corruption in public administration, in its simplest definition, is the use of public power and authority, morally and illegally, for personal and group interests. Wang An Shih, a Chinese reformist who lived nearly a thousand years ago, talks about two sources of corruption. The first of these is bad people and the other is bad laws. Based on this metaphor of Wang An Shih, it is possible to state that each example of corruption in the administrations is a product of bad people who use bad laws as they wish.

Bribery, extortion, embezzlement, financial interests, nepotism, cronyism, political favoritism (partisanism), patronage, lobbying are the most known traditional corruption. A land registry office employee receives a tip or a traffic policeman's money under soup money (bribe) to portray corruption as adorable, a physician working in a state hospital can make money by making use of the patient's desperate situation under the

¹ This study was produced from author's doctoral thesis.

name of knife money, claiming artificial reasons as if there were no tools and equipment to operate in the state hospital.

A public official who earns unfair gain tries to rationalize his corruption with words that sometimes sound like soup money, knife money, tip, and sometimes he licks his finger that holds honey and does not eat seafood, which is the property of the state. The common feature of these types of corruption is by using the authority of the public official by moving away from professional ethical values and using moral and illegal authority, sometimes by convincing the other person, or by deceiving or forcing the public service area, which is the reason for the existence of the public official and received a salary, based on mutual consent, leaving it desperate to gain financial gain. Any attempt by a public official to gain an interest is a deviant behavior. Each deviant behavior is to disregard ethical values.

Although the intensity of the types of corruption listed above varies from country to country, they are the types of crimes that are encountered all over the world and are accepted as unethical behaviors of public officials (public officer ethics code) in all countries, and have severe sanctions in disciplinary regulations and criminal laws. The aforementioned types of corruption have been the subject of study of many scientists working in fields such as public administration, sociology, economics, and legal sciences.

A new example of corruption in Turkish public administration is the Fattullahist Terrorist Organization/Parallel State Organization (FETÖ/PDY). FETÖ/PDY is an organized, transboundary crime network that is unique in the world that violates all known and unknown ethical principles. The unethical/criminal methods applied by FETÖ/PDY to achieve its purpose are quite different from traditional types of corruption.

Within an organization, that organization has a known administrative organizational scheme. This scheme shows the location of each employee in the organization, who is the supervisor and the officer, the rules to be followed, etc. With a clearer expression, this organizational structure, which shows official relations, is called *formal organization*. There are also informal groups that consist of people working in an organization getting closer to each other for various reasons. These groups should be monitored especially by the managers (Tortop, İşbir and Aykaç, 2005: 67-68). FETÖ/PDY is the most extreme of *informal organization* in Turkish public administration.

2. The Concept of Ethics

The concept, problem and discussion of ethics in social life, especially in recent years, is as old as human history. We frequently use phrases such as "I do not find this done ethical", "Where is ethics in this?", "Your

behavior is not ethical", when we encounter situations that are negative for us or think wrong (Türkeri, 2011: 11). Although the concept of ethics, which has been one of the most emphasized issues by social scientists for about two thousand and five hundred years, has been used in the same sense as the word morality, in fact both are separate concepts (Bello and Gomez, 2013: 13).

According to Gök, Deniz and Oral (2012: 3), ethics is a concept that has entered the Turkish literature in recent years, and it is one of the main areas of philosophy such as logic and epistemology in the ancient Greek period, which scientifically investigates human behavior, the obligation to act in accordance with morality and norms and It is a branch of philosophy that deals with systematic moral values. According to Guth and Marsh (2012: 161), ethics is our actions in life, and we cannot reach our ultimate goal of happiness without actualizing ethical actions.

Ethics, which is the subject of people's behavior, is a discipline that includes moral values that try to reveal what the good and the bad are while questioning a behavior and an action in a moral sense. Briefly, it investigates compliance with the code of ethics (Özdemir, 2013: 20).

As an ethical concept, it includes values that aim to explain what people should do and what they should not do. These values are; It can be grouped under four headings: virtues, principles, duties and society's interests. Homework; the job, transaction or behavior expected of an individual's position. When it comes to virtue; The beautiful and correct features that should be found in the model person come to mind. Principle word; are the truths that shape and limit behaviors. In the interest of society; They are behaviors in favor of people living in a society (Özdemir, 2008: 182).

According to Kant, ethics is a mentality philosophy and ethics have the moral good of action. When the lexical meaning is examined, it examines the right behavior in the light of ethical and moral values. Ethic, which comes from the Greek "Ethos" and means character, is the subject of what we call good or right or bad or wrong among people and in human relations with all living and non-living beings in the universe. With a short explanation, ethics is the search for what is right and ideal for people and society (Kant, 2007: 91-93, Yüksel, 2005a: 49).

3. Public Administration and Ethics

The reason for the existence of public administration is that the services and goods needed by the society are produced effectively and efficiently by public institutions and organizations. The reason for the existence of public administration is public interest. Public administration, which uses principles such as division of labor, efficiency, rationality and efficiency in order to provide public benefit, consists of human element and

managerial basic elements (Koç, 2009: 225). Under normal conditions, public officials who are the executors of public administration are expected to act in accordance with written rules, aiming at effective, efficient, transparent, service-oriented, public interest. Written law and some control mechanisms to ensure this are available in the Turkish public administration.

Although there are necessary legal regulations and sufficient inspection mechanisms to enable public employees to perform their business and transactions within the understanding of serving the public, examples of corruption such as corruption, nepotism, bribery, extortion, embezzlement are frequently encountered not only in the Turkish public administration but also in the public administrations of other countries.

It is clear that laws and other legislation that will keep public officials away from corruption, that is, a rule-oriented management approach, is not sufficient. In recent years, some reforms have been made in public administration in Australia, The United States of America, Mexico, England, Portugal and many other countries to prevent corruption in public administration. The essence of these reforms is a transition from a rule-oriented management philosophy to a "values and result-oriented" management approach (Aghdamy, 2009: 212-213).

This understanding of values and result-oriented management found the following expression by Confucius centuries ago: *"If you rule people by law and punishment, they will not do wrong again, but they will not have feelings of honor and shame. If you rule people with virtue and ethics, then they will both have a sense of shame and will try to do the right thing"*.

Ethics in public administration is all of the balance points that limit and control the public power that public employees have and use while performing their work (TUSİAD, 2005: 64). It is based on the fact that ethical values, moral standards and values, which will ensure the elimination of corruption in the administration, together with legal and control mechanisms, can prevent the functioning of the public administration in a service-oriented and public interest manner and ethical conflicts and ethical dilemmas in the public.

In summary; Two main factors play a role in the performance of public servants. The first one is laws that determine the behavior of public officials. In other words, these are external causes that control the employee. The second one is the intrinsic values that determine ethical behavior. Here is the point that public administration ethics wants to reach; to ensure that public officials can take all kinds of actions related to their duties both within the laws and ethical values.

4. Types of Corruption in Public Administration

The main reasons for people's unethical behavior are "easyness and self-interest". The number of public officials who find it easy and gain material and moral benefits by using their public authority is not few (Sökmen and Tarakçioğlu, 2011: 59). Briefly, the fact that public officials, who find their place as corruption, obtain benefits by abusing their powers and engaging in ethical and illegal deviations is seen as one of the leading problems of all countries in the world as a social problem (Özata, 2011: 9).

The money that the people pay for the development and prosperity of their country by enduring all kinds of difficulties can be put into the pocket of some public officials as unfair and easy gain. The damage to the economic crisis in 2001, Turkey failed banks is 12 billion dollars of the state budget. This damage is only material. Thousands of people are unemployed, trust in the state is shaken, economic problems in families, psychological deterioration of people, etc. These are some of the neglected but very important negative consequences of this crisis (Özsemerci, 2012: 6). Any unethical behavior has a direct or indirect relation to corruption. Corruption is the use of public power for personal gain. Corruption is corruption and it does not matter it is small or big.

Corruption is the illegal and immoral use of authority or power. Another definition of corruption is that *public officials benefit from not doing what they are supposed to do, or doing what they should not do*. Bribery, extortion, embezzlement and embezzlement are some of the types of corruption (Özsemerci, 2012: 10).

4.1 Unethical Behavior Based on Economic Interest

Economic Interest corruption is when public officials or politicians abusing their powers, knowingly and seeing the result, gaining benefits to themselves, another person or a group by committing acts that are explicitly criminalized by law. Bribery, embezzlement, rent-seeking, extortion, and tribute are the most prominent of these.

4.1.1 Bribery

Bribery is the leading substance-based unethical behavior. Bribery, with its best known definition; money, goods, gifts, etc. for public officials to do or not to do things that are not accepted in the society and which are shown as crime in the law. In other words, bribery is the abuse of public officials' duty and public power to obtain benefits in substance or other ways. When you say bribery, only money is considered among the people. An example of bribery is the payment of the rent of a public official to someone who has or may have a business relationship with him or the purchase of a vehicle worth a hundred thousand Turkish Lira for fifty thousand Turkish Lira (Hasanoğlu and Aliyev, 2007: 7-8).

In order for a bribery crime to occur, an agreement should be made with the person or persons that provides an interest for the public official to do or not to do something illegal. Another element of the bribery crime is that the promised unfair benefit is related to the work of the public official.

4.1.2 Embezzlement

Embezzlement, which means "stealing from the entrusted thing" and "using the things entrusted to him as his own property", which is translated into Turkish from Arabic, is a one-sided crime. Embezzlement is the unlawful use of public resources entrusted to them by public officials for themselves or other persons or persons, or the complete transfer of them to themselves. Even if it seems simple, even if a public official takes a printout from a state-owned photocopy machine for his/her private business, it is enough for embezzlement to occur (Hasanoğlu and Aliyev, 2007: 9).

4.1.3 Extortion

Although bribery and extortion crimes are confused with each other, the difference between them is actually quite clear. Although both acts are committed after public officials have abused their duties, in extortion crime there is "moral force" (Karadeli, 1984: 573). There are individuals or individuals who are subjected to crime in extortion, which is also called extortion among the people, and they are not responsible before the law. What is known as "active eating" is the abuse of the duty and authority of a public official to obtain material or intangible benefits by forcing the representative of the person or organization he is addressed with in the crime of extortion. In bribery crime, there is an agreement between the bribe and the giver, while in extortion crime, the public officer has to force, persuade the addressee and leave no other remedy (Hasanoğlu and Aliyev, 2007: 11).

With a fiction-example, this unethical situation can be explained as follows: "The gastroenterologist at the state hospital decides that the patient he has been following for a long time should have intestinal surgery. He goes to the surgeon in the same hospital with the patient reports. After seeing the reports, the surgeon confirms the necessity of the surgery after performing the necessary examinations. The painful patient asks the doctor when to undergo surgical intervention, but the surgeon receives distracting answers from the surgeon. You may find out that surgeon appointments are full, that he is going to a medical convention soon, etc. by saying passes the patient. After meeting with other patients who have undergone surgical intervention in the same hospital, he goes to the surgeon's private office and is examined for the same disease. After the examination, the physician who knows the patient well in the state hospital, tells the patient that he can undergo surgical intervention two days later.

But for this intervention to be made in the state hospital, he demands twenty thousand Turkish Liras under the name of "knife money". The painless, desperate patient does not speak to the doctor's request and says that a relative will give the money to the doctor before the intervention. On the day of the intervention, the surgeon performs this operation in the state hospital, in the operating room of the state, using all the means of the state and taking advantage of the patient's helplessness by taking the state's salary plus revolving fund for this intervention, and taking twenty thousand from the poor patient." Here, the crime committed is extortion and is one-sided. The patient is cornered, forced or somehow persuaded. Sometimes such crimes can be regarded as normal among the public. It should not be forgotten that public officials receive a salary from the state for their work. It is both unethical and a criminal offense for a public official to resort to such means. Those who see this crime as normal should ask. Would it be ethical if a thief broke into your home and took your valuables and the police demanded money from you to catch the thief, that is, to do their primary duty? It is possible to increase these examples.

4.2 Unethical Behavior Based on Uneconomic Interests

The benefit of a public official is not always based on a substance. Here, the public officer is not in pursuit of the economy or a substance, but again, there is a violation of the law, abuse of the power of the state, and a moral expectation.

4.2.1 Nepotism

Nepotism, synonymous with the Arabic-based word favoritism, is one of the typical images of corruption. When the word meaning is considered, nepotism, which finds its place as "supporting someone in a way that is not included in the laws", is referred to as "favoritism" among the people (Aktan, 2001: 57). Nepotism is one of the biggest diseases of Turkish public administration.

4.2.2 Relative Nepotism

Nepotism, which is generally seen in underdeveloped and developing countries, is the person's educational status, skills, success, etc. regardless of the fact that he/she is privileged in a civil service examination, if he/she is a public officer, his/her relocation or promotion in the profession. A public official or politician who gives his relatives privilege among his peers even though he does not deserve it will gain reputation among his relatives and relatives. Of course, while this gained dignity adds something supposed to the individual, it will cause the state and public administration to lose their dignity (Öztutkan, 2011: 57).

4.2.3 To Give Privilege to Friends (chronism)

It is the privilege of a public official to give privilege to his friends and relatives without making a fair evaluation with his peers by making a special effort. The only difference from nepotism is that it is nepotism towards acquaintances other than relatives (Öztutkan, 2011: 57-58).

4.2.4 Partisanism

Political parties can be privileged to individuals or organizations that vote for them before they come to power, help their parties in the election campaign or have other relations when they win the election and come to power. Partisanship, especially common in local governments, is encountered in many countries (Özsemerci, 2012: 29).

4.2.5 Patronage

It is the dismissal of a political party that came to power, especially high-level bureaucrats, and appoint people close to them (relatives, supporters, friends, etc.) to their places (Özsemerci, 2012: 30). Politicians who seek to cover up this wrong practice make statements such as "we are making a change of blood in the administration", "we are taking the tired bureaucrats to rest" in order to rationalize these appointments.

4.2.6 Lobbying

There are interest and pressure groups that are effective in the public administration of the country. Knowing well that the practices in public administration affect them especially economically, some companies and holdings engage in lobbying activities to ensure the functioning of the public administration in line with their interests. Especially by providing economic support to the party that is likely to win the election before the election, they are involved in activities of influencing the decisions to be taken in their own interests in the future (Aktan, 2011: 60).

4.3 A New Example of Corruption in Turkish Public Administration: (FETÖ/PDY)

The known types of corruption (conventional corruption), which have sanctions in disciplinary regulations and penal codes and are accepted as unethical codes of conduct, are different from the example of Fettullahist Terrorist Organization/Parallel State organization (FETÖ/PDY). FETÖ/PDY members have used all and more of the known types of corruption in private and public administration, working as a transnational organized criminal organization for years to achieve their own goals in an organized manner. In this sense, the fight against FETÖ/PDY in public administration is quite different from the fight against known types of corruption. In order to eliminate FETÖ/PDY, which can also be considered as a new generation terrorist organization (Police Academy Report, 2017),

from the public administration and prevent similar structures from finding a place in the public administration, it is necessary to change the paradigm in the public personnel regime in addition to the measures developed against the known types of corruption in the administration. .

The picture that emerged after the 17-25 December 2013 postmodern coup attempt - the so-called corruption operations - and the following developments clearly revealed that a considerable number of the personnel of the Police Department and the Ministry of Justice are the actors of a new type of corruption that has never been seen before in administrations. In addition, the evidence regarding the FETÖ/PDY, which emerged with hundreds of material findings after the coup attempt on July 15, 2016, is only the police, prosecutor and judge of this new and unprecedented type of corruption. It has revealed that it is not limited and spreads like a virus to almost every unit of public and private administration. In this context, it is very important to consider FETÖ/PDY both as a criminal network and as a new example of corruption in public administration and to change the paradigm in public personnel management.

The deficiencies of the Turkish public administration that allow FETÖ/PDY to infiltrate the public administration and to be involved in all kinds of corruption should be well identified. These security gaps should be closed and necessary administrative and legal arrangements should be made to prevent these and similar structures from coming into effect in public administration. Most important of all is to have public officials who have internalized ethical principles. Because the antidote to any kind of corruption is ethical values.

5. Factors Affecting Ethical Behaviors in Turkish Public Administration

Ethical values directly affect the quality of public service delivery. Any unethical behavior that public personnel does not do for the public benefit directly harms the state and the public (Uluğ, 2004: 6). It is not possible to prevent them without knowing the reasons for the unethical behaviors that harm the state and the citizens who pay taxes to the state.

There are various reasons for the unethical behavior of public officials. Some of them are; Not knowing the relevant legislation well, ideological approaches, friendship relations, personal or family interests, lack of control, unfair wages, not adopting ethical values, cultural structure of the society, etc. (Sökmen and Tarakçıoğlu, 2011: 61). The prominent reasons that push public officials to act unethically (corruption) are listed below (Gençkaya, 2009: 25);

1. The principles of the rule of law are not established in the public service,
2. Ethical culture is not established in public service,
3. Problems brought by the bureaucracy. These are;
 - a. Centralization means being closed to change,
 - b. Failure to properly supervise local governments,
 - c. Politicians influence public administration,
 - d. The arbitrariness of the exercise of discretion,
 - e. Failure to achieve the quality expected by the public in public services,
 - f. Clumsiness and inefficiency in bureaucratic services,
 - g. Prolongation of decision-making process in public services,
 - h. Unnecessary and tiresome stationery,
4. Insufficiency in administrative procedure and scattered legislation,
5. Employment problems and not hiring staff according to the job,
6. Inexperience and negligence,
7. Insufficient salary,
8. Lack of knowledge and experience in the field of work,
9. The insufficiency of non-governmental organizations and in some cases acting together in the state,
10. Bureaucratic privileges,
11. Social and cultural structure.

In this part of the study, the reasons that push public officials to act unethically will be included under certain headings.

5.1 Individual reasons

The reasons in this group are specific to the public official. Some of these are the lack of knowledge and skills required for the public personnel to do their job properly, the inadequacy of their education and the internal conflicts and dilemmas they experience as a result (Gençkaya, 2009: 63).

5.1.1 Conflict of interest

In short definition, conflict of interest is the conflict between personal interests and public interests while performing a job under the authority of a public official. The interests that are the subject of this conflict may

concern himself or his relatives, family or private enterprises with which he is close. One of the aims of ethical standards in public administration is to prevent public employees from experiencing ethical conflicts (Yüksel, 2005b: 27-28).

5.1.2 Ethical Dilemmas

Ethical dilemmas are complex situations that prevent public employees from making healthy decisions. Ethical impasse is the state of the public official after having a dilemma in terms of social and individual interests and choosing one of the two. Public employees may face such a dilemma depending on the nature of their daily work. In this conflict, sometimes two different values and sometimes more values are in a race. In the essence of ethical dilemmas that especially managers encounter more often, there are situations such as not giving priority to relatives and acting according to their own values (Sökmen and Tarakçioğlu, 2011: 63). In an ethical dilemma, there is a conflict of interests and values with the written law.

5.1.3 Differences in Ethical Values

Another reason that pushes the public official to unethical behavior is that the ethical standards of the person are different from the public ethical standards. The family, society, religious values and education have a great role in the formation of a person's ethical values. Even if an employee who starts working in the public sector adopts the universal ethical rules accepted by the public administration and it may be difficult to internalize it. Even a public employee can develop different defense mechanisms to prove that the ethical values of the institution that conflict with his own values are wrong (Sökmen and Tarakçioğlu, 2011: 65).

5.1.4 Selfishness

Selfishness is a person's all kinds of values, humanitarian tendencies, existing rules, etc. ignoring is only thinking about himself and acting accordingly. Selfish behavior can be considered as one of the most important causes of unethical behavior. In some cases, even knowing that a behavior is wrong, a public official may continue to do so because of his selfishness and try to justify himself by basing this wrong on various reasons (Sökmen and Tarakçioğlu, 2011: 66).

5.2 Environmental Causes (Political-Social-Economic)

It is basing the unethical behaviors of a public officer for political-social-economic reasons on factors other than himself. In some cases, external reasons may cause the public official to act unethically.

5.2.1 Problems Arising from the Political Structure of the State

In administrations where single-party and democratic rule of law are not seen in practice, it is often seen that those who govern the state engage

in unethical activities. In the last quarter century, Turkish public administration has begun to acquire the values accepted by the west decades ago. The Turkish public administration went through difficult, tragic and status quo periods until it accepted the modern public administration values. Some bureaucrats of the Turkish public administration, who did not give up the patrimonial administration understanding, remained between politicians and the people, went towards corruption in the name of protecting the lofty goals of the state. (Özsemerci, 2012: 51-55). Thanks to measures taken by Turkish Government, -especially in recent years- corruption has substantially reduced in Turkey.

The "centralist" management approach in Turkish public administration prevents the fulfillment of public services in a rational and efficient manner (Hasanoğlu and Aliyev, 2007: 8). Although attempts have been made to soften them through means such as centralization, authority extension and devolution (Aydın, 2006: 15) that are not in compliance with democratic rules, regulations that are indispensable for democratic life that will enable the people to participate in the administration of the city they live in and have a say in the administration have been possible to some extent with the changes made in recent years (Coşkun, 2007: 102-103). The most obvious example of this is the establishment of City councils. With the implementation of the City Councils, democratic values such as transparency, accountability, participation of the people in the administration, solidarity were put into practice and the work and transactions of public officials were audited by their stakeholders (Çoşkun, 2007: 105). It should not be forgotten that strict centralism, bureaucratic centralism is a management system that is always open to corruption.

There are conflicts with non-governmental organizations in undemocratic countries. The reason for this is that those who govern the state consider themselves superior and believe that others cannot make the best decisions for the future of the state (Özsemerci, 2012: 62). However, in developed democracies, the presence and demands of non-governmental organizations are quite determinant in state administration and in the formation of public policies.

Which qualities should a person who can stop corruption? Such a person must first of all be a honest. Regardless of what ideology or political view prevails in the country, if people are not honest, corruption will continue. (Özsemerci, 2012: 66). In addition to all these, rapid population growth, the opening of new places to development, the politicians allowing unplanned urbanization for the sake of votes, economic crises, etc. can cause unethical behavior of public officials.

5.2.2 Insufficient Budget and Tools-Equipment-Materials-Human Resources

Only every day of public expenditure in all OECD countries is not in Turkey are more muted. Reducing public expenditures means restricting the purchase of tools, equipment and materials used by public employees in public services (TÜSİAD, 2005: 27).

The possibility of a public official to act unethically due to insufficient resources while performing her duty can be explained with a fiction-example as follows;

M.F. works as the group chief at the Police Center named B of the City Police Department. He is an idealistic deputy commissioner who graduated from the Police Academy about two years ago. Especially in recent months, restrictions have been started in line with the savings package project received by the state in the monthly amount of gasoline given to the police station cars. With this restriction, the gasoline fee from 60 liters per month for a team car was reduced to 40 liters. After this gasoline restriction, there was a noticeable decrease in the quality of the judicial and preventive police services provided by the police station. Although the young commissioner saved some fuel by sending the officers in his nature to the crime scene on some days, in cases where there was no harm in delay, these pedestrian walks caused grunts among the officers.

Informing his superiors in writing and orally that gasoline is not sufficient, deputy commissioner M.F. but he could not get the answers to solve the problem. Once, he receives a call from the Public Prosecutor on one of the last days of the month when his petrol right is about to expire. The Public Prosecutor asks a suspect for whom a warrant is issued to be taken from his address and brought to the Prosecutor's Office. The commissioner tells the duty prosecutor that they do not have enough gasoline that he will appoint the officers on foot to retrieve the suspect, which will take some time. The public prosecutor says that what the commissioner is doing is to slow down and neglect the judicial task, and that this may be a matter of investigation. Upon these words, the young commissioner was depressed and he thought that he had heard from his teacher in the Police Ethics class at the Police Academy without ever leaving his room during his duty.

In fact, he knew well that with a phone call, any hotel or other business in his area could fill his crew car with gas. This possibility was repeatedly told to him by the officers at his command. On the one hand, the work of the state could not be done properly due to the gasoline restriction, on the other hand, dissatisfaction began among the pedestrian officers, on the other hand, they were at risk of being investigated due to the weakness caused by the performance of the duty. In the ethics class, he recalled his

professor's words, "The smallest of corruption is not what is not for the state, corruption is corruption, once you start to corrupt, the rest will come." In addition to the lack of gasoline, the printer connected to the computer where the forensic work was carried out was out of order, and to get a printout, he sometimes had the suspect's statement taken into his flash memory and had it printed from his own pocket from the stationer next to him.

He had spoken with his colleagues from the other police station and learned that they had the same problems, but they found solutions in their own way. The young commissioner did not ask what the solutions were, but the possible solutions were obvious. Either he would ask for help from the citizen who came to the police station for some reason, or he would demand that the shortcomings of the workplaces (hotel, night club, coffee house, internet cafe, etc.) that might have a job with the police in their area be corrected. Regardless, he did not want to buy gasoline with the money that would come out of the pocket of the citizen, even if it was for the business of the state. He could not overcome the problems caused by insufficient gasoline. The Commissioner began to have ethical dilemmas. In the face of this situation, how many public officials can continue to perform their duties without getting involved with how much corruption? This fictional story is given as an example of the fact that the lack of materials-equipment and equipment in a public institution can lead personnel to act unethically and lead to ethical dilemmas.

5.2.3 Increasing Expectations and Demands of Citizens

In the modern public administration approach, the state exists for the citizen and it has to consider citizen satisfaction as the basic criterion in all its services. Citizens now demand the standardization of the service they expect and to have them in written form in concrete statements where they can reach and see them. Conscious citizen of today, the number of minutes a state hospital ambulance providing emergency service will arrive at the farthest point of the city, how soon the fire department can start to intervene in a fire, or how soon a police team can intervene in a fight in the neighborhood, etc. wants to know and see. Even modern-developed states sometimes have difficulties in responding to these high-level expectations of citizens (Ekici, Koçyiğit and Küçük, 2007: 76). Citizens expect more from public officials in the new public administration approach that is citizen and service-oriented. Some cumbersome administrations may find it difficult to respond to these expectations. Employees of organizations that have not been able to establish the requirements of a management approach based on service to citizens in their institutions or who have not been able to absorb this understanding may experience ethical dilemmas in their behavior, work and transactions.

5.2.4 Lack of Inspection (Supervision)

Management, in its simplest definition, is a cooperative behavior in order to achieve a certain goal. The purpose of public administration is to perform a number of activities to realize the public benefit. In other words, the aim for both private enterprises and public institutions is to reach the desired targets (Şahin, 2011: 6-8). Managements can more or less predict whether things are going well, whether the target will be achieved or not, and other issues through the monitoring, control and supervision of the authorized bodies. It is to eliminate the negativities that may prevent the organization from reaching its goal by intervening in a timely manner to the irregularities, corruption and deviant behavior expected from the audit. So, how is this situation in Turkish public administration? Are the inspections really done properly? Are inspection units able to inspect away from any pressure? (Hasanoğlu ve Aliyev, 2007: 21)

Another important expectation from control is to prevent arbitrariness in public actions and transactions. The quality of organizational services cannot be increased if it does not inspect the legal compliance of the transactions made in the public administration. The quality of public administration in a country is directly proportional to the quality of the inspections (Uluğ, 2004: 98-99).

In the administrations where the audit is not independent and the auditors are under pressure, it is not possible to speak of a suitable audit. It is clear that in institutions where there is no supervision, even if it is not done properly, employees will go towards corruption. Each corruption behavior appears as a violated ethical principle.

5.2.5 Lack of Administrative Procedure and Disorganization of Legislation

It is in the nature of the public service that the works and transactions of public officials are bound by certain norms. The existence of these norms may prevent public officials from acting arbitrarily. The norms regulating the performance of some works are included in many laws or in various regulations and sometimes in circulars. This mess may cause the public official to get tired in the sea of regulations or to have dilemmas in their work. This mess may result in the public official exercising discretion in some cases. Public officials using discretionary power can make different decisions on the same issues. It means that the road to corruption has been opened in a public institution where different decisions are made on the same issue (TUSİAD, 2003: 98).

5.2.6 Lack of Transparency

One of the two most important new approaches that globalization has brought to public administration is "governance" and the other "transparency". In the understanding of governance, decisions are taken jointly. When it comes to the adoption of the governance model in the state; In the formulation of public policy or in the decisions to be taken by the public administration, it comes to mind that all actors participate in the management and make decisions jointly. Taking decisions jointly means that the works, policies, expectations, that is, everything are transparently formed within the framework of the principle of transparency. Transparency makes the state more responsible to society. How the resources entrusted by the society to the state to serve them are used. Transparency, which increases people's trust in the state, is also very important for the establishment of democratic understanding (Saygılıoğlu, 2010: 25).

There will be no hidden jobs in a public institution where there is transparency. Unethical behaviors will not be encountered in an institution where there are no hidden jobs, since everything will be in mind - within the existing laws and legislation.

6. Conclusion

What is expected from ethics is that it can create a peaceful, peaceful, happy and more livable future. Ethic; While dealing with good-bad, right-wrong, it encourages individuals to think so that the perfect society can be formed. While seeking an answer to the question of what moral life is, ethics strives to normalize moral values and create values that are accepted by everyone and may be of the general interest of society. In this context, what is expected from public ethics is to have honest, righteous public officials who have moral values and to provide them to serve the society within ethical values.

Public officials receive their wages and support their lives with the taxes paid by the public they serve. In this context, there is an obligation for public officials to act against their rights and expectations in their behavior towards the society they serve. The public official is primarily a member of the society he serves and he himself benefits from the services produced by other public officials. The public official, who is an individual of the society, must have certain ethical values in order to provide the expected quality public service.

Public officials have to take many decisions during their duties. These decisions should be compatible with the interests of both the institution they work for and the society they serve. Public officials may face many quandaries and dilemmas before, during and after the decisions they make.

In this sense, managerial ethics is very important for public officials to get rid of the ethical dilemma and conflict of interest. The importance of the concept of "managerial ethics", which clearly reveals how public officials should behave in all kinds of business and transactions, is indisputable. In this sense, public officials will make use of public ethical rules in order to distinguish between right and wrong in their decisions.

Ethical issue is important in public administration. Because public ethics cannot be created without ethical knowledge. If you cannot explain why an individual must be moral and right, you cannot explain what a tribute public official did wrong.

The "ethical behavior principles" that public officials must comply with while performing their duties have been determined. Some of these are: Public service awareness, compliance with service standards, obedience to the purpose and mission, honesty and impartiality, dignity and trust, courtesy and respect, notification to the competent authorities, avoiding conflict of interest, not using duties and powers for gain, avoiding extravagance in using public goods and resources, binding statements and no false declarations, accountability of managers, relations with former public officials, declaration of assets.

These principles mentioned above are the antidote to all kinds of corruption in Turkish public administration. If these principles are followed, it is not possible for public officials to be in any kind of corruption.

References

- Aghdamy, M. G. (2009). Türkiye’de ve İran’da Kamu Yönetiminde Etik Değerler, *Kamu Etiği, Sempozyum Bildirileri*, Todaie, Ankara, ss. 209-219.
- Aktan, C. C. (2001). Siyasal Ahlak ve Siyasal Yozlaşma, *Yolsuzlukla Mücadele Stratejileri*, Hak-İş Yayınları, Ankara, ss. 51-69.
- Alptekin, S. ve Tarakçıoğlu, S. (2011). *Mesleki Etik*, Detay Yayıncılık, Ankara.
- Aydın, A. H. (2006). *Kamu Yönetimi ve Polis*, Gazi Kitabevi, Ankara.
- Bilgin, M. H. (2003). Yozlaşma ve Türk Siyasal Yaşamının Yeniden Yapılanması: Bir Model Önerisi, *Amme İdaresi Dergisi*, c.36, s.2, ss. 35-49.
- Çevikbaş, R. (2006). Yönetimde Etik ve Yozlaşma, *İktisadi ve İdari Bilimler Dergisi*, c.20, s.1, ss. 265-289.
- David, W. and Guth, C. M. (2012). *Public Relations, A Values-Driven Approach*, Fifth Edition, Pearson Edition, United States.

- Ekici, B., Koçyiğit, M. ve Küçük, Y.K. (2007). Yerel Yönetim Hizmet Bildirgeleriyle Vatandaş Memnuniyetinin Artırılması: Su Abonelik İşlemleri, *Çağdaş Yerel Yönetimler*, Ankara, c.18, s.1, ss. 71-96.
- Gençkaya, Ö. F. (2009). Türkiye’de Yolsuzluğun Önlenmesi İçin Etik Projesi, Akademik Araştırma Projesi, Çıkar Çatışması, Türkiye Cumhuriyeti Kamu Görevlileri Etik Kurulu, <http://www.etik.gov.tr/test/BilgiBankasi/Akademik%20Arastirma/Cikar%20Catismasi.pdf>, (21.02.2013).
- Gómez, N. y Bello L. A. (2013). Etica, Transparencia y Lucha contra La Corrupcion en La Adiministracion Publica, Ministerio de Justicia y Drechos Humanos, Oficina Anticorrupcion Republica Arjentina, Proyecto ARG/05/013 «Fortalecimiento institucional de la Oficina Anticorrupción».
- Gök, S., Oral, B. D., Özer, B., vd. (2012). *Etik*, Zeus Kitabevi, İzmir.
- Guth, D. W. and Marsh, C. (2012). *Public Relations, A Values-Driven Approach*, Fifth Edition, Pearson Edition, United States.
- Hasanoğlu, M. ve Aliyev Z. (2007). *Yönetimde Yolsuzluk ve Mücadele Stratejileri*, Nobel Yayın Dağıtım, Ankara.
- Kant, I. (2007). *Ethica, Etik Üzerine Dersler*, Çeviren: Oğuz Üzücü, 2.baskı, Pencere Yayınları, İstanbul.
- Koç, Y. (2009). Kantçı Ödev Ahlakı ve Kamu Etiği”, *Kamu Etiği Sempozyum Bildirileri*, Todaie, Ankara.
- Özata, C. (2011). David Hare’in Bakış Açısıyla Stuff Happens Oyununda Yozlaşmanın Uluslararası Boyutu, *Sanat Dergisi*, ss.9-16, <http://edergi.atauni.edu.tr/index.php/gsfed/article/view/7067/6464>, (13.02.2013).
- Özdemir, E. (2009). Pazarlama Aşamasında Etik Karar Alma, *Ankara Üniversitesi SBF Dergisi*, Ankara, 64-2, ss.119-144, <http://dergiler.ankara.edu.tr/dergiler/42/997/12134.pdf>
- Özdemir, M. (2008). Kamu Yönetiminde Etik, *ZKÜ Sosyal Bilimler Dergisi*, c.4, s.7, ss. 179-195.
- Şayan, İ. Ö. ve Kışlalı, M. (2004). Yolsuzluk Üzerine Ekonometrik Bir Çalışma, *Amme İdaresi Dergisi*, c.37, s.2, ss. 31-50.
- Özsemerci, K. (2012). Türk Kamu Yönetiminde Yolsuzluklar, Nedenleri, Zararları ve Çözüm Önerileri, <http://www.sayistay.gov.tr/yayin/elek/elekicerik/35KamuYonYolsuzluk.pdf>, (16.02.2013).

- Öztutkan, Ö. (2011). Kamu Yönetiminde Yozlaşmayla Mücadele ve Etik: Türkiye Uygulaması, *Sakarya Sosyal Bilimler Enstitüsü*, (Yayınlanmamış Yüksek Lisans Tezi), Sakarya.
- Polis Akademisi Raporu (2017). Yeni Nesil Terör: FETÖ'nün Analizi, *FETÖ Çalıştay Raporu*, Polis Akademisi Yayınları 31, Rapor No: 10, Ankara.
- Saygılıoğlu, N. (2010). Değişen Devlet Yapısı Karşısında Yolsuzluk Gerçeği ve Saydamlık Gereği, <http://www.sayder.org.tr/e-dergi-degisen-devlet-yapisi-karsisinda-yolsuzluk-gercegi-ve-saydamlik-geregi-1-3.pdf>, (22.02.2013).
- Sökmen, A. ve Tarakçıoğlu, S. (2011). *Mesleki Etik*, Detay Yayıncılık, Ankara.
- Şahin, Y. (2011). *Yönetim Bilimi ve Türk Kamu Yönetimi*, Murathan Yayınevi, 3.Baskı, Trabzon.
- Tortop, N., İşbir, E. ve Aykaç, B. (2005). *Yönetim Bilimi*, Yargı Yayınevi, 4. Baskı, Ankara.
- Tusiad (2005). Devlette Etikten Etik Devlete: Kamu Yönetiminde Etik, c.2, (Yayın No. TÜSİAD-T/2005-11/411), Graphis Matbaa, İstanbul.
- Tusiad-Oecd, (2003). Kamu Hizmetinde Etik, (Yayın No. TÜSİAD-T/2003-9-363), Eylül.
- Türkeri, M. (2011). *Etik Bilinç Kaynak Sizsiniz*, Lotus Yayınevi, Ankara.
- Uluğ, F. (2004). Kamu Yönetimi Temel Kanunu Tasarısı Işığında Kamu Denetim Sisteminde Yeniden Yapılanma, *Amme İdaresi Dergisi*, Ankara, c:7, s:2, ss. 97-122.
- Yüksel, C. (2005a). Devlette Etikten Etik Devlete: Kamu Yönetiminde Etik, Kavramsal Çerçeve ve uluslararası Uygulamalar, *Tusiad Devlette Etik Altyapı Dizisi*, c.1, n.1, Yayın No. TÜSİAD-T/2005 - 11/412, Kasım, İstanbul.
- Yüksel, C. (2005b). Kamu Hizmetinde Etik ve Çıkar Çatışması, 2. *Siyasette ve Yönetimde Etik Sempozyumu Bildirileri*, Sakarya.