

Edited By Okyay UÇAN

# DISCUSSIONS BETWEEN ECONOMIC AGENTS: SOCIO-ECONOMIC STUDIES

Ersin KIRAL

Harun KIRILMAZ

Ragif HUSEYNOV

Smiti JHAJJ

Veclal GÜNDÜZ

Vedat CENGİZ

Can BİÇER

Abdullah AÇIK

Mustafa AMARAT

Vikram SINGH

Alibey KUDAR

Cüneyd İkbâl SARIOĞLU

Gökhan AKANDERE

Güldeñ GÖK

Can MAVRUK

Achmad Sofwan POEDJİYO

Şükrü UMARBEYLİ



İKSAD  
Publishing House

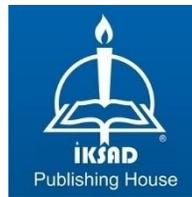
# DISCUSSIONS BETWEEN ECONOMIC AGENTS SOCIO-ECONOMIC STUDIES

## EDITED BY

Prof. Dr. Okyay UÇAN

## AUTHORS

Assoc. Prof. Dr. Ersin KIRAL  
Assoc. Prof. Dr. Harun KIRILMAZ  
Assoc. Prof. Dr. Ragif HUSEYNOV  
Assoc. Prof. Dr. Smiti JHAJJ  
Assoc. Prof. Dr. Veclal GÜNDÜZ  
Assoc. Prof. Dr. Vedat CENGİZ  
Assist. Prof. Dr. Can BİÇER  
Res. Assist. Dr. Abdullah AÇIK  
Res. Assist. Mustafa AMARAT  
Res. Assist. Vikram SINGH  
Dr. Alibey KUDAR  
Dr. Cüneyd İkbâl SARIOĞLU  
Dr. Gökhan AKANDERE  
Dr. Gülден GÖK  
Lecturer Can MAVRUK  
Achmad Sofwan POEDJİYO  
Şükrü UMARBEYLİ



Copyright © 2020 by iksad publishing house  
All rights reserved. No part of this publication may be reproduced,  
distributed or transmitted in any form or by  
any means, including photocopying, recording or other electronic or  
mechanical methods, without the prior written permission of the  
publisher, except in the case of  
brief quotations embodied in critical reviews and certain other  
noncommercial uses permitted by copyright law. Institution of  
Economic Development and Social  
Researches Publications®  
(The Licence Number of Publicator: 2014/31220)  
TURKEY TR: +90 342 606 06 75  
USA: +1 631 685 0 853  
E mail: iksadyayinevi@gmail.com  
www.iksadyayinevi.com

It is responsibility of the author to abide by the publishing ethics rules.  
Iksad Publications – 2020©

**ISBN: 978-625-7279-47-5**  
Cover Design: İbrahim KAYA  
December / 2020  
Ankara / Turkey  
Size = 16 x 24 cm

## **CONTENTS**

### **EDITED BY**

### **PREFACE**

*Prof. Dr. Okyay UÇAN* .....1

### **CHAPTER 1**

#### **AN EMPIRICAL STUDY OF SERVICE QUALITY PERCEPTION ON CUSTOMER SATISFACTION PERCEPTION IN NORTHERN CYPRUS COMMERCIAL BANKING SECTOR**

*PhD. Şükri UMARBEYLİ*  
*Assoc. Prof. Dr. Veclal GÜNDÜZ*.....7

### **CHAPTER 2**

#### **A CONCEPTUAL FRAMEWORK FOR BRAND COOLNESS AND BIBLIOMETRIC ANALYSIS**

*Dr. Cüneyd İkbal SARIOĞLU* .....27

### **CHAPTER 3**

#### **A PROPOSAL OF NEW INDICATOR FOR THE DRY BULK FREIGHT MARKET**

*Res. Asst. Dr. Abdullah AÇIK* .....51

### **CHAPTER 4**

#### **ANALYSIS OF UNIVERSITY STUDENTS 'INCOME- EXPENDITURE-SAVING RELATIONSHIP AND LIVING COSTS**

*Dr. Gülden GÖK*  
*Dr. Gökhan AKANDERE* .....83

## **CHAPTER 5**

### **AN EXAMINATION OF WHETHER THE IMPACT OF US DOLLAR ON ECONOMIC GROWTH IN TURKEY IS LINEAR**

*Dr. Alibey KUDAR* .....113

## **CHAPTER 6**

### **EMERGENCY MEDICAL SERVICES PERFORMANCE CRITERIA: A COMPARATIVE STUDY**

*Res. Assist. Mustafa AMARAT*

*Assoc. Prof. Dr. Harun KIRILMAZ* .....143

## **CHAPTER 7**

### **ROLE OF DIGITAL MARKETING FOR SMART AGRICULTURE: THEIR IMPLICATIONS, PRACTICES AND FUTURE DIRECTION**

*Res. Assist. Vikram SINGH*

*Assoc. Prof. Dr. Ragif HUSEYNOV*

*Assoc. Prof. Dr. Smiti JHAJJ*.....167

## **CHAPTER 8**

### **MARGINAL EFFECT OF SOCIAL CAPITAL OVER QUALITY OF LIFE**

*Lecturer Can MAVRUK*

*Associate Prof. Ersin KIRAL* .....203

## **CHAPTER 9**

### **THE POWER AND POLITICS IN ORGANIZATIONS**

*Assist. Prof. Dr. Can BİÇER* .....221

## **CHAPTER 10**

### **THE RELATIONSHIP BETWEEN INCOME INEQUALITY AND ECONOMIC GROWTH IN EMERGING MARKET COUNTRIES (EMCs): THE ROLE OF FINANCIAL INTERMEDIATION, EDUCATION AND TRADE OPENNES**

*Assoc. Prof. Dr. Vedat CENGİZ*

*Student. Achmad Sofwan POEDJIYO.....247*



## **PREFACE**

The linkage between countries, firms and individuals is crucial in the globalizing world. So, financial problems include both economy and business subjects. Moreover, mathematics and statistics are used in various branch of science including law, psychology, management, economics and etc. The economic agents in our global world are everywhere and they are intertwined. In this context, articles mentioned below are discussed together. There are ten valuable works in the book.

In the first chapter of the book, Şükrü UMARBEYLİ and Veclal GÜNDÜZ prepared an analysis with Servqual Model in the study named “An Empirical Study of Service Quality Perception on Customer Satisfaction Perception in Northern Cyprus Commercial Banking Sector”. In the study servqual scale surveys include 22 questions for customer expectations. Their study is unique to present the first gap model for the Northern Cyprus banking sector.

In the second chapter Cüneyd İkbal SARIOĞLU in his work called “A Conceptual Framework for Brand Coolness and Bibliometric Analysis”, examined to analyze the scientific researches written in the field of brand coolness between 2000 and 2020. This study is up to date and valuable that it uses statistical and mathematical tools to explain 25 academic publications on brand coolness.

In the third part of the book, Abdullah AÇIK, author of the study called “A Proposal of New Indicator for the Dry Bulk Freight Market”, analyzed commodity prices which were obtained from Worldbank using monthly data in the period of January 2000 and June 2019. Author used causality test to give the relationship between the variables. In the study, SALBE refers to Capesize route from Saldanha (South Africa) to Beilun (China), TUBQINQ refers to Capesize route from Tubarau (Brazil) to Qingdao (China), TUBROT refers to Capesize route from Tubarau (Brazil) to Rotterdam (Netherlands). The results show that there is significant causality from the commodity price index to the Salbe route after 2 lags, to the Tubqing rote immediately, and to the Tubrot route after 2 lags.

In the forth chapter of the book, Gülден GÖK and Gökhan AKANDERE conducted the study named “Analysis of University Students’ Income Expenditure Saving Relationship and Living Costs”, in which they have analyzed the relationship of income expenditure of Selçuk University students. Questionnaire method was used to reach the aim set out in the study. Finally, they reached that the students found the living costs in Konya more affordable than other cities.

In the fifth chapter, Alibey KUDAR conducted a time series analysis using 1999: Q1-2020:Q1 period in the study named “An Examination of Whether the Impacts of US Dollar on Economic Growth in Turkey is Linear”. He investigated whether the effect of US dollar on economic growth in Turkey is symmetric or asymmetric. Author uses

two cases and both cases support that the effect of the US dollar on economic growth is not linear.

In the sixth chapter of the book, Mustafa AMARAT and Harun KIRILMAZ prepared a medical performance analysis in the study named "Emergency Medical Services Performance Criteria: A Comparative Study". The reports and the indicators that are available in Australian Institute of Health and Welfare, Minister of Health NSW and Queensland Health, National Health Services England, Turkish Ministry of Health, Ireland Health Services, and the Agency for Healthcare Research and Quality are used in the study. Finally authors indicate that it is possible to find some differences and similarities between the medical performance criteria of the determined countries adopting the same triage system. So these differences and similarities stem from medical system management, financing, resource supply, number of applications to emergency and medical service use of citizens relevant to the countries.

In the seventh chapter, Vikram SINGH, Ragif HUSEYNOV and Smiti JHAJJ in their work called "Role of Digital Marketing for Smart Agriculture: Their Implications, Practices and Future Direction", examined whether smart farming is crucial or not. Authors find that smart farming is a brilliant farming philosophy, which can help farmers gain more from increased production. Here important point is to apply it properly. Such creativity, however, involves money, know-how and expertise. It is important to incorporate more than just your

passion for agriculture. This study involves lots of information to support the idea that smart farming through the digital marketing.

In the eighth part of the book, Can MAVRUK and Ersin KIRAL, the authors of the study called “Marginal Effect of Social Capital Over Quality of Life”, analyzed a cross section analysis with brand command of Long and Freese after ordered Logit models for global and individual Wald tests using 980 residents in Adana in the period January and February 2019. Study includes QoL, social capital, location of living, perceived environment and income inequality factors. Authors, finally concludes that model estimation results confirm most of the hypotheses and are in line with the theory.

In the ninth chapter, Can BİÇER prepared a paper named” The Power and Politics in Organizations”. In his study power and the politics have been outlined. Authors concludes that it must be remembered that when both individuals and groups engage in organizational politics that may be rather destructive, as individuals focus on personal interests and goals at the expense of the organization, such self-serving political efforts might negatively influence the social groupings, cooperation, information sharing, and many other organizational functions.

“The Relationship Between Income Inequality and Economic Growth in Emerging Market Countries (EMCs): The Role of Financial Intermediation, Education and Trade Openness” is the last chapter of the book. The authors, Vedat CENGİZ and Achmad Sofwan

POEDJİYO, investigated the relationship between income inequality, economic growth and the moderator variables. The study consists of Panel Data Analysis that determines best model through pooled least square, fixed effect and random effect models. Finally authors offer a suggestion that to accelerate economic growth with low income inequality in emerging market countries, policy makers in these countries should increase credit distribution especially to people that have bad living standard and build advanced financial systems to prevent or minimize financial crisis impact.

I would like to express my sincere gratitude to all the authors for their high quality contributions. In addition I would like to thank the ISPEC managers and workers for their support during the publishing process of this book.

Prof. Dr. Okyay UÇAN



## **CHAPTER 1**

### **AN EMPIRICAL STUDY OF SERVICE QUALITY PERCEPTION ON CUSTOMER SATISFACTION PERCEPTION IN NORTHERN CYPRUS COMMERCIAL BANKING SECTOR**

Şükrü UMARBEYLİ, PhD.<sup>1</sup>  
Assoc. Prof. Dr. Veclal GÜNDÜZ<sup>2</sup>

---

<sup>1</sup> University of Mediterranean Karpasia, Business Administration Faculty, Business Administration Department, Nicosia, TRNC, sukru.umarbeyli@akun.edu.tr.  
Orcid id 0000-0001-7745-0606

<sup>2</sup> Bahçeşehir Cyprus University, Faculty of Economics, Administration and Social Sciences, Banking & Finance Department, Nicosia, TRNC,  
veclal.gunduz@baucyprus.edu.tr. Orcid id 0000-0002-6002-582X



## **INTRODUCTION**

During the pandemic process, institutions that work technology-oriented in the service sectors and stand by their customers and provide convenience have stepped forward rapidly. In the economy of the Turkish Republic of Northern Cyprus (TRNC), education and tourism are the priority in the service sector, followed by banking.

There is a gap between the quality of the service provided and the perception of customer satisfaction and how to eliminate it has been the subject of research for years. In the quarantine period, the effects of the disputes between these gaps on the service quality have become even more important.

This study includes analyzing and evaluating the service quality perception and customer satisfaction perception empirically with the Servqual method in private banks operating in TRNC during the pandemic process. The current market conditions in the Turkish Republic of Northern Cyprus (TRNC), the banks' transaction volumes, product features, managements, customer portfolios, their importance depending on customer satisfaction, the policies that the bank should follow, the technologic investments and the establishment of the strategies and risks were analysed under this study with the observations and the investigations.

The perceived service quality of the customer based on the expected service and its quality analyzed with the questionnaire based on the Servqual Method. The effects of disputes arising from the quality of

the services provided in the banking sector are measured. The aim of the study to extent the approach on the banks' service quality according to the expected and perceived service by the customer. It has been investigated by researches that the style problems can arise.

The banking sector in the Turkish Republic of Northern Cyprus is developing rapidly as in the world. For this reason, it is important to constantly improve the technologies and to predict the high risks caused by environmental factors, to be in a dynamic structure, to constantly follow the market conditions, to target the division of customer portfolios (customer selection) and to differentiate and determine the strategies for the bank. For a better service quality in all kinds of banking products in the sector, market research for customers, following- up the technologies are essential.

The banking sector is one of the most important elements of the service sector. In parallel with the technology developing, the Service Sector must follow the progress in improvements. Therefore, for increasing the market share, the banking sector has to implement all of these developments. Otherwise, the bigger banks will either destroy the minors in the banking sector or the small banks have to merge in order to increase their market share.

Customer satisfaction is the basic rule to be different in the banking sector where there is tough competition. It is more advantageous and profitable to keep the existing customer, which is the common result of all the researches than to gain a new customer. In this study, in

addition to the information about the TRNC Banking sector, the information on the contributions to the economy, its development, financial status, employment, as well as the Customer Gap part arising between the Customer Expected Service and the Perceived Service are investigated.

In addition to the questions of the Servqual Quality of Service model, other questions were added to make the information more reliable. Parasuraman, Zeithaml and Berry (1985) firstly used Servqual Service Quality Measurements, which measured and analysed the service quality in their study.

The Banks determine the target market choices according to their infrastructure and strategic structure in the markets. For the commercial marketing, the performance of a branch is measured by the analysis of the profitability (Gunduz, 2018). The technologies should be capable of responding to the wishes and goals of the customers from the competition in the banking sector, together with the intense transactions in terms of banks' development and rapid transactions. With its technological infrastructure and investments, it plays a role in obtaining a great impact and shares in achieving the quality of service that is at the level of satisfaction expected by the customers. Today, the effect of technology in terms of service quality has been determined in studies conducted.

Service quality is now important due to the competition among the banks in the TRNC. The sector is increasingly offering products that are affordable, easy and reasonably priced to provide a competitive advantage depending on the quality, the product and the technology. With the advancement of technology, interactive channels ATM, telephone banking, internet banking are the services for a better customer satisfaction.

The banking sector, which varied in this way, has started to move towards a new banking style. Also, they continue their marketing activities towards the mobile advertisements and more customer targeting with using the social media channels. The products and the services can be differentiated depending on the demographic differences of the customers. They have started to evolve different banking products, instruments and their service.

The digital world has also led to the differentiation of the rapidly developing technology's marketing models and strategies in banks. In this developing world, the marketing models and activities of banks have also evolved and have gained momentum differently and intensely. Mobile applications and mobile marketing have increased options. Alternative channels are classified according to the demographic structural features of their customers, and they are taken further and reach the customer more effectively.

In Bank ATM ads and interactive telephone banking services, it is aimed to reach the more customers in the best way by advertising the useful banking instruments that are frequently developed through Customer Call Centers and social media.

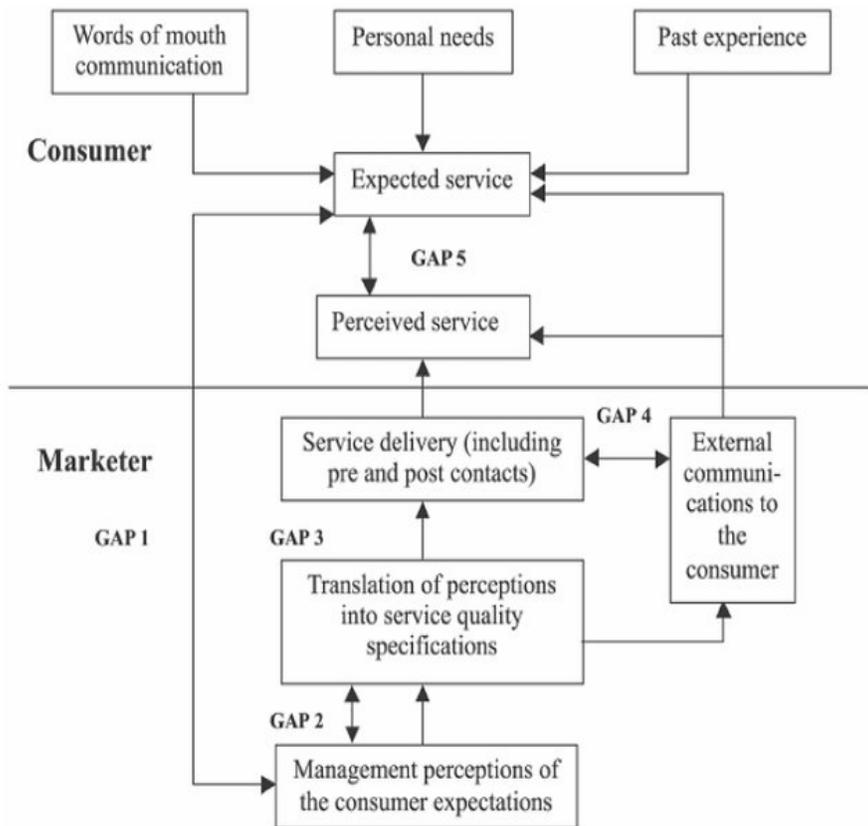
## **LITERATURE REVIEW**

### **Customer Relations and Customer Satisfaction in the Banking Sector**

In order to meet the demands of the customers and communities, banks make loans, purchase securities, and take deposits with different maturities and interest rates according to the amounts, conditions (guarantees, financial analysis, risks) and their needs (Gunduz, 2020).

Taking into account the customers of the banks, the current Gap Models and the service quality take the gap between the services the banks do with their understanding of improving the quality, and how the gaps between the services that customers expect and receive from the service (Gaps) depending on the quality of the services perceived by the customers are expressed with a “Gap Model”.

Parasuraman et. all cited the four gaps described briefly as the main reasons as the gap between expected service and perceived service and find the fifth gap, which forms the basis of the Servqual Model. “When this gap is positive, that is, quality can be mentioned when the perceived service is equal to or exceeds the expected service. The perceived service being below expectations leads to poor quality.”



Source: Parasuraman *et al.* (1985)

**Figure 1:** Servqual Model

Banks, by their nature, are financial intermediaries in the service sector. The concept of customer satisfaction is also handled within the banking sector, usually within the framework of a customer-oriented approach, in other words, within the framework of customer relations. In this framework, customer satisfaction is handled as the sole factor and the focus is on providing the best service.

There are 5 basic dimensions of service quality. The following dimensions are of great importance for the gap between customers' expectations and the services they receive. In short, staff working in the bank will be able to improve their service quality by giving importance to these dimensions.

When the dimensions are used carefully at the right time and in the right place, the bank will surely catch the best service and keep the satisfaction at the highest level by providing good service to its customers by marketing their products correctly.

The five SERVQUAL dimensions are:

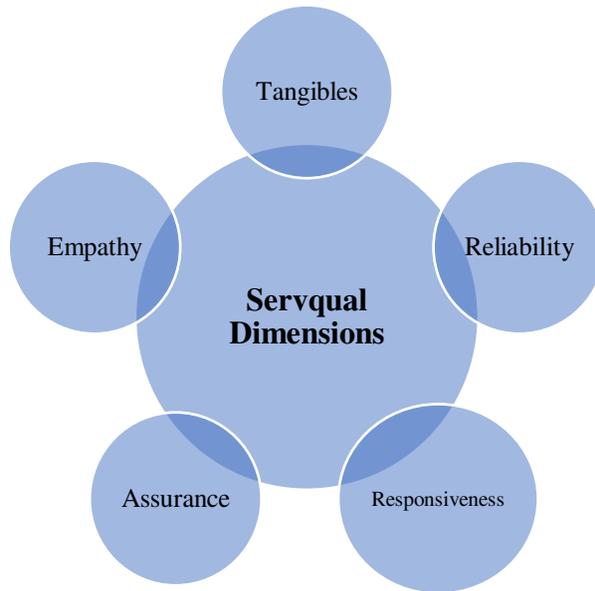
**Tangibles**-Appearance of physical facilities, equipment, personnel, and communication materials.

**Reliability**-Ability to perform the promised service dependably and accurately.

**Responsiveness**-Willingness to help customers and provide prompt service

**Assurance**-Knowledge and courtesy of employees and their ability to convey trust and confidence.

**Empathy**-Caring, individualized attention the firm provides its customers.



**Figure 2:** Sevqual Dimensions

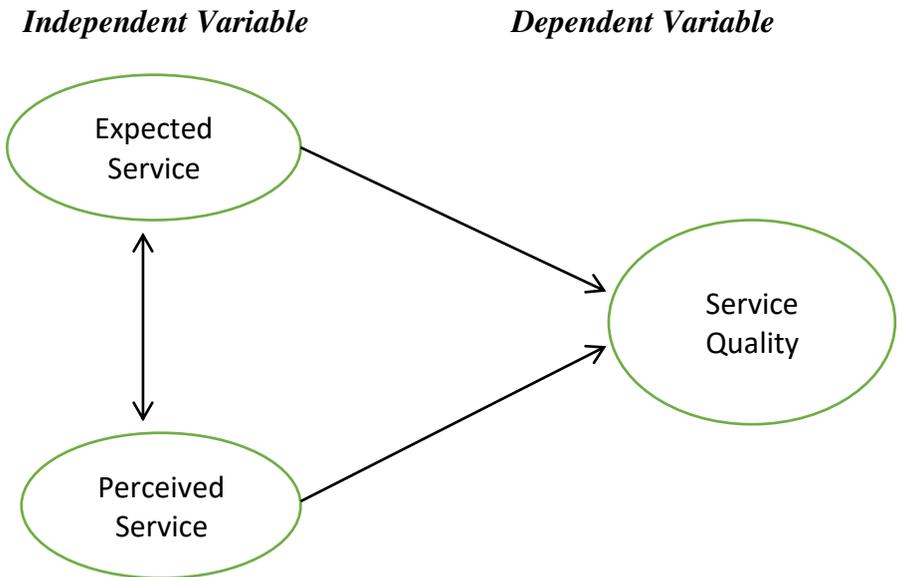
**Source:** compiled by the authors

## **METHODOLOGY**

The customers must perform segmentation and demographic reviews based on which customer portfolios they need to serve, to determine which target policies to follow where the banks are in the market, to determine where they will position themselves, and to decide which position to make a difference in the first place. To reach this information, conducting quantitative studies on customer satisfaction, the SERVQUAL Scale surveys include 22 questions for customer expectations and the same 22 questions for customer perceptions, and 44 questionnaires will be collected for the results uploaded to the

SPSS program and will be analyzed with the SPSS V23 data analysis program.

In addition to this, we should ensure that it is consistent, secure, open, transparent and competitive in terms of its positioning, making interviews with senior executives, determining the ratio of products and needs in the sector by utilizing the Central bank data and determining the ratio of products and needs in the sector.



**Figure 3:** Conceptual Framework

**Source:** compiled by the authors

There are 3 variables in our research. These are regarded as “SERVICE QUALITY” as one dependent variable, and “EXPECTED SERVICE” and “PERCEIVED SERVICE” as the other two independent variables. 22 questions were used to measure the service quality of the services provided at banks. These questions were scored by evaluating the 5-point Likert scale. (It was conducted as 2 separate surveys as Perceived Service - Expected Service.) Then, by analysing the factors, the dimensions were calculated, and it was tested in various statistical analyses by measuring its consistency and significance. Bank employees distributed the questionnaires to their customers visiting the branch. Also, the enable customers who couldn't come to the bank fill out the questionnaires via e-mail or during existing customer visits.

In the survey study, it was carried out to reach the result of measuring perceived service quality depending on customer expectations and perceptions by considering the service sector aspect of banking. Accordingly, it examines the results of the banks evaluating the services of the banks and accordingly how these services have reflected the customers and affect the perceptions and reach the expected service perception. Depending on the correlation and regression analysis, the relationship and effects were also examined using SPSS.

The universe of our study is made based on a private bank and its branches serving in the TRNC. The total number of employees of the bank consists of 60 people and the total existing bank customer

consists of 285 people. The acceptable minimum sample size was reached by calculating with the help of Yamane Taro's formula. Thus, according to the result, a survey was made to bank customers consisting of 167 people.

As a result of these surveys, to be informed about what the customers expect from bank employees and to raise awareness in this direction, for example, to be friendly, empathize, to give priority to customers, etc. It is necessary to focus on the development of the personnel to understand the issues such as emotions and thoughts and customer expectations.

Hypotheses of the study were created as follows:

$H_0$  = There is no significant difference between the Expectation and Perception Levels of Customers in the Bank Regarding Service Quality.

$H_1$  = There is a significant difference between the Expectation and Perception Levels of Customers in the Bank Regarding Service Quality.

Expected Service and Perceived Service Quality are also determined by the responses of the customers to the surveys. It is understood that if the perceived service meets the expected service in the scores calculated based on these answers or if a value is higher, the service is of high quality. If the perceived service is under the below expectations, it turns out that the quality of service is low.

## CONCLUSION

In-Service Marketing, it is important to provide quality service under increasing competition conditions according to customer attitudes and needs.

As long as the product that meets the needs of the customers is better, the service and marketing improve itself.

Pricing is another important factor in the marketing of services. For the sale of products in the competitive market, the fact of the price must necessarily manifest itself at a good level.

Depending on the performance in the distribution of the services, the bank needs to act quickly and enforce its decisions. Today, it is a great advantage to focus on early results to win the customer.

Banks need to satisfy customers with the services they offer to keep their customers long-term, which is based on the long-term relationships developed over time.

The appearance of physical factors (branches-materials and tools used) is important when providing services in banks. Bank Headquarters are especially important for reputation.

The services at the bank must be performed transparently, accurately and reliably. It is a point in itself and a feature not to be missed.

The Employees should trust their customers with their know-how and kindness, and the transparency in their service should reflect their sense of trust.

The Employees must empathize, produce solutions and show special attention to their customers. The ability to empathize is an extra performance and an essential feature to win the customer.

The attitudes and behaviours of the staff in the banks, speech and clothing styles also affect the service perception and quality of the customer.

The problems that occur in the relations of the personnel with the customer (not listening to the customer, not taking into account etc.) also deteriorate the service quality.

The proximity of the service products in the banking sector affects the quality of service, confusing existing services. It is a point to be considered.

The Customers are always expecting special behaviours. The high number of customers affects the service quality as a bank staff have difficulty meeting expectations. This important item has reached a critical point and is still being experienced today.

The Banks' dependence on profit margins is high. In this case, the high rates of work done at high costs prevent the customer to reach the desired service quality. Senior managers should analyse this well and

make plans accordingly considering the effects of such products on customers.

According to the customer-oriented marketing approach, customers decide which service is quality. That's why service quality starts with customers. The place of quality in the mind of the customers. Therefore, businesses have to create a strong perception of quality in the minds of customers. Nowadays, as a result of the development and spread of banking services, banks are accepted not only as institutions operating in the field of finance but also as a service sector institution. "In this direction, competitive advantage is achieved through the right strategies and practices aimed at obtaining, maintaining and increasing the number of loyal customers in banking within the service sector and can survive in the long term. Undoubtedly, priority should be determined in the strategies in question, market segmentation should determine the customer demands and expectations correctly".

Our study has some limitations as only one bank was taken under analysis. But it is unique because it is the first time that it presents the first gap model for the Northern Cyprus banking sector. For further research, we would do it for more banks by separating the type of customers and bank product and services.

## REFERENCES

- Alpaslan, C.M. ve KARABATI, S. (1996). *Hizmet kalitesi ölçülebilir mi? Bir yöntemin değerlendirilmesi*. Endüstri mühendisliği dergisi, 7(1).
- ARMSTORGGARY Kotler Philip (2004). *Principles Of Marketing*, Uppersaddleriver, New Jersey.
- AVSARLIGİL, N. ve KITLIK, H. Ö. (2013). *Reklamlarda Oynayan Ünlülerin Banka Tercihleri Üzerindeki Etkisi*.
- BALLANTAYNE, D.(2000). *Internal Relationship Marketing: A Strategy for Knowledge Renewal*, The International Journal of Bank Marketing. (Vol.18, No.6, p 274-286)
- Bankacılık Sektöründe Hizmet Kalitesinin Değerlendirilmesi: Ahs-Topsis Yöntemi*. İstanbul Bankacılar Dergisi, Sayı 69; 2009.
- CEVHER, E. ve ÖZTÜRK, İ. D. (2012). *Bankacılık Sektöründe Müşteri Beklentilerine Yönelik bir Araştırma*,
- ÇAKMAK, A. Ç. v.d. (2011). *Bankaların Müşterilerine Sunduğu İnternet Bankacılığı Hizmetinin Müşteriler Tarafından Değerlendirilmesi*
- GENÇTÜRK, M. vd. (2011). *Bireysel Bankacılıkta Müşteri Memnuniyetini Etkileyen Faktörler*
- GÜNDÜZ V. (2018) *Due Diligence for Bank M&A's: Case from Turkey*, Emerging Trends in Banking and Finance, Springer
- GÜNDÜZ V. (2020) *Risk Management in Banking Sector*, Management and Strategy, Artikel Akademi, İstanbul
- HARVEY, J. (1998). *Service Quality: a Tutorial*", Journal Of Operations Management, 16 (5), 583-597.
- HEPKUL, A. ve KAĞNICIOĞLU, H. (1992). *Veri Tabanlı Pazarlama, Pazarlama Dünyası*, Yıl:6, Sayı:34, Temmuz, s. 27-33
- İLKE Özdemir R. (2012). *Bankacılıkta Halkla İlişkiler ve Müşteri İlişkileri; Bankacılık ve Sigortacılık Araştırmaları Dergisi Cilt 1 Sayı 3-4*, s. 4-15
- K.K.T.C Merkez Bankası Bülteni 2016/III, <http://www.mb.gov.ct.tr> (Erişim tarihi: 3 Haziran 2017)

- KARA M. ve HACIHASANOĞLU P. (2015). *Bankacılıkta Mobil Pazarlama ve Tüketici Satın Alma Kararı Üzerine Etkisi*;
- KARACA, Ş. (2006). *Hizmet Kalitesi ve Bankacılık Sektöründe Hizmet Kalitesi Ölçümüne Yönelik bir Uygulama*.
- Kuzey Kıbrıs Bankalar Birliği, <http://www.bankalarbirligi.org/> (Erişim tarihi: 5 Mayıs 2016)
- LEDİNGHAM, J. and BRUNİNG, S. (1998). *Relationship Management and Public Relations Dimensions of an Organization public relationship Public Relations Review* (24)
- ODABAŞI Y. (2000). *Müşteri İlişkileri Yönetimi*, Sistem Yayıncılık,
- ÖZ, M. ve UYAR, E. ( 2014). *Sağlık Hizmetleri Pazarlamasında Algılanan Hizmet Kalitesi ve Müşteri Memnuniyeti Üzerinde Ağızdan Ağıza Pazarlamanın Etkisini Belirlemeye Yönelik bir Araştırma*.
- ÖZDEMİR İ. (2012). *Bankacılıkta Halkla İlişkiler ve Müşteri İlişkileri*; Bankacılık ve Sigortacılık Araştırmaları Dergisi Cilt 1 Sayı 3-4, s. 4-15
- PARASURAMAN, A. vd (2007). *Servqual: Müşterinin Hizmet Kalite Algısını Ölçmede Çoklu Birim Ölçeği*, (Çev. Ayşe Ersoy)
- ŞAFAKLI O. V. (2007). *A Research On The Basic Motivational Factors In Consumer Bank Selection: Evidence From Northern Cyprus"* Banks and Banks Systems, Volume2, Issue 4,2007.
- ŞAFAKLI, O. V. ve ÖZDEŞER H. (2008). *KKTC'de Mevduat Sahiplerine (Mudilere) Özgü Banka Seçme Kriterlerinin Analizi*.
- ŞAKAR, G. D. R. (2012). *Hizmet Sektöründe İlişki Pazarlaması ve Pazarlama Araştırmalarında Çeşitleme*.
- Tolon, M. (2004). *Ticari Bankalarda Pazarlama Stratejilerinin Uygulanması ve Türkiye'deki Ticari Bankalar Üzerine Bir Araştırma*; Verimlilik Dergisi(4),s.63-88
- USTASÜLEYMAN, T. (2009). *Bankacılık sektöründe hizmet kalitesinin değerlendirilmesi Ahs-Topsis Yöntemi*. İstanbul: bankacılar dergisi, sayı 69; 2009.

- ÜNAL, S. ve ERCİŞ, A. (2004). *Banka Hizmetleri Satın Alan Tüketicileri Banka Özellik ve Hizmet Değişkenlerine Yönelik Tutumlarına Göre Alt Pazar Bölümlerine Ayırma Üzerine Erzurum'da bir Araştırma*
- Veysel Y. ve H. Eray Çelik.(2006). *Bankacılık Sektöründe Müşteri Memnuniyeti ve Bankaya Bağlılık Arasındaki İlişkinin Yapısal Eşitlik Modelleriyle Araştırılması;*
- YEŞİLADA, F. A. ve TANYERİ, M. (2003). *Rekabet Üstünlüğü Sağlamada Pazarlama Bilgi Sistemleri.*
- ZIRDELIN, M. (2000). *Beyond Relationship Marketing: Technologicalship Marketing, Marketing Intelligence and Planning.* (Vol. 18, No.1, p. 9-23)



**CHAPTER 2**  
**A CONCEPTUAL FRAMEWORK FOR BRAND COOLNESS  
AND BIBLIOMETRIC ANALYSIS**

Dr.Cüneyd İkbal SARIOĞLU<sup>1</sup>

---

<sup>1</sup> Kocaeli University, Hereke Ömer İsmet Uzunyol Vocational School, Foreign Trade, Business Administration, Kocaeli, Turkey. cuneyd.sarioglu@kocaeli.edu.tr.  
<https://orcid.org/0000-0002-1610-8775>



## **INTRODUCTION**

It can be said that the brand is the dominant concept in marketing literature today. Because businesses are known not with their products but with their brands and gain sustainability with this promotion and marketing tool. In order for brands to survive, they should differentiate from other brands and provide a competitive advantage. Especially as a result of the effects of changes in technological, economic, legal and socio-cultural environmental conditions, the greatest support for important strategic decisions such as launching new products, product diversification, and entering new markets, which determine the life course of the brand, is possible with conscious and systematic researches. Because, as the captain of the ship, the brand manager must know where his or her ship is going and keep it on course. Consumers' perceptions and motivations are like winds. Therefore, it is necessary to know the direction, strength and possible changes of the wind (Aaker, 2009). How brands are perceived by consumers is very important for the success of brands. In this context, consumers' perception of their brands as “cool” is one of the issues that have been examined recently. In this context, it is observed that the concept of “brand coolness” has emerged and academic research has been conducted in this field. In this study, it was aimed to conduct a bibliometric analysis of scientific researches written in the field of brand coolness between 2000-2020. Accordingly, the distributions according to the publication years and types, the samples on which the concept of brand coolness were

investigated and meanings perceived by consumers from this concept were tried to be examined.

## **1. BRAND AND COOL BRANDS**

### **2.1. Brand**

There is no single definition of the brand agreed upon by marketing and communication researchers and professionals. As Stephen King said, a product is something that is made in a factory, while a brand is something the customer buys. Charles Revson, the founder of Revlon, pointed out a similar point, while he said that he produced cosmetics at the factory and that his customers in the store bought hope. (Randall, 2000). More importantly, a brand is the source of the promise made to the customer. (VanAuken, 2003). The American Marketing Association defines the brand as a name, sign, symbol, design, or a combination of all, as the promotion of the products / services of a vendor or group of vendors and making a difference for competitors. However, brand is not just a single name or logo that everyone knows. Brand is sum of functional and emotional gains, qualities, usage experiences, icons and symbols (Zyman and Brott, 2003). At this point, we must be clear that the brand lives only in the common mind of the consumer. The brand is a personality / identity that can be defined within the common perception of consumers and is unique like all other personalities. Because it consists of fulfilled promises and different value sets. Its structure is associated with a large number of concrete and intangible experiences, and by the

successful combination of different elements, a brand is clearly different from other 'similar' products and services (Pile, 2009). In other words, the brand is a tool that allows the products and services of the same or different various qualities and sectors to be easily separated from each other, and differentiates the products / services from their counterparts through promotional activities. The brand offer the product to the market, announces it to the masses through printing and publishing, promotes it, protects people and companies against the imitation of others or unfair behaviors within the framework of the rules of the country or international law. Brand is a combination of letters, numbers, colors, shapes and designs. As understood, the brand is a unique idea or concept used as an adjective and expressing a surplus value (Ries and Ries, 2002).

A brand can be defined as a promise and quality guarantee that establishes a mutual relationship between a business and its customers and is based on this relationship. As a result of the strength of the brand, it is easier for customers to perceive and demand this. A strong brand is a sign, emblem, a global symbol that is immediately recognized in any country, sector or product group and always attracts attention. The strong brand ensures that the business is noticed faster than its competitors and thus communicates with the target audience (Perry and Wisnom, 2003). From another point of view, taking into account the richness of the globalizing world, a brand can be defined as an entity that fulfills the following four conditions (Morgan, 2004):

- It is something that has a buyer and a seller.
- It is something with a distinctive name, symbol or registration.
- It is something that makes a positive or negative impression in consumers' minds for reasons other than real product features.
- It is something created rather than something created spontaneously.

There are two things that are tried to be avoided in this definition. The first is to define a brand as anything to be marketed. The reason why this is opposed is that the only person who can decide whether something is a brand is a buyer, not a seller. The second thing is; is much more seductive: it is the definition of a brand not as a product of a company or an organization, but as something the consumer wants to buy (Morgan, 2004). Thus, the brand is a relationship established with the target audience (Bond and Kirshenbaum, 1998) and a promise and quality guarantee for this relationship. This guarantee consists of a series / synthesis of logical and emotional qualities that establish a relationship between the firm and the firm's customers (Perry & Wisnom, 2003).

In this study brand coolness concept has been investigated and therefore positioning a brand as “cool” in the customers’ mind becomes an area of research. For that reason brand positioning is an important factor for brand management process. The purpose of brand positioning is to place the brand in a competitive position in the minds of the target audience. Therefore, brand positioning indicates the sum of the promises and features offered by the brand to the consumer. For

the purpose of positioning, it is important to create positive associations for the brand in the minds of consumers and these associations ensure that the consumer perceives that the brand is in a different place from the competing brands. Four strategies can be proposed in terms of positioning (Kotler, 2009).

- Strengthening the current position of the brand in the minds of consumers,
- To seize an unoccupied position,
- To remove competitors from their positions or to reposition them elsewhere,
- Developing a club strategy,

In terms of positioning strategy (Kotler, 2009);

- Product qualifications,
- Price-quality,
- Usage area of the product,
- Product-user relationship,
- Product category and
- Competitors matter.

The frequently used positioning tool is to refer to the properties of the product. For example, some car brands refer to being "economical", some to being "strong", some to being "safe". In terms of positioning, activities written below should be taken into consideration (Aaker and Shansby, 1982)

- Bringing some features of the product (functional / symbolic) to the forefront according to the brand image to be achieved,
- Working on the brand image instead of a short-term market share increase,
- Remembering that price is a part of this image, quality assurance and in terms of the conformity of the distribution channel with the image,
- The expectations of the consumers should be determined and met exactly,
- The sponsorship activities of the famous people selected in terms of associations towards the brand image should also be suitable for the image.

It is also possible to position the brand by targeting certain consumer groups. If a direct or indirect reference is made to competitors as in many positioning strategies, it should not be forgotten that it is important for the consumer to perceive why the brand is better than the competing brands rather than perceiving how good the positioned brand is (Aaker and Shansby, 1982). In this context brand coolness provides significant contribution o the differantiation of a brand according to th its competitors. Therefore, the concept of brand coolness will be discussed in the continuing part of the study.

## 2.2. Cool Brands

The concept of “cool” emerged as a symbol of rebellion among the African-American community in the United States in the 1950s against prejudice against society (Belk, 2006; Pountain & Robins, 2000). Later, being cool was associated with the hippie culture in the 1960s (Frank, 1997). As a result, the concept of cool has been identified with anti-commercial and ecological movements and has attracted the attention of the broad masses. Businesses have recognized the popularity of the cool idea and have made efforts to add coolness to their marketing activities. As a result, the concept of cool has shown its effect in the field of marketing more strongly (Belk et al., 2010).

In the marketing literature, many structures and definitions have been made in the studies about the brand. Accordingly, brand personality (Aaker, 1997), brand relationships (Fournier, 1998) or branding (Veloutsou & Moutinho, 2009) can be given as very well-known examples. However, today more structures need to be defined in order to better understand the success and characteristics of brands. The “cool brand” concept is also one of the newly described structure in the marketing literature. The concept of cool brand attracts increasing attention in the Marketing literature (Nancarrow et al., 2001; Gurrieri, 2009). However, there is no common definition for the cool brand concept yet. It should also be stated that it seems to work to give consumers the image of a "cool" brand. Perceiving a brand as “cool”

compared to other brands enables the brand to be differentiated (Kerner and Pressman, 2007).

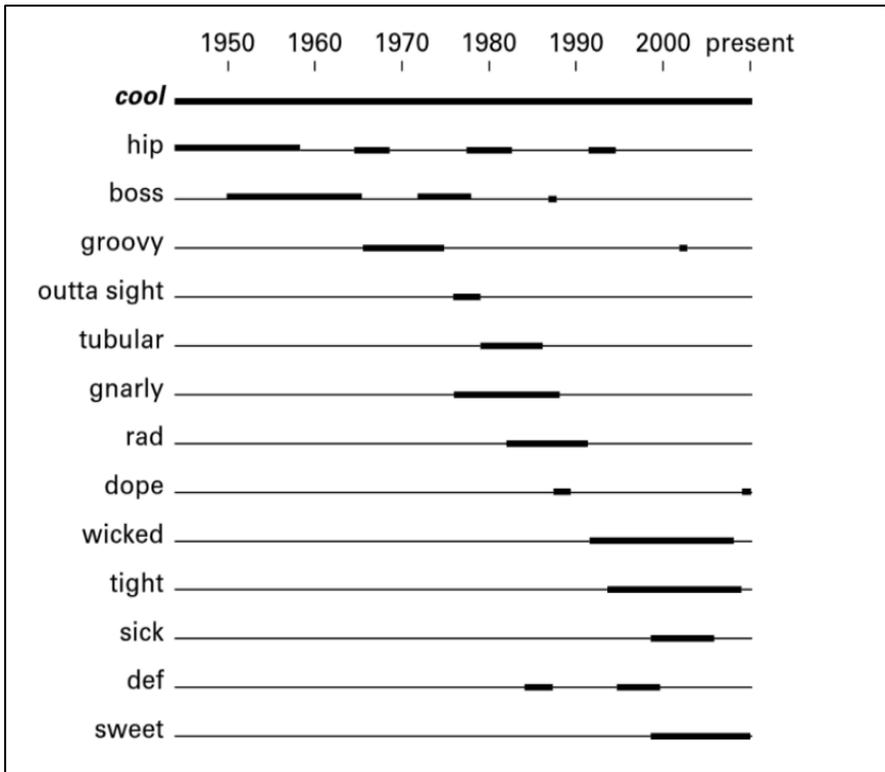
There are various dimensions of the concept of cool for brands. These can be expressed as follows (Bird & Tapp, 2008; Belk et al., 2010; Wooten & Mourey, 2013):

- First, coolness is an abstract concept. Coolness of a brand is a feature perceived and determined by consumers (Belk et al., 2010).
- Second, coolness involves a subjective consideration. Consumers with a similar background and similar interests set trend as to which brand or which product is cool.
- Third, coolness is dynamic due to its variable nature. While a brand or product may be perceived as cool over time, it may not be perceived later.
- Fourth, coolness allows brands to stand out and adapt to the times.
- Fifth, grouping a product or brand as cool highlights the positive side of the product.
- Sixth, coolness shows belonging to cool groups (Horton et al., 2012) and shows belonging (Culén & Gasparini, 2012). Coolness offers a very important differentiation opportunity for brands.

It is seen that the definition of a brand as cool is also expressed in different words. It can be stated that the statements about the coolness

of a brand from the past to the present have changed as in Figure 1. As can be seen from the figure, the words “boss, awesome, hip, groovy, tubular, rad, dope, sweet, tight, def, sick, gnarly etc.” have been used as synonyms of the word “cool”. It is also understood that the “cool” expression for brands has also been used since the 1950s (Den Bergh and Behrer, 2016). Loureiro and Lopes (2011) put forward 10 sub-dimensions of a cool brand. Accordingly, a cool brand contains “contemporary, singularity, emotional relation, preciousness, sub-group, unconventional, remarkable experience, social conscience, vintage, youthful” sub-dimensions. Matos (2017), as a result of his study with the perspective of managers, attributed the coolness of a brand to five factors. These are: associations, authenticity, originality, storytelling and accessibility. It is also observed that especially the young generation uses the concept of cool for brands in the following meanings (Den Bergh and Behrer, 2016):

- Appealing and fun,
- Innovation and novelty,
- Original and unique,
- Pleasurable,
- Creative,
- High status
- Contemporary
- Own style,
- Trendy.



**Figure 1:** Synonyms for “cool” (Den Bergh and Behrer, 2016)

A cool brand has distinctive features compared to other brands. Since the features that are found cool by the masses are constantly changing, the cool brands must keep up with this change (Rahman et al., 2009). Because of this need for change, the cool brand should always be contemporary and based on progressivism and innovation while creating a cool identity. Accordingly, the latest trends should be supported and it is necessary to be willing to be innovative (Gurrieri, 2009; Larocca and Saracco, 2010). In addition, cool brands are expected to be socially responsible, stylish, creative and have high design standards (Larocca and Saracco, 2010; Rahman et al., 2009;

Nancarrow et al., 2001). On the other hand, a cool brand needs to be confirmed by a group of viewers as being cool. For example, groups such as friends, family and colleagues should emphasize that the brand is cool (Rahman et al., 2009).

According to Gurrieri (2009), for a brand to be recognized as cool, it should be associated with cool people and organizations. Accordingly, the consumers try to be cool by associating themselves with the cool person. According to Breckenfeld (2009), consumers either publicly or secretly desire to be like cool people or want to be associated with these people. For this reason, they try to reveal the cool brands they use to the widest possible audience.

A cool brand is distinctly different from other brands and gives a sense of originality to its user (Kerner & Pressman, 2007; Pountains & Robbins, 2000; Southgate, 2003). Consequently, consumers can endure the difficulty and pay more to buy a cool brand. For this reason, while creating a cool brand identity, attention should be paid not to resemble other brands, to be original, to use the latest technology standards (Nancarrow et al., 2001; Rahman et al., 2009; Gurrieri, 2009; Allegro, 2010).

### **3. METHOD**

In this study, it was aimed to conduct a bibliometric analysis of scientific researches written in the field of brand coolness between 2000-2020. Bibliometric analysis is a method first introduced to the literature by Pritchard (1969). Pritchard (1969) defined the term

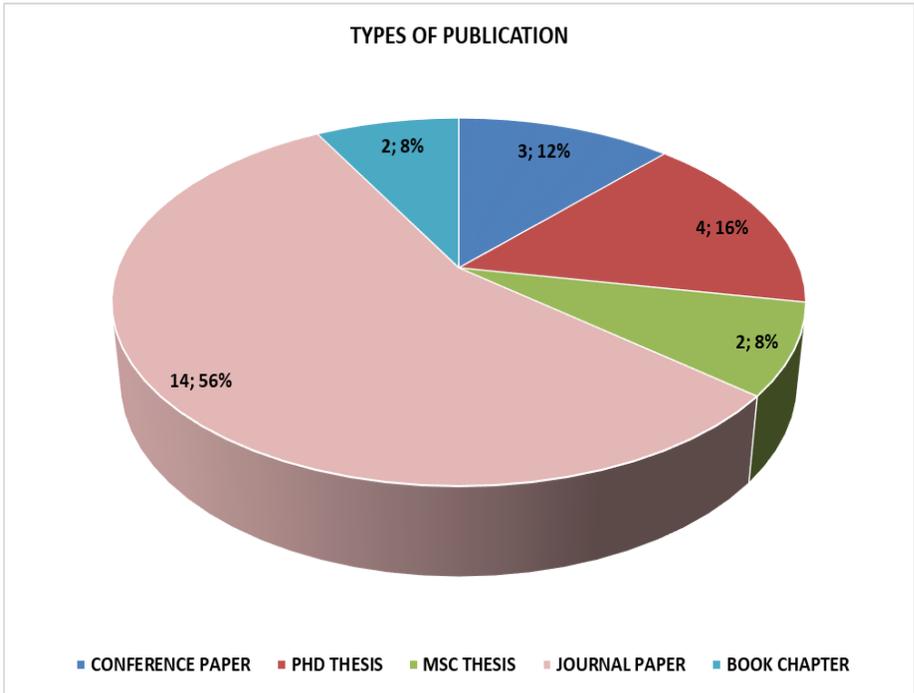
"bibliometric" as a statistical and mathematical tool that can be applied to different communication media such as books or other written material. Bibliometry has its origins in library studies and includes the examination of books, articles, publications, and citations in any discipline (De Bellis, 2009).

In the last twenty years, articles, theses and papers published in the field of brand coolness were downloaded from Google Scholar and academic databases and a data set was created for this study. In collecting the data, it is taken as a basis that the subject is about brand coolness.

Some statistical results were tried to be obtained from the database created in the analysis of the data. In this context, the distributions according to the publication years and types were examined. The samples on which the concept of brand coolness were studied and the meanings perceived by consumers from this concept were tried to be revealed.

#### **4. FINDINGS**

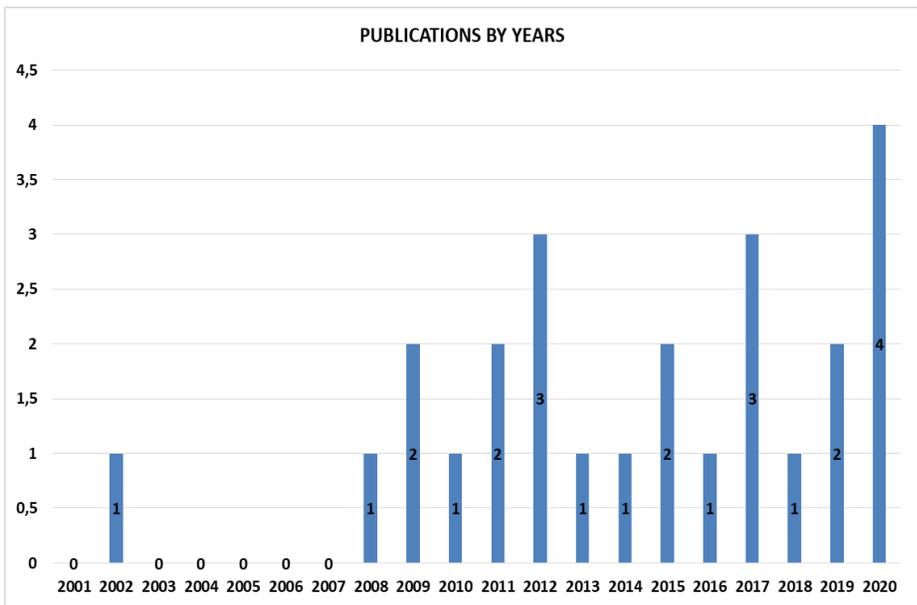
In this research, 25 academic publications on brand coolness (thesis, conference publication, magazine publication or book chapter) were examined. It was determined that the majority of the studies conducted in this context were journal articles (n = 14), besides, academic thesis (n=6), conference publication (n=3) and book chapters (n=2) on brand coolness were also made.



**Figure 2:** Types of Publication on “Brand Coolness”

Although it is seen that the concept of cool dates back to 1950s, it is seen that research on the concept of cool brand in the field of marketing has only been done in recent years. When the literature is examined, it can be stated that the concept of brand coolness is a new research area that has not been studied since very old times. In this context, the distribution of 25 publications examined in this study by years is given in the graphic below. When the figure below is examined, it is determined that the studies on the concept of brand coolness have been carried out in the last 20 years and have been increasing after 2010. However, it was found that the number of publications on this subject remained low. This situation shows that

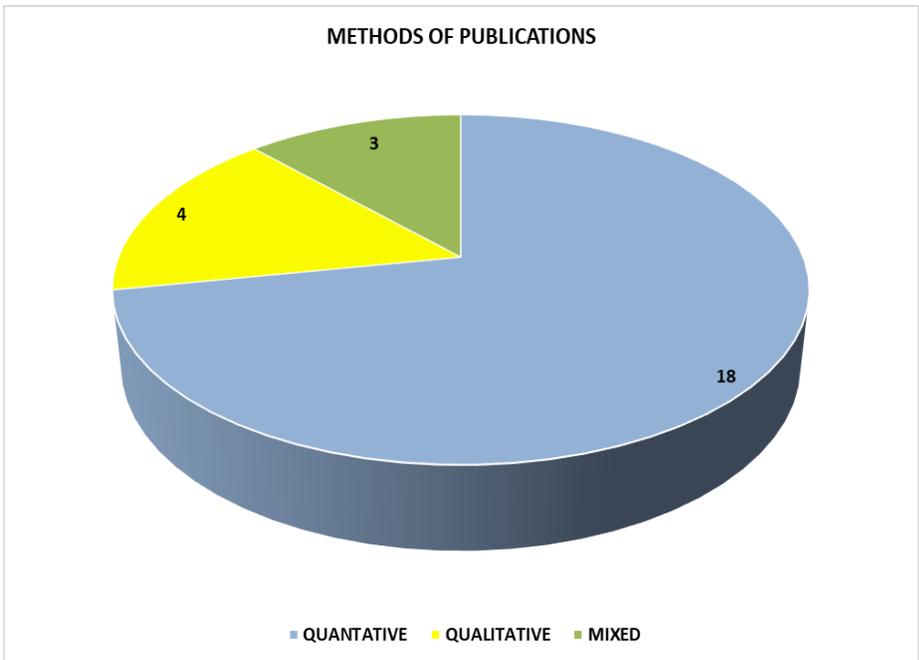
the concept of brand coolness is a new research area. It can be stated that this situation creates an important opportunity for those who want to do academic work on this subject. Because doing the first academic studies in a new field makes an important contribution to the formation of the literature and the value of early academic studies increases.



**Figure 3:** Number of Publications by Years

The methods of the studies in this field have been examined. It has been determined that the studies carried out are generally done by quantitative methods (n=18). In quantitative methods, it has been investigated that consumers' perceptions of brand coolness are generally tried to be measured and what meanings the concept of cool has on customers. This situation shows that the concept of brand

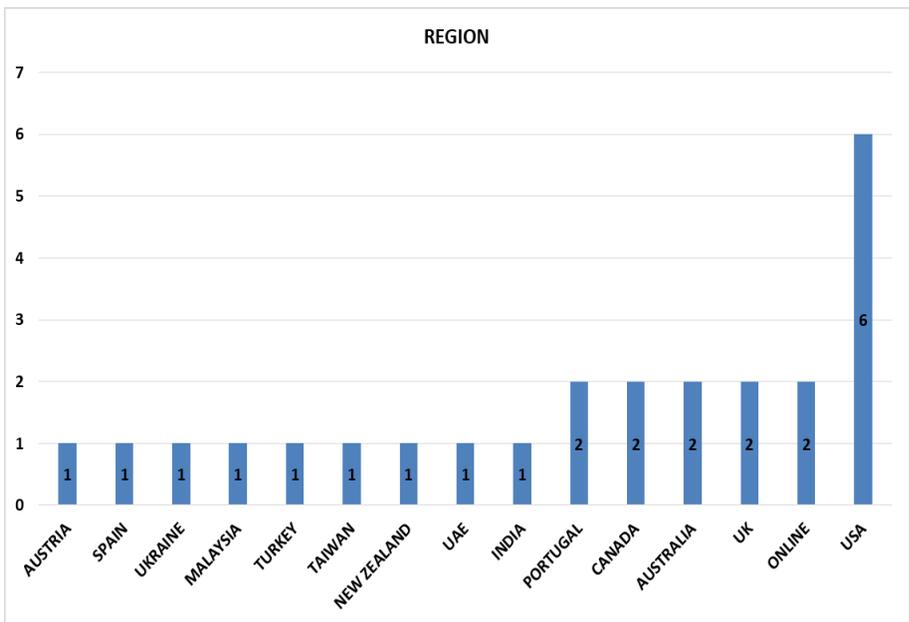
coolness is still being defined. It has been observed that there are also studies examining the relationship between brand coolness and other variables (brand credibility (Loureiro and Lopes, 2012), brand love (Tiwari et.al., 2020), brand attitude and purchase intentions (Jakel, 2020) etc.), even if it is very small. In addition, there are studies on brand coolness that have been conducted with qualitative (n=4) and mixed methods (n=3). In studies conducted with qualitative methods, it was observed that the consumer perception towards cool brands was tried to be understood by making interviews with consumers.



**Figure 4:** Method of Publications

Within the scope of the study, the regions of the samples where the publications on brand coolness were made were also examined. It was

investigated in which region the questionnaires or interviews in the publications were applied to the sample. Accordingly, it can be stated that the studies were mostly conducted on North American and European sample. In addition, it has been determined that research has been carried out on samples from countries in different regions such as Australia, Malaysia, Taiwan, UAE and India. On the other hand, it is observed that researches involving various regions have been conducted with the online participation of consumers in different parts of the world. These online researches include diverse participants from several regions.



**Figure 5:** Publication samples by regions

It has been observed in the studies examined in the research that there have been studies on how the concept of cool is perceived in the

minds of customers. Because the results obtained from these studies contribute to the definition of the concept of cool in terms of brands. The features attributed to cool brands in the studies examined in this context are shown in Table 1. When the attributed features are examined, it has been determined that features such as “originality, progressiveness, contemporary and authenticity, unconventional” come to the fore.

**Table 1:** What Makes a Brand “Cool”

<b>Author (s)</b>	<b>Participants</b>	<b>Cool Brand Attributes</b>
Matos, 2017	Managers	Associations, Authenticity, Accessibility, Storytelling Originality
Guerreri, 2009	Marketers and Consumers	Value, Social networks, Progressiveness, Unconventionality.
Loureiro and Lopes (2011)	Consumers	Contemporary, Singularity, Emotional relation, Preciousness, Sub-group, Unconventional, Remarkable experience, Social conscience, Vintage, Youthful.
Rahman et.al., 2013	Consumers	Fashionable, Amazing,

Author (s)	Participants	Cool Brand Attributes
		Sophisticated, Unique, Entertaining, Eye-catching, Composed
Warren et.al, 2019	Consumers	Subcultural, Rebellious, Authentic, Original, Popular, Iconic.
Chen and Chou	Tourism consumers	Uniqueness, Identification, Attractiveness
Tiwari et.al., 2020	Consumers	Desirability, Rebelliousness, Attractiveness, Innovativeness of technology, Reliability, Usability

## CONCLUSION

In this study, academic studies on the concept of cool brand were examined and the statistical and conceptual data obtained on this subject were shared. According to this, although the perception of some brands as cool goes back to old times, the concept of brand coolness has been observed to be a new concept in marketing literature. It has been observed that especially the publications on this subject have been made in the last 20 years. However, it has been observed that there are still few publications on brand coolness and this field is a newly developing literature.

It has been determined that the studies carried out are mostly handled in North America and Europe samples, but there are also studies on brand coolness in different parts of the world. On the other hand, it has been observed that the studies conducted are generally aimed at measuring what is understood from the concept of cool brand. This shows that the concept of brand coolness is still being defined. In this context, it has been determined that when the word cool brand is mentioned, the meanings such as “originality, progressiveness, contemporary and authenticity, unconventional” come to mind of the consumers.

In future studies, examining the relationship between brand coolness and some other variables (purchase decision, brand love, brand equity, brand loyalty, etc.) will provide unique contributions to the literature.

## REFERENCES

- Aaker, D. A., & Shansby, J. G. (1982). Positioning Your Product. *Business Horizons*, 25(3), 56- 62.
- Aaker, J. L., (1997). Dimensions of brand personality. *Journal of Marketing Research* 34(3), 347-356.
- Belk, R. W., Tian, K., & Paavola, H. (2010). Consuming cool: Behind the unemotional mask. *Research in Consumer Behavior*, 12(1), 183-208.
- Belk, W.R. (2006). Cool shoes, cool self, In: A.M. Dahlberg (Ed.), *Eyes Just for Shoes*, Swedish Royal Armory, Stockholm, pp. 77-90.
- Bird, S., & Tapp, A. (2008). Social marketing and the meaning of cool. *Social Marketing Quarterly*, 14(1), 18-29.
- Bond, J., & Kirshenbaum, R. (1998). *Under the radar: Talking to today's cynical consumer*. John Wiley & Sons.
- Breckenfeld, D. (2009). *The cool factor. Building your brand's image through partnership marketing*, John Wiley & Sons, New Jersey.
- Chen, C. F., & Chou, S. H. (2019). Antecedents and consequences of perceived coolness for Generation Y in the context of creative tourism-A case study of the Pier 2 Art Center in Taiwan. *Tourism Management*, 72, 121-129.
- Culén, A.L. & Gasparini, A.A. (2012), Situated techno-cools: factors that contribute to making technology cool in a given context of use, *PsychNol. J.*, 10 (2) pp. 117-139
- De Bellis, N. (2009). *Bibliometrics and citation analysis: from the science citation index to cybermetrics*. scarecrow press.
- Fournier, S., (1998). Consumers and theirs Brands: developing relationships theory in consumer research. *Journal of consumer research* 24, 343-373.
- Frank, T. (1997). *The Conquest of Cool: Business Culture, Counterculture, and the Rise of Hip Consumerism*, University of Chicago Press, Chicago
- Gurrieri, L., (2009). Cool Brands: A discursive identity approach. Proceedings of the Australian and New Zealand Marketing Academy Conference. In Luxton, S.

- (Ed.) Melbourne: Business Economics Department of Marketing, Monash University.
- Horton, M. Read, J.C. Fitton, D. Toth, N. Little, L., (2012), Too cool at school - understanding cool teenagers, *PsychNol. J.*, 10 (2) pp. 73-91.
- Jäkel, L. J. (2020). How does influencer marketing impact brands in the sportswear industry?: exploring the effects of brand coolness, brand attitude and purchase intentions (Doctoral dissertation). Universidade Católica Portuguesa.
- Kerner, N., Pressman, G., (2007). *Chasing Cool: Standing Out in Today's Cluttered Marketplace*, Atria Books, New York.
- Kotler, P. (2009). *Marketing management*. Pearson education.
- Larocca, R & Saracco, C. (2010). *Coolness and Gaps, branding survey*. Allegro234, Strategic marketing & branding. Madrid.
- Loureiro, S. M. C., & Lopes, R. (2011, November). Characteristics of cool brands: the development of a scale. In ANZMAC 2011, Perth Convention and Exhibition Centre (pp. 28-30).
- Loureiro, S. M. C., & Lopes, R. (2012, July). Brand credibility and self-brand connection as drivers to cool brands. In Global marketing conference at Seoul,.
- Matos, G. (2017). *Producers' Perspectives on What Makes (and Keeps) Brands Cool*. (Doctoral dissertation). University of Rhode Island.
- Morgan, A. (2009). *Eating the big fish: How challenger brands can compete against brand leaders*. John Wiley & Sons.
- Nancarrow, C., Nancarrow, P., Page, J., (2002). An analysis of the concept of cool and its marketing implications. *Journal of Consumer Behaviour* 1(4), 311-322.
- Perry, A., & Wisnom, D. (2003). *Before the brand: Creating the unique DNA of an enduring brand identity*. McGraw Hill Professional.
- Pile, T. (2009). Total communications strategy, In: Ed. Leslie Butterfield, *Excellence in Advertising*, Chapter 12. 231-246, Elsevier Butterworth-Heinemann.

- Pountain, D. & Robins, D. (2000). *Cool Rules: Anatomy of an Attitude Reaktion*, London.
- Pritchard, A. (1969). Statistical bibliography or bibliometrics. *Journal of documentation*, 25(4), 348-349.
- Rahman, K. (2013). “Wow! It's cool”: the meaning of coolness in marketing. *Marketing Intelligence & Planning*. 31 (6), 620-638.
- Rahman, K., Harjani, A., Thoomban, A., (2009). Meaning of “Cool” in the Eye of Beholder: Evidence from UAE, American University in Dubai, SBA Working Paper 09-001.
- Randall, G. (2000). *Branding: A practical guide to planning your strategy*. Kogan Page Limited.
- Ries, A., & Ries, L. (2002). *The 22 immutable laws of branding*. Harper Collins.
- Tiwari, A. A., Chakraborty, A., & Maity, M. (2020). Technology product coolness and its implication for brand love. *Journal of Retailing and Consumer Services*, 58, 102258.
- VanAuken, Brad, (2003), *Brand Aid, An Easy Reference Guide to Solving Your Toughest Branding Problems and Strengthening Your Marketing Position*, Amacom, New York.
- Veloutsou, C., Moutinho, L., (2009). Brand relationships through brand reputation and brand tribalism. *Journal of Business Research* 62, 314–322.
- Warren, C., Batra, R., Loureiro, S. M. C., & Bagozzi, R. P. (2019). Brand coolness. *Journal of Marketing*, 83(5), 36-56.
- Wooten, D., & Mourey, J. (2013). Adolescent consumption and the pursuit of “cool.”. *The Routledge companion to identity and consumption*, 169-176.
- Zyman, S., & Brott, A. A. (2003). *The end of advertising as we know it*. John Wiley & Sons.

**CHAPTER 3**

**A PROPOSAL OF NEW INDICATOR FOR THE DRY BULK  
FREIGHT MARKET**

Res. Assist. Dr. Abdullah AÇIK<sup>1</sup>

---

<sup>1</sup> Dokuz Eylül University, Maritime Faculty, Department of Maritime Business Administration, İzmir, Turkey. [abdullah.acik@deu.edu.tr](mailto:abdullah.acik@deu.edu.tr).  
<https://orcid.org/0000-0003-4542-9831>



## INTRODUCTION

Maritime transport basically performs the process of transporting cargo from one point to another (Branch, 2007:2) and contributes greatly to the realization of economic change in the world (Wilmsmeier, 2014:1), as, cargoes transported by maritime constitute approximately 90% of world trade by weight (Rodrigue, 2013:28). Cargo transported by sea can generally be classified as general cargo, container, pallet, and bulk cargo (Liu, 2012:379). The ship types used according to each cargo type can be specialized ships or flexible ships. Bulk cargo can be divided into liquid and dry (Lun et al., 2010:4), or five major bulk, minor bulk, and liquid (Stopford, 2009:63). The main feature of these cargoes is that they are homogeneous and can take the shape of the hold where they are loaded (Hinkelman, 2008:678). Therefore, they can be loaded directly onto ships without any packaging needed (Gubbins, 1996:58). Dry bulk cargoes account for approximately 27% of the world's maritime trade in terms of tonnage (UNCTAD, 2019a). The transported cargoes mostly consist of raw materials such as iron ore, coal, and grain used in the production of final products (Geman, 2009:191). Therefore, the situation in the dry bulk market is used by most researchers as a leading indicator of current and future global economic developments (Langdana, 2009:94; Şahin et al., 2018). Since the increasing dry bulk traffic may cause an increase in freight rates, the increase in freight rates can be interpreted as a good sign for the global economy, while in the opposite case, negative inferences can be made. However, this is of

course more valid in the short-run (Barhoumi and Ferrara, 2015). In the long run, when new ships are entering the market, freight rates tend to decrease again (Carr, 2011:131).

The dry bulk market has the characteristics of a perfectly competitive market in terms of market structure; the price is determined by the market; easy entry and exit (except high capital costs); there are many shipowners and cargo owners (Ma, 2020:304). Due to this market structure and the inelastic supply structure in the short-run (Koopmans, 1939), changes in demand can cause immediate effects on dry bulk freight. Thanks to this, it is proposed by many researchers as a leading indicator. Also, since the demand for maritime transport is derived, all factors affecting the demand for commodities also affect the demand for maritime transport (Marcus, 2014:1). Assuming that the information of demand for commodities is carried in their prices, there is likely to be a relationship between commodity prices and freight rates. Because the increasing demand for commodities may cause an increase in prices primarily by causing an increase in production costs (Radetzki, 2008:57). Also, manufacturers or miners who want to sell at high prices can increase their production levels (Açık and Başer, 2018a), which consequently result in an increase in the demand for maritime transportation. Of course, this situation may vary depending on the ship type, as there are many different types of ships operating in the dry bulk market.

Classifications of the vessels in dry bulk market often made based on their sizes as Handysize (20,000-35,000 DWT), Handymax (35,000-45,000 DWT), Supramax (45,000-55,000), Panamax (60,000-75,000 DWT) and Capesize (80,000-300,000 DWT) respectively (Alizadeh & Nomikos, 2009: 30). Ship selection in the dry bulk market by cargo owners is affected by some factors. This selection can be best explained by Parcel Size Distribution Function (PSD). PSD is a concept that expresses which cargo should be transported with which kind of ship (Lun et al., 2010:8). This concept is mainly related to 3 factors; stock levels of end users, draft levels, and infrastructure at loading and unloading ports, cost savings by using larger-scale ships (Stopford, 2009:75). Considering all these factors by cargo owners, some types of ships are used more extensively in the transportation of some major dry bulk cargoes. For example, 70-80% of the world's iron ore is transported by Capesize type vessels, 10-20% by Panamax type vessels; 40-50% of the world's grain transported by Panamax type vessels, and 45-55% by Handymax type vessels (Chen et al., 2014). Therefore, changes in the price of each commodity may affect more than one ship type, but these effects may be different for each ship type, as their specialization rates are different for bulk cargoes.

When we examine the literature, many studies are examining the relationships between commodity prices and maritime markets, and obtaining significant relationships. These studies can be categorized into the following groups; those related to the freight market (Chou et al., 2015; Tsioumas and Papadimitriou, 2018; Aık and Baer, 2019;

Açık and İnce, 2019; Açık and Başer, 2020; Angelopoulos et al., 2020; Açık, 2020), those related to the derivatives market (Kavussanos et al., 2010; Kavussanos et al., 2014), those related to the second-hand market (Başer and Açık, 2019), and other types of studies (Açık and Başer, 2018a; Açık and Başer, 2018b). When examining the impact of commodity prices on the freight market, each commodity is examined separately in the literature, which may ignore the impacts of other commodities. In this respect, it may be beneficial to use a single indicator that contains the effect of all commodities for each ship type in order to obtain more accurate results. Thus, this study aims to develop a commodity price index for three major ship types weighted by the ratios of the cargoes carried by them and to test the effect of this index on the three freight market by econometric methods. We indexed the iron ore, coal, and wheat prices according to the transport rates on Capesize, Panamax, and Handymax ship types, and developed a separate commodity index for each ship type. We have also used some assumptions and rounding in doing this. Basically, we do not have a definite claim that the indices we have obtained are leading indicators, but by following this methodology, we suggested the idea that a dynamic commodity index can be used as a leading indicator for each ship type by using more detailed and realistic data. In order to test the effect of commodity indices on freight markets, nonlinear causality test was used. Our findings presented significant results and support the idea of using such indices as a leading indicator for each shipping market.

In the first section, information about the data set, method, and pre-tests used in the study were presented. In the second section, first of all, a weighted commodity price index was formed for each ship type, assuming constant transport rates for major bulk cargoes by ship types. Then, pre-tests were applied for nonlinear causality analysis. In line with the obtained findings, the DP tests were applied and the results were presented. In the last section, the findings obtained were evaluated.

## **1. METHODOLOGY**

In this section, first of all, the data set used in our study is examined. Then, our major method, DP causality test, is introduced. Finally, since the method requires to be stationary and non-linear, tests for these situations are explained.

### **1.1. Data**

The commodity prices used in our study were obtained from monthly statistical data published by Worldbank (2019). Units are US dollars paid per ton. Freight rates are obtained from the Bloomberg Data Platform (2019). Their units are in US dollars paid per ton for transportation activities. Monthly arithmetic averages of daily values were used for freight rates. Capesize dataset covers the dates between January 2000 and June 2019. SALBE refers to Capesize route from Saldanha (South Africa) to Beilun (China), TUBQINQ refers to Capesize route from Tubarau (Brazil) to Qingdao (China), TUBROT refers to Capesize route from Tubarau (Brazil) to Rotterdam (Netherlands). The unit of these three routes are \$ per metric tons.

**Table 1:** Descriptive Statistics for the Capesize Dataset

	COAL	ORE	WHEAT	SALBE	TUBQINQ	TUBROT
Mean	69.76	83.46	195.53	17.61	23.55	12.34
Median	67.51	69.55	187.81	13.40	19.31	9.11
Maximum	180.00	197.12	419.61	77.02	97.51	53.53
Minimum	22.25	28.79	90.87	4.07	5.53	2.75
Std. Dev.	32.24	47.74	66.81	12.89	16.91	9.02
Skewness	0.44	0.74	0.65	2.29	2.21	2.17
Kurtosis	2.75	2.49	2.91	8.98	8.61	8.36
Jarque-Bera	8.21	23.93	16.55	556.0	499.3	465.3
Probability	0.01	0.00	0.00	0.00	0.00	0.00
Obs.	234	234	234	234	234	234

**Source:** Worldbank, 2019; Bloomberg, 2019.

Panamax dataset covers the dates between February 2001 and June 2019. HAMROT refers to Panamax route from Hamphthon Road (USA) to Rotterdam (Netherlands), RICROT refers to Panamax route from Richard Bay (South Africa) to Rotterdam (Netherlands), ROBROT refers to Panamax route from Roberts Bank (Canada) to Rotterdam (Netherlands), WAROT refers to Panamax route from South wales to Rotterdam (Netherlands). The unit of these three routes are \$ per metric tons.

**Table 2:** Descriptive Statistics for the Panamax Dataset

	HAMRO				ROBRO		
	COAL	ORE	WHEAT	T	RICROT	T	WAROT
Mean	72.29	86.67	201.16	13.94	15.55	25.05	23.16
Median	71.07	71.53	190.3	12.00	12.62	21.07	18.46
Maximum	180.0	197.12	419.6	48.75	58.00	90.0	88.34
Minimum	22.25	29.31	97.42	4.82	4.36	8.36	6.26
Std.Dev.	31.37	47.19	64.44	7.87	9.59	13.77	14.13
Skewness	0.41	0.69	0.70	1.93	1.86	1.83	1.78
Kurtosis	2.86	2.43	2.97	7.23	6.95	7.14	6.76
Jarque-Bera	6.63	20.90	18.05	302.7	272.0	282.4	247.9
Probability	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Obs.	221	221	221	221	221	221	221

**Source:** Worldbank, 2019; Bloomberg, 2019.

Handymax dataset covers the dates between January 2009 and June 2019, and consists of 126 monthly observations. USJAP refers to Handymax route from US Gulf to Japan, PANSA refers to Handymax route from Pacific Northwest (US) to South America.

**Table 3:** Descriptive Statistics for the Handymax Dataset

	COAL	ORE	WHEAT	PANSA	USJAP
Mean	86.47	100.6	227.4	49.68	46.66
Median	86.98	88.83	209.8	49.84	46.90
Maximum	132.4	187.1	346.4	66.33	72.85
Minimum	49.02	40.50	157.5	42.34	23.21
Std.Dev.	20.6	39.48	48.84	5.67	11.54
Skewness	0.12	0.46	0.67	1.04	0.00
Kurtosis	2.20	1.96	2.46	3.74	2.72
Jarque-Bera	3.67	10.11	11.04	25.80	0.39
Probability	0.15	0.00	0.00	0.00	0.82
Obs.	126	126	126	126	126

**Source:** Worldbank, 2019; Bloomberg, 2019.

## 1.2. Index Generation Process

The method and logic used in the calculation of the Baltic Dry Index were used in the calculation of the commodity index for each shipping market. The calculation of the relevant index is detailed in A Guide to Freight Reporting and Index Production published by Baltic Exchange (Baltic Exchange, 2011:47).

In the BDI application of this technique, the weight ratios were determined for each route included in the index as the sum of weights is 100%.

$$\sum_{i=1}^n w_i = 100$$

Then, an initial value for the index is determined and the contribution of each variable to the index is calculated according to the weights assigned to the variables.

$$\text{Contribution to Index}_i = W_i \times \text{Initial Index Value}$$

After calculation of the Contribution to Index values for each variable, Weighting Factors are assigned to each variable to make the index dynamic in the following time units.

$$\text{Variable Weighting Factor}_i = \frac{\text{Contribution to Index}_i}{\text{Value of Variable}_i}$$

Finally, the new values of the index are calculated in the following periods by multiplying the values of the variables by their Weighting Factors.

$$\begin{aligned} & \text{Index Value}_{t+k} \\ &= \sum_{i=1}^n \text{Value of Variable}_{i,t+k} \times \text{Variable Weighting Factor}_i \end{aligned}$$

In this study, based on this technique, commodity price indices are calculated for each ship market subject to research, and econometric analyzes are applied.

### 1.3. Causality Test

The causality test, one of the most widely used econometric methods, was first developed by Granger (1969). In this method, when examining the relationship between two variables, if the past values of

one variable make a significant contribution to explain the current and future values of the other variable (Yu et al., 2015), the first variable is expressed as the Granger cause of the second variable (Dura et al., 2017). This result occurs when the method detects a significant correlation between these values (Chiou-Wei, 2008).

However, since this method is a linear one, in today's globalizing world, this method may be insufficient to determine the relationship between variables (Bal & Rath 2015; Kumar, 2017; Adıgüzel et al., 2013), as the data are exposed to too many shocks and structural breaks (Bildirici & Turkmen, 2015). One of the nonlinear methods developed in this direction is the causality test developed by Diks and Panchenko (2006). Earlier versions of this method were developed by Baek and Brock (1992) and Hiemstra and Jones (1994). However, these methods assumed that the series were mutually and individually independent, and identically distributed, or over rejected the null hypothesis when the sample size increased (Diks & Panchenko, 2005). Over these shortcomings, the more advanced version was developed by Diks and Panchenko (2006). The method has been deemed appropriate by us as it is a useful method in terms of both detecting nonlinear relationships and providing lagged results between the variables. In this method, the linearity of the series must be tested and the series must be stationary.

#### **1.4. Unit Root Test**

Since the series must be stationary in the DP causality analysis applied in our study, unit root tests should be applied. Considering that the

maritime and commodity markets are subjected to a lot of shocks and structural breaks in time, we decided that it is more appropriate to apply special unit root tests, which also take into account the structural breaks in the series considering both level and trend breaks. Accordingly, one break ADF test developed by Zivot & Andrews (1992), one break LM test developed Lee & Strazicich (2013), two break ADF test developed by Narayan & Popp (2010), two break LM test developed by Lee & Strazicich (2003) are applied to the series which take into account possible breaks in level and level and trend. GAUSS statistical software and codes are used in these unit root analysis.

### **1.5. Nonlinearity Tests**

Since the method we use is a nonlinear one, the linearity of the series should be tested first. Accordingly, we used the BDS (Brock, Dechert and Scheinkman) Independence Test proposed by Brock et al. (1987). This method is applied to the residuals of any model and tests whether the residuals are independent and identically distributed. The null hypothesis of the test is that the residuals are independent and identically distributed (Brock et al., 1996). Rejecting the null hypothesis indicates that there are hidden nonlinear dependencies in series. In such a case, it is more appropriate to apply nonlinear causality tests rather than linear causality tests (Lim and Ho, 2013).

To implement this test, we first transform all variables into a return series. Then, we determined the most suitable ARMA models based on the smallest AIC values and separated the residues of the model.

Finally, we applied the BDS test to the residuals in order to test their linearity.

## **2. RESULTS**

In our research, we first generated a weighted commodity price index for each ship market using their rates of transport by ship types. Later, like most other research, we simplified our model by making some assumptions, since there are too many variables that affect commodity prices and freight, and it is not possible to include all of them in the model. After this stage, we applied linearity and unit root pre-tests to the newly generated commodity price index variables and maritime route variables. Thus, we checked whether they are suitable for DP analysis.

### **2.1. Index for Main Bulkers**

Cargo ratios carried by three main bulk ships were used to generate an index, which was presented in Table 4. These ratios are derived from the approximate values reported by Meersman et al. (2014) and converted to a net ratio through the author's own assessments. According to the assumed rates, 75% of the ore is transported by Capesize vessels, 15% by Panamax vessels, and 10% by Handymax vessels; 35% of the coal is transported by Capesize vessels, 47% by Panamax vessels, and 18% by Handymax vessels; 5% of grain is transported by Capesize vessels, 45% by Panamax vessels and 50% by Handymax vessels.

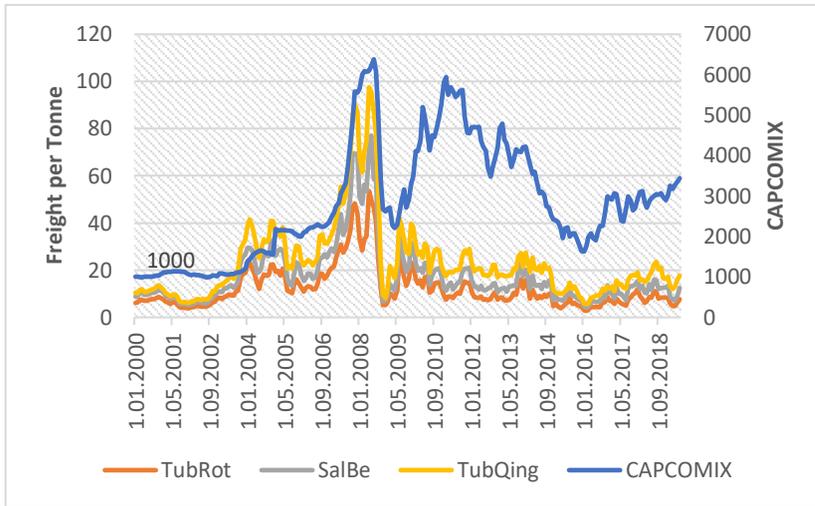
**Table 4:** Approximately Rate of Cargoes in Three Ship Types

	<b>Iron Ore</b>	<b>Coal</b>	<b>Grain</b>
Capesize	75%	35%	5%
Panamax	15%	47%	45%
Handymax	10%	18%	50%

At this point, since the length of the dataset available for each ship type related to the freight data is different, the start dates of the indices also differ. This limitation is not considered to be a major problem since the analyzes examined the relationship between newly formed commodity price indices and freight rates rather than inter-index interaction. In addition, wheat prices were used instead of grain prices as no general pricing of grain commodity could be reached. The new commodity price indexes obtained were named CAPCOMIX for Capesize vessels, PANCOMIX for Panamax vessels, and HANCOMIX for Handymax vessels.

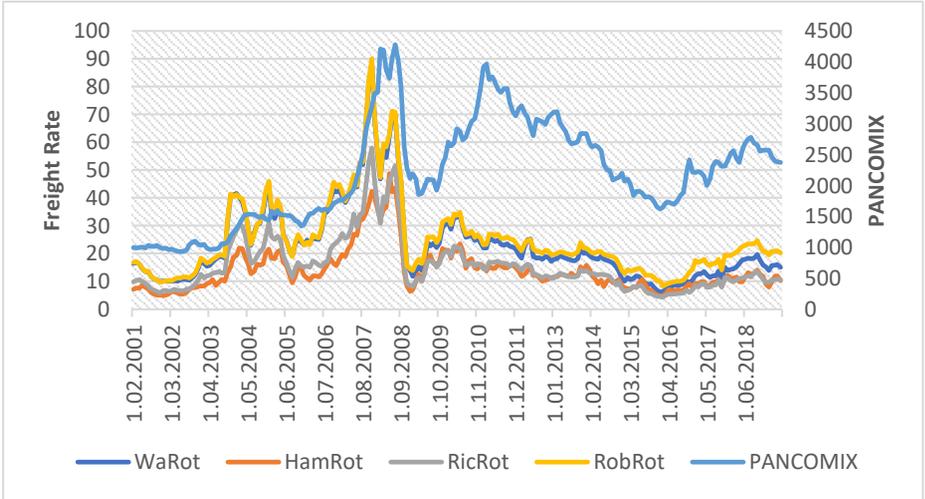
The data set for the Capesize market starts from 2000M1, so this date was used as a reference date for CAPCOMIX. On that day, iron ore price was \$28.79, coal price was \$ 25.1 and wheat price was \$98.56. The weight factors obtained using these prices were 22.65 for ore, 12.12 for coal, and 0.44 for wheat. Figure 1 presents the commodity price index for Capesize type vessels and the movements of the rates of the freight routes over time. The included freight routes are SALBE (Saldanha - South Africa to Beilun - China), TUBQINQ (Tubarau - Brazil to Qingdao - China), TUBROT (Tubarau - Brazil to Rotterdam - Netherlands), and the unit of these three routes are \$ per metric tons. When the visual figure is examined, it can be seen that there are

similarities in movements of CAPCOMIX and the freight values of routes.



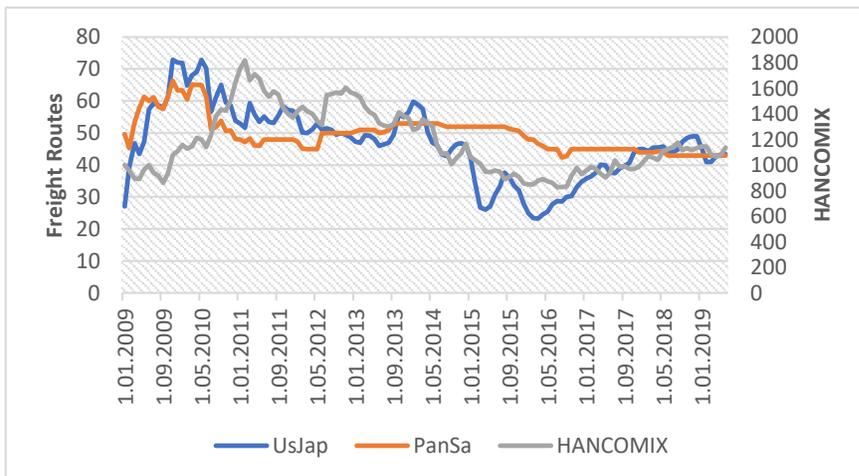
**Figure 1:** CAPCOMIX and Freight Routes (Bloomberg, 2019).

The data set for Panamax market starts from 2001M2 and therefore the date was used as the reference date for PANCOMIX. On that day, iron ore price was \$30.03, coal price was \$ 32.1 and wheat price was \$106.74. The weight factors obtained using these prices were 4.64 for ore, 13.76 for coal, and 3.92 for wheat. The commodity price index for Panamax type vessels and the movements of the rates of the freight routes over time were presented in Figure 2. As in Capesize, the commodity price index for the Panamax market is largely in line with the freight rates in the routes. The freight routes consisted of HAMROT (Hampton Road - USA to Rotterdam - Netherlands), RICROT (Richard Bay - South Africa to Rotterdam - Netherlands), ROBROT (Roberts Bank - Canada to Rotterdam - Netherlands), WAROT (South Wales to Rotterdam - Netherlands).



**Figure 2:** PANCOMIX and Freight Routes (Bloomberg, 2019).

Since the freight values for Handymax started from 2009M1, this date was the reference date for this market. Due to the data constraint, the HANCOMIX index is considerably shorter than other commodity price indices. On that day, iron ore price was \$72.51, coal price was \$79.4 and wheat price was \$195.10. The weight factors obtained using these prices were 1.78 for ore, 2.84 for coal, and 3.30 for wheat. The included freight routes are USJAP (US Gulf to Japan), PANSAs (Pacific Northwest - US to South America). The commodity price index for Handymax type vessels and the movements of the rates of the freight routes over time were presented in Figure 3.



**Figure 3:** HANCOMIX and Freight Routes (Bloomberg, 2019).

The descriptive statistics of the commodity price indices generated for each ship type as a result of the index generation process are presented in Table 5. However, the comparison of these values does not provide a sound interpretation, because the dates that the indices refer to are different from each other.

**Table 5:** Descriptive Statistics of the Commodity Price Indices

	<b>CAPCOMIX</b>	<b>PANCOMIX</b>	<b>HANCOMIX</b>
Mean	2822.9	2186.8	1177.1
Median	2635.1	2116.9	1118.3
Maximum	6379.6	4278.9	1818.3
Minimum	991.1	931.6	826.6
Std.Dev.	1441.9	832.3	250.3
Skewness	0.60	0.35	0.55
Kurtosis	2.47	2.37	2.21
Jarque-Bera	16.8	8.20	9.73
Probability	0.00	0.01	0.00
Observations	234	221	126

**Source:** Bloomberg (2019).

After establishing commodity price indices specific to each ship type, econometric analyzes are initiated in the further sections.

## **2.2. Assumptions of The Analysis**

Some details need to be ignored or fixed to be able to carry out the study. In some cases, it is not possible to achieve significant results by adding every detail to the model. Therefore, by making some assumptions mentioned in this section, the model of the study is made practicable.

### ***Transported Cargoes***

In the dry bulk market, there are three major bulk cargoes that are transported mostly, which are iron ore, coal, grain. In some of the ships included in the study, other cargo types can be also transported. Therefore, the demand from other cargoes can be effective on the freight of these ships. However, no information regarding the transport rates of these cargo types could be obtained. Considering that these cargoes constitute a small amount in addition to the 3 main bulk cargoes, their impact on freight rates may be low. Therefore, while carrying out these analyzes, it is assumed that the other cargo types have no significant effect on dry bulk freight rates.

### ***Transport Rates***

The amount of specific cargo transported by ships may vary according to the demand received over time. However, since there is no access to such data, the rates of three major cargo carried by three main types of

ships in this study are assumed to be constant throughout the period covered.

### **2.3. Causality Analysis**

Before applying DP analysis, the stationarities and linearity of the series should be tested, because this analysis method is carried out with stationary series and is not a linear one. Unit root tests were applied to all variables and their results are presented in Appendix 1. According to the results of the analysis applied for the Capesize market, the unit root null hypothesis was rejected by at least 1 test in all variables. Especially on freight routes, unit root test with 2 structural breaks test come to the fore, and break dates were concentrated in 2008 and 2014 years. In the analysis results applied for the Panamax market, the unit root null hypothesis was rejected by at least 1 test for all variables. In this market, the unit root tests with 2 break come to the fore, and breaks were generally experienced in 2008 and 2014. Finally, for the Handymax market, the unit root null hypothesis was rejected by at least 1 test in all variables. In this market, the unit root test with 2 structural breaks test tests come to the fore, as in the other two markets.

After determining the unit root, the linearity of the series should be tested. The BDS Independence Test was used for this and the results are presented in Appendix 2. In order to determine the nonlinear structures in the series, the most appropriate ARMA model was determined for each variable according to the lowest Akaike information criterion value. After checking AR and MA roots of the

model, the linearity was tested by applying BDS Independence Test. The maximum size was set to 6 and the fraction of pairs method was used. For the Capesize market, the linearity null hypothesis is rejected in all dimensions in all variables. Likewise, for the Panamax market, it is rejected in all dimensions for all variables. For the Handymax market, it is rejected in the route variables other than the Han Index variable. This is likely because the data set is short. Since the routes in the analyzes are nonlinear, the analyzes were applied assuming that this variable is not linear.

After obtaining valid results from pre-tests, DP analysis was applied for each market. The analyzes applied for the Capesize market were presented in Table 6. The results show that there is significant causality from the commodity price index to the Salbe route after 2 lags, to the Tubqinq rote immediately, and to the Tubrot route after 2 lags.

**Table 6:** Capesize Market Results

Lags	HJ (1994) Probability	HJ (1994) T-Statistics	DP (2006) Probability	DP (2006) T-Statistics
Incape does not granger cause Insalbe				
1	0.353355	0.376277	0.200501	0.839834
2	0.168662	0.959466	0.132792	1.113290
3	0.079498	1.408455	0.063960*	1.522358
4	0.071698	1.463261	0.054000*	1.607246
Incape does not granger cause Intubqinq				
1	0.123146	1.159403	0.052961*	1.616796
2	0.015702	2.151925	0.013861**	2.201209
3	0.011129	2.285930	0.011147**	2.285328
4	0.005604	2.536133	0.007279***	2.443169
Incape does not granger cause Intubrot				
1	0.331753	0.435078	0.191869	0.871031
2	0.173109	0.941951	0.121390	1.168068
3	0.064380	1.519013	0.057390*	1.577066
4	0.085469	1.369196	0.081696*	1.393754

\*Null of non-causality is rejected at \*10%, \*\*5%, \*\*\*1%

The results of the DP test applied for the Panamax market are presented in Table 7. The results show that there is significant causality from the commodity price index to the Hamrot route after 1 lag, to the Ricrot rote immediately, to the Robrot route immediately, and to the Warot route immediately.

**Table 7: Panamax Market Results**

Lags	HJ (1994) Probability	HJ (1994) T-Statistics	DP (2006) Probability	DP (2006) T-Statistics
Inpanix does not granger cause Inhamrot				
1	0.244725	0.691183	0.177666	0.924298
2	0.047626	1.668318	0.035270**	1.808429
3	0.051053	1.634730	0.042456**	1.722872
4	0.055818	1.590884	0.042718**	1.719985
Inpanix does not granger cause Inricrot				
1	0.071368	1.465681	0.064597*	1.517284
2	0.017479	2.108844	0.021348**	2.026663
3	0.008758	2.375700	0.013215**	2.219826
4	0.012110	2.253611	0.016975**	2.120663
Inpanix does not granger cause Inrobot				
1	0.049720	1.647573	0.074869*	1.440459
2	0.019630	2.061457	0.039900**	1.751849
3	0.010063	2.324009	0.021858**	2.016812
4	0.011288	2.280527	0.021211**	2.029350
Inpanix does not granger cause Inwarot				
1	0.054433	1.603313	0.057235*	1.578416
2	0.025131	1.957730	0.041414**	1.734505
3	0.017892	2.099367	0.034854**	1.813807
4	0.023599	1.984522	0.041804**	1.730120

\*Null of non-causality is rejected at \*10%, \*\*5%, \*\*\*1%

Finally, the results of the DP test applied for the Handymax market are presented in Table 8. The results show that there is significant causality from the commodity price index to the Pansa route immediately and to the Usjap rote immediately.

**Table 8:** Handymax Market Results

Lags	HJ (1994) Probability	HJ (1994) T-Statistics	DP (2006) Probability	DP (2006) T-Statistics
Inhanin does not granger cause Ln PANSAs				
1	0.035577	1.804493	0.035655**	1.803502
2	0.002473	2.810521	0.011556**	2.271592
3	0.001905	2.893463	0.010665**	2.302105
4	0.004034	2.649226	0.017444**	2.109657
Inhanin does not granger cause Ln USJAP				
1	0.190967	0.874340	0.098477*	1.290277
2	0.061709	1.540581	0.021575**	2.022261
3	0.033956	1.825595	0.020473**	2.044084
4	0.058930	1.563817	0.031621**	1.857489

\*Null of non-causality is rejected at \*10%, \*\*5%, \*\*\*1%

## CONCLUSION

In this study, we aimed to bring a new perspective to the examination of the relationship between commodity prices and freight rates, which are the subject of various studies in the literature and have obtained significant results. In the dry bulk market, more than one different ships can be used to transport some cargoes. For example, although Capesize ships are specialized in iron ore transportation, they are also used extensively in coal transportation. Similarly, although Panamax vessels are specialized in coal transportation, they can frequently get jobs from the iron ore market.

In this respect, changes in demand for different commodities affect more than one type of ship. This interaction has been detected in some studies in the literature, from the same commodity price to freight rates of the different type of ships (Tsioumas and Papadimitriou, 2018; Açık and İnce, 2019; Açık, 2020). However, the degree of this effect may vary depending on the cargo transport density. In this

study, we started our analysis assuming that the price of the commodity carries information about the demand for it. We also assumed that the rates offered by Chen et al. (2014) are constant over time due to data constraints. In the real-life, these rates may vary over time depending on market conditions. In addition, since there is no general price for grain commodities, we used wheat prices. We weighted commodity prices according to the rate of use of ships in transporting iron ore, coal, and wheat, and formed a separate commodity index for each ship type. Then, we tested the relationship between the commodity price index formed for each ship type and the freight rates of that ship with nonlinear causality analysis. The results we obtained showed that the indices can have a 2-period delay on some routes and can be effective instantly on some routes. These results showed that individual commodity price indices can be used as a leading indicator according to ship types.

In the study, we conducted our analysis in order to give a methodological idea rather than the goal of forming leading indices directly applicable in real life. If more detailed and dynamic data can be obtained in future studies, healthier commodity price indices can be formed and offered to the use of market stakeholders in order to reduce their risks arising from uncertainty.

## REFERENCES

- Açık, A. (2020). *Agent based interaction of commodity price and freight market*. Doctoral Thesis. Dokuz Eylül University, Institute of Social Sciences, İzmir, Turkey.
- Açık, A. and Başer, S.Ö. (2018a). An analytical study on the likely causes of the minor bubbles in the Baltic dry index. *International Journal of Logistics Economics and Globalisation*, 7(4), 353-365.
- Açık, A. and Başer, S.Ö. (2018b). The effects of fast decline in crude oil prices on the tanker market in the short run. *Dokuz Eylül Üniversitesi Denizcilik Fakültesi Dergisi*. 10(1), 61-82.
- Açık, A. and Başer, S.Ö. (2019a). Impact of commodity price on freight market considering the 2008 crisis: An investigation of iron ore price and capesize shipping rates. in *II. Business & Organization Research Conference Full Text Book* (pp. 1087-1099), Yaşar University. İzmir. 4th-6th September 2019.
- Açık, A. and Başer, S.Ö. (2020). Asymmetric causality from commodity prices to shipping markets: an empirical research on Istfix region. *World Review of Intermodal Transportation Research*, 9(1), 47-62.
- Açık, A. and İnce, M.R. (2019). Do commodity price shocks matter for dry bulk freight markets?. *Studies on Social Sciences* (pp. 77-101). Ankara: İKSAD Publishing House.
- Adıgüzel, U., Bayat, T., Kayhan, S. and Nazlıoğlu, Ş. (2013). Oil prices and exchange rates in Brazil, India and Turkey: Time and frequency domain causality analysis. *Siyaset, Ekonomi ve Yönetim Araştırmaları Dergisi*, 1(1), 49-73.
- Alizadeh, A. and Nomikos, N. (2009). *Shipping derivatives and risk management*. London: Macmillian.
- Angelopoulos, J., Sahoo, S. and Visvikis, I. D. (2020). Commodity and Transportation Economic Market Interactions Revisited: New Evidence from A Dynamic Factor Model. *Transportation Research Part E: Logistics and Transportation Review*, 133, 1-15.

- Baek, E. and Brock, W. (1992). *A general test for nonlinear Granger causality: Bivariate model*. Working Paper. Iowa State University and University of Wisconsin-Madison.
- Bal, D. P. and Rath, B. N. (2015). Nonlinear causality between crude oil price and exchange rate: A comparative study of China and India. *Energy Economics*, 51, 149-156.
- Barhoumi, K. and Ferrara, L. (2015). *A world trade leading index (WTLI) (No. 15-20)*. International Monetary Fund.
- Başer, S.Ö. and Açıık, A. (2019a). Do commodity prices matter for second hand values? An empirical research on Capesize market. *Turkish Journal of Maritime and Marine Sciences*, 5(1), 44-52.
- Bildirici, M. E. and Turkmen, C. (2015). Nonlinear causality between oil and precious metals. *Resources Policy*, 46, 202-211.
- Bloomberg (2019). *Freight Data*. URL: <https://www.bloomberg.com/professional/>.
- Branch, A. (2007). *Elements of shipping (8th ed)*. London: Routledge.
- Brock, W., Davis, D., Jose, S. and Blake, L. (1996). A test for independence based on the correlation dimension. *Econometric Reviews*, 15(3), 197–235.
- Brock, W., Dechect, W. and Scheinkman, J. (1987). *A test for independence based on the correlation dimension*. Working Paper. Department of Economics, University of Wisconsin, Madison.
- Carr, E. (2011). *Delivering development: Globalization's shoreline and the road to a sustainable future*. London: Palgrave Macmillan.
- Chen, S., Meersman, H., Van de Voorde, E. and Frouws, K. (2014). *Modelling and forecasting in dry bulk shipping*. London: Informa Law from Routledge.
- Chiou-Wei, S. Z., Chen, C. F. and Zhu, Z. (2008). Economic growth and energy consumption revisited—Evidence from linear and nonlinear Granger causality. *Energy Economics*, 30(6), 3063-3076.
- Chou, M. T., Su, Y. L., Chou, T. Y., and Liang, H. U. (2015). An analysis of the relationship between Asian Steel Index and the Baltic Capsize Index. *Modern Economy*, 6(2), 207-216.

- Diks, C. and Panchenko, V. (2006). A new statistic and practical guidelines for nonparametric Granger causality testing. *Journal of Economic Dynamics and Control*, 30(9-10), 1647-1669.
- Diks, C. and Panchenko, V. (2006). A new statistic and practical guidelines for nonparametric Granger causality testing. *Journal of Economic Dynamics and Control*, 30(9-10), 1647-1669.
- Dura, Y. C., Beser, M. K. and Acaroglu, H. (2017). Econometric analysis of Turkey's export-led growth. *Ege Akademik Bakis*, 17(2), 295.
- Geman, H. (Ed.). (2009). *Risk management in commodity markets: from shipping to agricultural and energy (Vol. 445)*. England: John Wiley & Sons.
- Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: Journal of the Econometric Society*, 424-438.
- Gubbins, E. J. (1996). *The shipping industry: the technology and economics of specialization*. Canada: Gordon and Breach Publishers.
- Hiemstra, C. and Jones, J. D. (1994). Testing for linear and nonlinear Granger causality in the stock price-volume relation. *The Journal of Finance*, 49(5), 1639-1664.
- Hinkelman, E. G. (2008). *Dictionary of international trade (8th edition)*. Czech Republic: World Trade Press.
- Kavussanos, M., Visvikis, I., and Dimitrakopoulos, D. (2010). Information linkages between Panamax freight derivatives and commodity derivatives markets. *Maritime Economics and Logistics*, 12(1), 91-110.
- Kavussanos, M.G., Visvikis, I.D., and Dimitrakopoulos, D.N. (2014). Economic spillovers between related derivatives markets: The case of commodity and freight markets. *Transportation Research Part E*, 68, 79–102.
- Koopmans, T. C. (1939). *Tanker freight rates and tankship building*. Holland: Haarlem.
- Kumar, S. (2017). On the nonlinear relation between crude oil and gold. *Resources Policy*, 51, 219-224.

- Langdana, F. K. (2009). *Macroeconomic policy: Demystifying monetary and fiscal policy*. USA: Springer.
- Lim, S. Y. and Ho, C. M. (2013). Nonlinearity in ASEAN-5 export-led growth model: Empirical evidence from nonparametric approach. *Economic Modelling*, 32, 136-145.
- Liu, J. J. (2011). *Supply chain management and transport logistics*. New York: Routledge.
- Lun, Y. V., Lai, K. H. and Cheng, T. E. (2010). *Shipping and logistics management*. London: Springer.
- Ma, S. (2020). *Economics of maritime business*. New York: Routledge.
- Marcus, H.S. (2014). *Marine transportation management*. New York: Routledge.
- Radetzki, M. (2008). *A handbook of primary commodities in the global economy*. New York: Cambridge University Press.
- Rodrigue, J.P. (2013). Transport and globalization. In Rodrigue, J.P., Notteboom, T. and Shaw, J. (eds) *The SAGE Handbook of Transport Studies*, pp. 17-30. London: Sage.
- Şahin, B., Gürgen, S., Ünver, B. and Altin, I. (2018). Forecasting the Baltic Dry Index by using an artificial neural network approach. *Turkish Journal of Electrical Engineering & Computer Sciences*, 26(3), 1673-1684.
- Stopford, M. (2009). *Maritime economics*. New York: Routledge.
- Tsioumas, V., and Papadimitriou, S. (2018). The dynamic relationship between freight markets and commodity prices revealed. *Maritime Economics and Logistics*, 20(2), 267-279.
- UNCTAD (2019a). Review of Maritime Transport 2019. [https://unctad.org/en/PublicationsLibrary/rmt2019\\_en.pdf](https://unctad.org/en/PublicationsLibrary/rmt2019_en.pdf), (17.01.2020).
- Wilmsmeier, G. (2014). *International maritime transport costs: market structures and network configurations*. UK: Ashgate.
- Worldbank (2019). Commodity Prices. URL: <https://www.worldbank.org/en/research/commodity-markets>.

Yu, L., Li, J., Tang, L. and Wang, S. (2015). Linear and nonlinear Granger causality investigation between carbon market and crude oil market: A multi-scale approach. *Energy Economics*, 51, 300-311.

# APPENDICES

## Appendix 1. Unit Root Test Results

Unit Root Tests with Structural Breaks for Capesize Market

Test Items	Mod A Capesize	Mod C Capesize	Mod A Salbe	Mod C Salbe	Mod A Tubrot	Mod C Tubrot	Mod A Tubqing	Mod C Tubqing
One break ADF test (Zivot & Andrews, 1992)								
ADF Stat	-3.513	-3.715	-4.608*	-5.740***	-4.723**	-5.811***	-3.795	-4.751
Break Date	2013M11	2012M12	2003M6	2008M7	2003M6	2008M7	2002M7	2008M7
Fraction	0.71	0.66	0.17	0.44	0.17	0.44	0.13	0.44
Lag	2	2	1	1	1	1	9	9
One break LM test (Lee & Strazicich, 2013)								
LM Stat	-2.085	-3.439	-3.312	-4.832**	-3.405	-4.979**	-2.54	-4.403**
Break Date	2004M12	2013M2	2003M6	2008M8	2014M11	2008M8	2008M9	2008M8
Fraction	0.256	0.66	0.19	0.44	0.76	0.44	0.44	0.44
Lag	2	2	1	1	1	1	9	9
Two break ADF test (Narayan & Popp, 2010)								
ADF Stat	-4.791**	-4.925*	-5.411***	-6.537***	-5.45***	-6.668***	-4.503**	-6.212***
Break Date	2004M11, 2013M11	2007M3, 2014M3	2008M7, 2014M9	2008M7, 2014M10	2008M7, 2013M11	2008M7, 2014M10	2009M10, 2014M9	2008M6, 2015M8
Fraction	0.25, 0.75	0.37, 0.73	0.44, 0.75	0.44, 0.76	0.44, 0.71	0.44, 0.76	0.50, 0.75	0.43, 0.80
Lag	2	3	1	1	1	1	9	9
Two break LM test (Lee & Strazicich, 2003)								
LM Stat	-2.557	-4.696	-3.779	-5.316	-4.016**	-5.493*	-2.875	-5.116
Break Date	2004M12, 2014M8	2007M3, 2014M8	2003M6, 2010M6	2008M7, 2016M11	2010M6, 2014M11	2008M7, 2016M11	2008M9, 2014M11	2003M8, 2009M11
Fraction	0.25, 0.75	0.37, 0.75	0.19, 0.53	0.44, 0.86	0.53, 0.76	0.44, 0.86	0.44, 0.76	0.18, 0.50
Lag	2	1	1	1	1	1	9	9

\*Null of unit root is rejected at \*10%, \*\*5%, \*\*\*1%

Unit Root Tests with Structural Breaks for Panamax Market

Test Items	Mod A Panamax	Mod C Panamax	Mod A Hamrot	Mod C Hamrot	Mod A Ricrot	Mod C Ricrot	Mod A Robrot	Mod C Robrot	Mod A Warot	Mod C Warot
One break ADF test (Zivot & Andrews, 1992)										
ADF Stat	-4.183	-	-	-	-3.762	-4.760	-3.865	-	-3.744	-4.681
Break Date	2013M11	2007M4, 2014M4	2003M5	2008M6	2003M1	2008M6	2003M8	2008M6	2003M2	2008M6
Fraction	0.69	0.33	0.127	0.40	0.10	0.40	0.14	0.40	0.11	0.40
Lag	5	5	1	1	1	1	1	1	1	1
One break LM test (Lee & Strazicich, 2013)										
LM Stat	-2.668	-	-2.903	-4.390*	-2.729	-4.027*	-2.873	-3.953	-2.683	-3.763
Break Date	2008M5	2011M2	2003M9	2008M8	2003M9	2007M12	2003M9	2008M7	2003M9	2008M7
Fraction	0.39	0.54	0.145	0.41	0.14	0.37	0.14	0.40	0.14	0.40
Lag	5	5	1	1	1	1	1	1	1	1
Two break ADF test (Narayan & Popp, 2010)										
ADF Stat	-5.112***	-	-4.939**	-6.572***	-	-6.665***	-	-6.099***	-4.762**	-6.869***
Break Date	2007M2, 2013M11	2007M4, 2011M2	2008M6, 2013M11	2008M6, 2015M6	2009M10, 2014M4	2008M6, 2015M6	2008M6, 2013M9	2008M6, 2014M9	2008M6, 2014M4	2008M6, 2015M5

Fraction	0.33, 0.69	0.33	0.40, 0.69	0.40, 0.78	0.47, 0.71	0.40, 0.78	0.40, 0.68	0.40, 0.74	0.40, 0.71	0.40, 0.77
Lag	5	5	1	1	1	1	1	1	1	1
Two break LM test (Lee & Strazicich, 2003)										
LM Stat	-2.879	-	-3.208	-	-2.946	-	-3.047	-5.215	-2.918	-5.583*
		5.512*		5.736**		5.722**				
Break Date	2004M12, 2008M5	2007M4, 2014M6	2003M9, 2014M5	2008M6, 2017M4	2003M9, 2014M11	2008M4, 2017M4	2002M12, 2003M9	2008M5, 2017M4	2003M9, 2012M5	2008M4, 2017M5
Fraction	0.21, 0.39	0.33, 0.72	0.14, 0.72	0.40, 0.88	0.14, 0.75	0.39, 0.88	0.10, 0.14	0.39, 0.88	0.14, 0.61	0.39, 0.88
Lag	5	5	1	1	1	1	1	1	1	1

\*Null of unit root is rejected at \*10%, \*\*5%, \*\*\*1%

### Unit Root Tests with Structural Breaks for Handymax Market

Test Items	Mod A Handymax	Mod C Handymax	Mod A Usjap	Mod C Usjap	Mod A Pansa	Mod C Pansa
One break ADF test (Zivot & Andrews, 1992)						
ADF Stat	-4.67*	-4.08	-4.81**	-4.31	-3.58	-4.92*
Break Date	64	101	53	82	62	71
Fraction	0.50	0.80	0.42	0.65	0.49	0.56
Lag	7	7	12	12	10	10
One break LM test (Lee & Strazicich, 2013)						
LM Stat	-1.56	-2.49	-3.89**	-4.71**	-2.19	-2.97
Break Date	42	67	41	82	19	63
Fraction	0.33	0.53	0.32	0.65	0.15	0.50
Lag	2	2	12	12	11	11
Two break ADF test (Narayan & Popp, 2010)						
ADF Stat	-5.25***	-5.69***	-6.48***	-7.29***	-5.17***	-6.07***
Break Date	49, 64	18, 71	16, 40	17, 82	71, 93	55, 91
Fraction	0.38, 0.50	0.14, 0.56	0.12, 0.31	0.13, 0.65	0.56, 0.73	0.43, 0.72
Lag	7	7	12	12	10	10
Two break LM test (Lee & Strazicich, 2003)						
LM Stat	-1.69	-4.71	-4.57***	-4.97	-2.54	-4.27
Break Date	42, 103	46, 92	28, 41	53, 82	19, 63	36, 77
Fraction	0.33, 0.81	0.36, 0.73	0.22, 0.32	0.42, 0.65	0.15, 0.50	0.28, 0.61
Lag	2	2	12	12	11	11

\*Null of unit root is rejected at \*10%, \*\*5%, \*\*\*1%

## Appendix 2. Nonlinearity Test Results

### Capeize Market BDS Results

	Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
Cape Index	2	0.025949	0.006434	4.033265	0.0001*
	3	0.045819	0.010254	4.468605	0.0000*
	4	0.067407	0.012248	5.503747	0.0000*
	5	0.079660	0.012806	6.220558	0.0000*
	6	0.084750	0.012390	6.840303	0.0000*
Salbe	2	0.011402	0.005728	1.990684	0.0465*
	3	0.018962	0.009113	2.080832	0.0374*
	4	0.022468	0.010864	2.068067	0.0386*
	5	0.024362	0.011337	2.148893	0.0316*
	6	0.024370	0.010946	2.226297	0.0260*
Tubqinq	2	0.016307	0.004965	3.284409	0.0010*
	3	0.028903	0.007898	3.659649	0.0003*

	4	0.038440	0.009412	4.084107	0.0000*
	5	0.041876	0.009817	4.265534	0.0000*
	6	0.038244	0.009474	4.036632	0.0001*
Tubrot	2	0.009351	0.005226	1.789268	0.0736*
	3	0.014326	0.008328	1.720268	0.0854*
	4	0.021303	0.009943	2.142439	0.0322*
	5	0.025360	0.010391	2.440597	0.0147*
	6	0.026962	0.010046	2.683713	0.0073*

\*Null of linearity is rejected at \*10%, \*\*5%, \*\*\*1%

#### Panamax Market BDS Results

	Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
Pan Index	2	0.009987	0.005657	1.765282	0.0775*
	3	0.019874	0.009019	2.203605	0.0276*
	4	0.028719	0.010773	2.665721	0.0077*
	5	0.028200	0.011264	2.503605	0.0123*
	6	0.025781	0.010897	2.365996	0.0180*
Hamrot	2	0.012065	0.004584	2.631698	0.0085*
	3	0.032180	0.007291	4.413475	0.0000*
	4	0.040666	0.008687	4.681394	0.0000*
	5	0.043617	0.009057	4.815627	0.0000*
	6	0.045012	0.008737	5.151695	0.0000*
Ricrot	2	0.019469	0.005514	3.530918	0.0004*
	3	0.034971	0.008771	3.986964	0.0001*
	4	0.042304	0.010455	4.046442	0.0001*
	5	0.043563	0.010906	3.994234	0.0001*
	6	0.042772	0.010527	4.063011	0.0000*
Robrot	2	0.013773	0.006278	2.193832	0.0282*
	3	0.034809	0.009988	3.484983	0.0005*
	4	0.047993	0.011909	4.030100	0.0001*
	5	0.051241	0.012429	4.122813	0.0000*
	6	0.048064	0.012002	4.004560	0.0001*
Warot	2	0.016550	0.006729	2.459682	0.0139*
	3	0.031889	0.010730	2.971927	0.0030*
	4	0.046514	0.012824	3.627031	0.0003*
	5	0.054149	0.013417	4.035754	0.0001*
	6	0.055377	0.012990	4.263160	0.0000*

\*Null of linearity is rejected at \*10%, \*\*5%, \*\*\*1%

### Handymax Market BDS Results

	<b>Dimension</b>	<b>BDS Statistic</b>	<b>Std. Error</b>	<b>z-Statistic</b>	<b>Prob.</b>
Han Index	2	0.001740	0.006783	0.256557	0.7975
	3	0.000778	0.010800	0.072075	0.9425
	4	0.009779	0.012883	0.759086	0.4478
	5	0.011627	0.013451	0.864390	0.3874
	6	0.014282	0.012993	1.099212	0.2717
PANSА	2	0.034267	0.009867	3.472799	0.0005*
	3	0.067772	0.015817	4.284788	0.0000*
	4	0.091458	0.019006	4.812084	0.0000*
	5	0.105040	0.019994	5.253589	0.0000*
	6	0.113450	0.019464	5.828645	0.0000*
USJAP	2	0.017798	0.007378	2.412311	0.0159*
	3	0.031746	0.011749	2.702130	0.0069*
	4	0.037738	0.014018	2.692180	0.0071*
	5	0.046726	0.014639	3.191883	0.0014*
	6	0.042136	0.014146	2.978755	0.0029*

\*Null of linearity is rejected at \*10%, \*\*5%, \*\*\*1%

**CHAPTER 4**

**ANALYSIS OF UNIVERSITY STUDENTS 'INCOME-  
EXPENDITURE-SAVING RELATIONSHIP AND LIVING  
COSTS**

Dr. Gül den GÖK<sup>1</sup>  
Dr. Gökhan AKANDERE<sup>2</sup>

---

<sup>1</sup> Selçuk University Vocational School of Social Sciences  
guldengok@selcuk.edu.tr.Orcid No:0000-0002-9948-867X

<sup>2</sup> Selçuk University Vocational School of Social Sciences  
gkhanakandere@gmail.com.Orcid No: 0000-0002-5051-1154



## **INTRODUCTION**

Economics, which is aimed at meeting unlimited needs with limited resources, is a social science about human behavior. Economics, which is aimed at meeting unlimited material needs with limited resources, is a social science about human behavior. People living in the community must consume the goods and services to protect and maintain their being.

Economics aims to increase individual and social welfare by meeting human needs. The need is the desire that gives the individual benefit and pleasure when it is met and gives sadness and suffering to the individual when it is not met. Needs that are vitally important, such as feeding and shelter, are called compulsory needs. Cultural needs such as education travel; needs such as sports, automobile, world tour, etc. are luxury needs (Ünsal, 2010: 6). Since the needs are unlimited, and the resources are scarce, people tend to consume in scarce resources. Therefore, consumption takes place in the form of different preferences in line with the needs of each individual (Özer et al, 2010: 232).

Consumption is the expenditure from income to final goods and services to meet the needs of the individual or household (Seyidoğlu, 2011: 471; Bocutoğlu et al., 2000: 10).

Savings, on the other hand, are the unspent portion of income, the sum of consumption and savings equals the income of the individual. Consumption in the economy has been considered important by

economists in every period and various theories have been put forward in this regard. Firstly Adam Smith, in his book "Wealth of Nations"; argues that the main goal and purpose of production is consumption, and national wealth is measured by the size of the stock allocated for emergency consumption.”

Keynes, in his Absolute Income Hypothesis, firstly asserted that as people's average income increases, their consumption increases, but this increase in consumption is not as high as income increase. “If a person earns an additional \$ 1 income, he consumes some of it and saves some of it”. (Mankiw, 2010: 512; Keynes, 1969). Secondly, Keynes expresses the consumption-income ratio, which is referred to as the "average consumption trend", as the "average income trend decreases as income increases". Therefore, Keynes states that saving is a luxury, so the rich can save a higher proportion of their income than the poor.

According to J. Duesenberry's “Relative Income Hypothesis”, an individual’s attitude to consumption and saving is dictated more by his income in relation to others than by abstract standard of living; the percentage of income consumed by an individual depends on his percentile position within the income distribution. The Relative Income Hypothesis sets out two basic assumptions:

-Individual consumption behavior of individuals depends not only on income, but also on consumption of other individuals, ie individuals in the immediate vicinity.

-Individual consumption behaviors depend on the highest income level in the past (Aslan, 2011: 82; Mankiw, 2010: 513)

According to the "Intertemporal Consumption Function" developed by Fisher in the 1930s, consumption is defined according to the two periods that the individual lives: The first is the period of the individual's youth, and the second is the old age period.

The individual may prefer current consumption to future consumption in the first period. In this period, the individual consumes all of the current income without thinking about the future, and can consume above the current income level by borrowing.

In the second period, it may prefer future consumption to today's consumption; in this case, it cuts consumption, and earns interest income by saving a large part of the income. The future consumption of the individual is equal to the interest he earned from his income and savings in that period. Since the individual has the opportunity to borrow or save money in both periods, consumption in any period may be larger or smaller than the income in that period (Mankiw, 2010: 514; Yıldırım & Karaman, 1999).

According to the "Lifetime Income Hypothesis" developed by "Franco Modigliani, Albert Ando, Richard Brumberg" in the 1950s, the income of the individual is low in the early stages of life, increases in the Middle Ages where he / she gains experience, and decreases again after retirement and in the last stages of life(Ando and Modigliani,1963). However, the individual tends to maintain a more

or less stable or increasing consumption level normally throughout life. At maturity, when the income is high, the individual makes positive savings for retirement to maintain the old standard of living because his or her income will fall after retirement. Therefore, the individual tends to maintain a stable consumption level throughout his life. Therefore, changes in income do not affect the level of consumption (consumption flattening), so consumption depends not only on the current income but also on the income it expects to achieve for future life( Seyidođlu, 2011; Ünsal,2011; Artus,2002). At the main starting point of this approach are the observations that “people prefer a stable consumption pattern rather than a variable consumption pattern” (Paya, 2013). Continuous income refers to the long-term income that the person plans to earn every year with the wealth he has. According to the “Continuous Income Theory” developed by Milton Freidman, long-term income expectation is the most important factor that determines consumption expenditures. The main idea of this theory is saving made for future consumption. Savings may have been made for reasons such as daily consumption during the retirement, testacy etc. (Mankiw, 2010).

Rational individuals argue that they should increase their savings in anticipation of a decrease in their income in the future (Campbell, 1987). One of the known empirical tests of this hypothesis is the expected income level. If individuals expect a decrease in their income in the future, they will increase their savings and vice versa. According to the "Random Walk Hypothesis" developed by R. Hall,

"future income is estimated as average income. Unless there is a surprise event, consumption does not change. The surprise that may occur in consumption is called "random walk of consumption". "Unexpected policy changes" in income affect consumption. "Expected changes in income" does not affect consumption and does not change the consumption plans of individuals (Mankiw, 2010; Ünsal, 2011).

## **1. LITERATURE SUMMARY**

There are many studies in the literature that reveal students' income-expenditure relationship. In a study conducted by Tan et al. (1998), in order to determine the income-expenditure relationship of Kahramanmaraş Sütçü İmam University students, revealed that the highest share in the monthly total expenditure of the students was food expenditure with 32.2%.

Tarı et al. (2006) investigated the effect of gender and department of the students on consumption behaviors in their study in Kocaeli University. In this study, male students' marginal consumption tendencies were found to be (3.1%) lower than female students' marginal consumption tendencies.

In a study conducted by Kaşlı and Serel (2008) with 554 students studying at Balıkesir University Gönen Vocational School, the income-spending relationship of the students was examined and as a result of the study, 34% of the students' monthly budgets were entertainment, 23% were shelter-electricity-water-gas and

communication, 18% food and beverage, 11% clothing, 10% transportation expenses.

Yaylali et al. (2009), made a study to determine the income-expenditure relationship of 564 students studying at Selcuk University Seydişehir Vocational School, they examined the share of 9 expenditure groups in total expenditure; of these, food, shelter, education, transportation and communication expenditures were determined as mandatory expenditures, culture-entertainment and personal care expenditures were close to unit flexibility but mandatory expenditures, and the chance games expenditures were determined as luxury expenditures.

In two separate studies conducted by Karahasanoğlu (1974) and Erkan (2014), it was determined that the share of food expenditures within the total monthly expenditures of university students was 39% (Erkan (2014)).

In a study conducted by Acaroğlu et al. (2018) with students studying at Eskişehir Osmangazi University, it was determined that students perceived the living costs in Eskişehir as normal.

In a study conducted by Pehlivanoğlu and Narman (2018) at Kocaeli University, it was determined that the share of food and non-alcoholic beverages in students' spending groups was 19%, the share of housing, water, electricity and fuel was 17%.

In the study conducted by Çayın and Özer (2014), the contribution of Muş Alparslan University students' income and expenditures on the provincial economy was analyzed. As a result of the research, it was observed that the accommodation and nutrition expenditures of the students were more than 50% of the total expenditures, and the culture, education and entertainment expenditures were around 18.5%.

In the study conducted by Merdan (2017) with the aim of determining the expenditure trends and contributions of the students of Gümüşhane University to the city life, it was determined that the most out-of-school nutrition, on-campus transportation, shelter and clothing are among the monthly expenditure tendencies of Gümüşhane University students.

Karaca et al. (2018) examined the income-expenditure relationship of university students studying in Erzurum province and the contribution of students to the city economy: food, clothing-footwear, shelter, transportation and education-training expenditures were found as compulsory expenditures. Communication, personal care, entertainment, socio-cultural activities, games of chance and other expenses were determined as luxury expenses for students.

Çakır et al. (2010) analyzed the consumption preferences of Adnan Menderes University students by survey method: It was determined that the biggest share in the expenses of the students was shelter expenditures, followed by clothing and food expenditures respectively.

According to the research conducted by Ada and Bilgili (2008) to investigate the income and expenditure patterns of Atatürk University students, it was found that 35% of students' monthly expenses was food, 30% was shelter, 17% was communication, 5% was clothing, 4% entertainment, 3% books and stationery, and 2% transportation expenses.

Özer et al. (2010), according to a study conducted by Atatürk University students, transportation, communication, personal care, education and training, entertainment, drinks, cigarettes and tobacco products were determined as compulsory expenses. It was determined that spending games of chance were luxury spending and it was concluded that the highest share among spending groups was food spending.

## **2.METHODOLOGY**

### **2.1. Purpose of the research**

The aim of this study is to investigate the income-expenditure relationship of Selçuk University students and to determine the share of monthly expenditure groups in total expenditures and to determine the level of perception of students' living costs in Konya. In addition, the study aims to determine the saving behavior of students. Questionnaire method was used to reach the aim set out in the research. In the first part of the questionnaire used for data collection, there were 10 questions about students' school and personal information, and 2 questions about income-saving.

In the second part of the questionnaire, 7 questions were asked to the students in order to measure the perception of cost of living of the students in Konya. The third part of the questionnaire is designed to determine the percentage of students' annual expenditures by sector and their spending intensity. In the third part, students were asked two questions. The questionnaire was made available to students on the internet between 3/29/2019 and 5/20/2019, during which time 939 students from 62 different colleges and faculties on Selçuk University campuses were answered. The collected data were classified and analyzed in SPSS 17 program. It was seen that the data did not conform to the normal distribution, therefore Mann Whitney U, Kruskal Wallis and Chi-square methods which are used for nonparametric data were preferred in the analyzes. Considering the statistical indicators such as average, median and standard deviation, the results are interpreted below.

## **2.2. Universe and Sample of the Research**

Selçuk University students are the Universe of the Research, and the students in the faculties and high schools at the central campus of Selçuk University are the sample of the Research. Participants of the questionnaire were selected by simple sampling method for easy and fast access to large-scale data (Cui et al., 2003; Zhou, 2004; Nakip, 2003). The data was collected over the internet, 988 questionnaire data were reached within the given time and 939 valid questionnaires suitable for the analysis were obtained as a result of the examination of the questionnaires.

### **2. 3. Research Hypotheses**

In the research, the following hypotheses about the perception of cost of living of the students in Konya were developed:

H1: According to the place of residence, students' perceptions about the following costs in Konya do not show statistically significant differences.

H2: The perceptions of associate, undergraduate, postgraduate or doctoral students about the following costs in Konya do not show statistically significant differences.

H3: The perceptions of the students about the following costs in Konya do not show statistically significant differences according to ages.

H4: The perceptions of the students about the following costs in Konya do not show statistically significant differences according to gender.

H5: The perceptions of the students about the following costs in Konya do not show statistically significant differences according to average monthly income.

H6: The perceptions of the students about the following costs in Konya do not show statistically significant differences according to their credit or scholarship status.

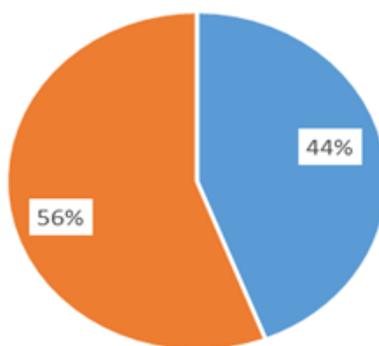
H7: The perceptions of the students about the following costs in Konya do not show statistically significant differences according to the family place of residence.

- a. Housing Cost,
- b. Food and Beverage Cost,
- c. Clothing Cost,
- d. Transportation Cost,
- e. Entertainment, Cinema-Theater Cost,
- f. Electricity-Heating Cost

### 3. FINDINGS AND COMMENTS

#### 3.1. Information About the Sample

**Graphic 1:** Distribution of the students by gender



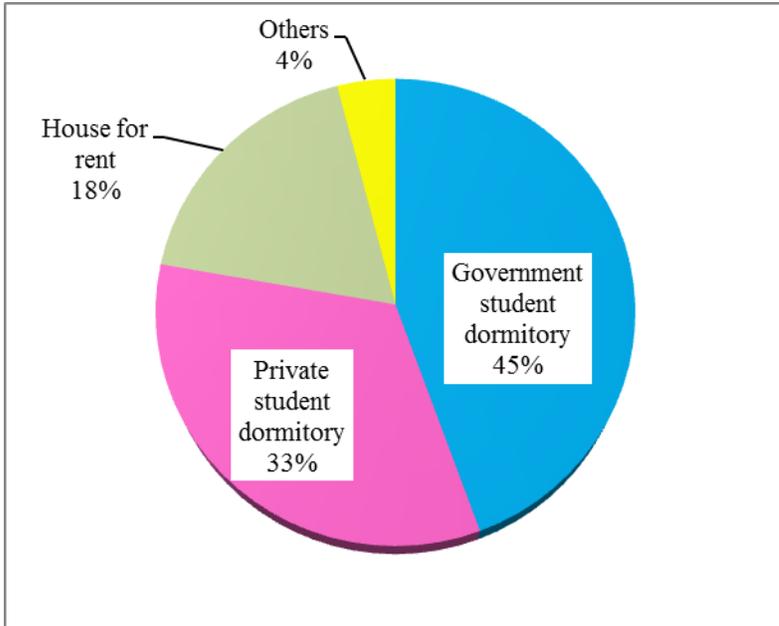
56% of the students participating in the study are male and 44% are female.

**Table 1:** Distribution of Students by Age Groups

Age groups	Number of the students	%
17-23	878	94 %
24 and up	61	6%

As seen in Table 1, 94% of the students participating in the research are between 17-23 years old and 6% are 24 years old and above.

**Graphic 2:** Distribution of students by place of residence



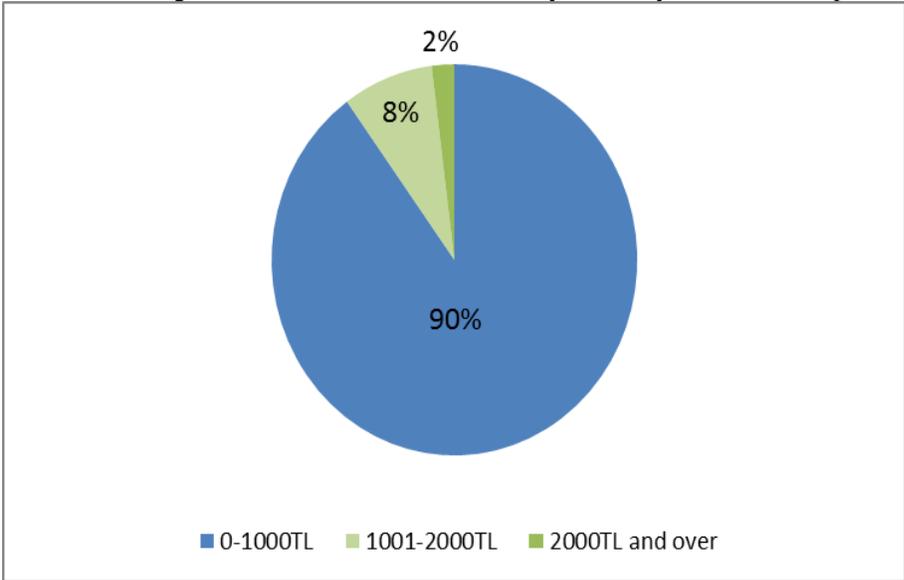
As can be seen from Chart 2, 77% of the students participating in the survey prefer to stay in dormitories, 18% prefer rented accommodation, 4% prefer other options.

**Table 2:** Educational Status of the Students

<b>Educational status of the students</b>	<b>N</b>	<b>%</b>
Associate degree students	100	11%
Undergraduate student	823	88%
MS and PhD students	16	2%

The majority of students (88%) are undergraduate students. Associate students are sufficient for research. Only 2% of the respondents study at master's and doctorate level.

**Graph 3:** Distribution of Students by Monthly Income Groups



It is seen that 90% of students have a monthly income below 1000 TL.

**Table 3:** Distribution of Students According to Their Answers to the Question "Do you receive credit or scholarship?"

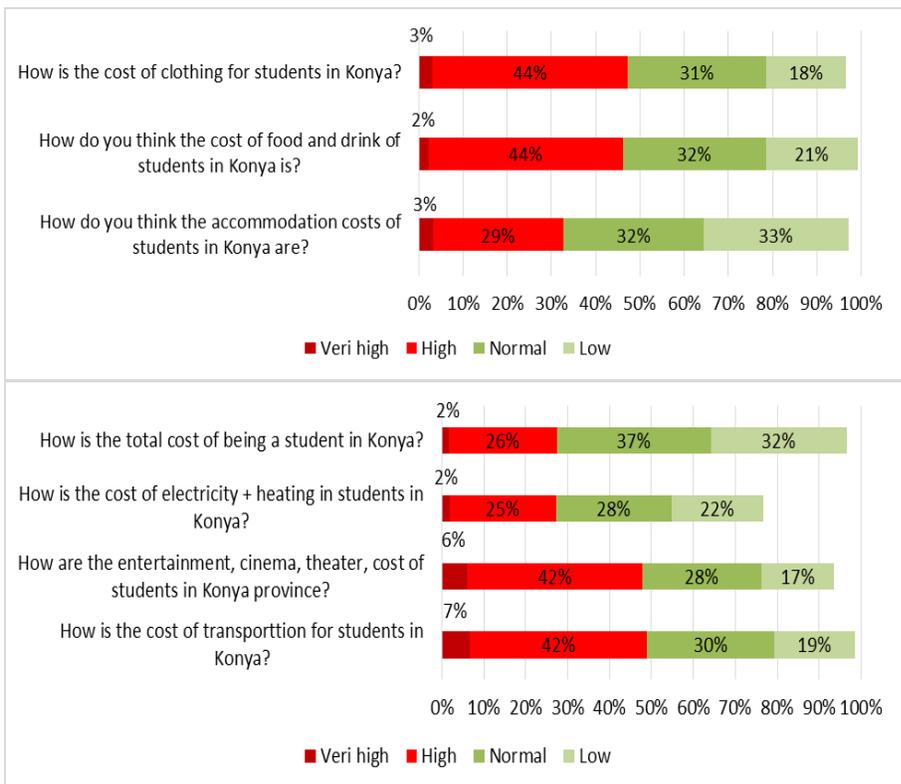
Answers	N	%
Yes	707	75%
No	218	23%
Receive credit and scholarship	13	1%

The number of people who did not receive a loan or scholarship is sufficient for analysis.

## 4.2. Average Students' Perceptions About Cost of Living In Konya

In the research, the students were asked about how they found the costs in Konya province in 6 main consumption areas. In addition, how they found the total cost of being a student in Konya compared to other cities was questioned and their perceptions about this subject were tried to be fully reflected. Statistics of the students belonging to the questions of the questionnaire (13-17) can be seen in the graphics below.

**Graphs 4-5: Students' Perceptions**



The answers of the students to the question "How is the total cost of being a student in Konya?" was "normal + low" with a rate of 69%. This ratio shows us that being a student in Konya province is not perceived as expensive, and is considered to be affordable compared to other cities.

Considering the consumption area preferences, students perceive low costs in Konya in the fields of clothing, food and beverage, shelter, electricity + heating consumption; however, it was revealed that they perceived entertainment, cinema-theater costs as expensive and they did not perceive transportation costs differently from other provinces.

### 4.3. Investigation of Students' Consumption and Saving Habits

In the 20th question of the questionnaire, the students were asked, "In Konya, what percentage of your budget do you allocate for the following consumption in an academic year?" was asked. They were asked to write the spending rates in line with the 15 consumption items listed. According to the average of the rates given to each consumption item, the consumption items determined as the first 6 are shown in the table below.

**Table 4:** Expenditures of Students From Their Annual Budgets

Consumption items	Shelter	Nutrition	Urban and intercity transportation	Clothing	Electricity + Heating	Tobacco and alcoholic beverages
% of budget	24%	22%	11%	9%	8%	7%

It can be seen from the table that students spend approximately one-fourth of their annual income as a housing expense and one-fifth as a

nutritional expense. The third item according to the spending rate is transportation. It was noteworthy that tobacco and alcoholic beverages were in the top 6 of the expense.

In the 21st question of the research, "Choose the 3 products you spend the most monthly in Konya." question was asked and they were asked to mark the 3 products they identified. The related frequency table is shown in table 5 below.

**Table 5:** Products the Students Consume Most Monthly

Products	Shelter	Clothing	Nutrition	Transportation-Communications	Household goods
N	665	501	388	242	126
%	80%	60%	47%	29%	15%

Products	Education Tools	Energy-Heating	Cultural Activity Expenses	Health	Personal care	Entertainment Sports
N	87	72	68	51	28	20
%	10%	9%	8%	6%	3%	2%

(830 students answered this question).

It is seen from Table 5 that there is a correspondence between the monthly consumption items of the students and the consumption items with the highest share in the annual consumption budgets. However, it was observed that the expenses of educational tools and household goods came to the fore in the monthly expenditures of the students.

According to the answers given by the students to the question asked to measure their saving habits, 81% of the students stated that they could not save, only 29% stated that they saved less than 10% of their monthly income.

#### 4.4. Research Hypothesis

Whether the data collected in the study conforms to the normal distribution was investigated by Kolmogorov-Smirnov and Shapiro-Wilk normality tests and Sig. values were calculated to be less than 0.05. Nonparametric tests were used to analyze the hypotheses because the data did not conform to the normal distribution.

In the analysis of the Hypothesis 1, the statistics obtained in the analysis made with the Kruskal-Wallis test according to place of residence of the students in Konya are in the table below.

**Table 6-7:** Analysis Results According to Place of Residence of the Students

		N	Mean Rank
Q1: How do you think the accommodation cost of students in Konya is?	Government dormitory	407	439,83
	Private dormitory	302	453,87
	Rental house	170	518,46
	Others	34	383,01
	Total (Unanswered)	913 (26)	
Q2: How do you think the cost of food and drink of students in Konya is?	Government dormitory	416	466,12
	Private dormitory	309	485,59
	Rental house	170	460,36
	Others	37	339,54
	Total (Unanswered)	932 (7)	
Q3: How is the cost of clothing for students in Konya?	Government dormitory	407	451,03
	Private dormitory	302	461,56
	Rental house	161	462,66
	Others	37	387,23
	Total (Unanswered)	907(32)	
Q4: How is the cost of transportation for students in Konya?	Government dormitory	411	473,48
	Private dormitory	311	451,94
	Rental house	169	456,29
	Others	35	483,80
	Total (Unanswered)	926 (13)	

Q5: How are the entertainment, cinema, theater, cost of students in Konya province?	Government dormitory	387	468,58
	Private dormitory	295	407,14
	Rental house	162	438,23
	Others	35	409,23
	Total (Unanswered)	879 (60)	
Q6: How is the cost of electricity + heating in students in Konya?	Government dormitory	289	357,41
	Private dormitory	229	331,63
	Rental house	168	409,89
	Others	34	337,19
	Total (Unanswered)	720 (219)	

Test Statistics <sup>a,b</sup>						
	Q1	Q2	Q3	Q4	Q5	Q6
Chi-Square	15,218	11,352	3,339	1,671	11,833	18,081
df	3	3	3	3	3	3
Asymp. Sig.	<b>,002</b>	<b>,010</b>	,342	,643	<b>,008</b>	<b>,001</b>

According to the residence group of the students: accommodation costs; food - drink; entertainment costs, cinema- theater costs and electricity + heating costs' perception of the students show statistically significant differences ( $p < 0,050$ ). On the other hand, it was understood that the perceptions about clothing costs and transportation costs did not differ significantly.

The following results were obtained with advanced analyzes:

I.....The students who stayed in a rented house were the ones who perceived housing costs as the lowest in Konya. Students staying in a state dormitory were the group that perceived the housing costs as the highest.

II.....The students who perceived the cost of food and beverage in Konya as the lowest were the students who stayed in a private dormitory. On the other hand, the students staying at the rented house were the group that perceived the cost of food and beverage in Konya as the highest.

III.....Students staying in a state dormitory perceived entertainment, cinema-theater costs as much lower than other groups.

IV.....While students staying in a rented house perceive electricity + heating costs as low, but students staying in a private dormitory become the group that perceived this cost the highest.

As a result, “H1: According to the place of residence, students' perceptions about the following costs in Konya do not show statistically significant differences.” hypothesis was rejected. It has been calculated that there are significant differences in perceptions of the students about Accommodation, Food-beverage, Entertainment, cinema-theater and Electricity + heating costs.

In order to test the truthiness of Hypothesis 2, Kruskal-Wallis test was used for students' education level groups. According to the statistics obtained, there was no statistically significant differences between groups in the perception of Accommodation, Clothing, Transportation, Entertainment, cinema-theater and Electricity + heating costs ( $p > 0.050$ ).

On the other hand, significant differences were found in the perceptions of the groups formed according to the education level about Food - beverage costs ( $p = 0.034 < 0.050$ ). Associate degree students were the group that found the lowest food and beverage costs in Konya, while the undergraduate students were the group that found the highest.

For Hypothesis 3, the differences of the perceptions of the two groups formed by the students about the costs of main expenditure items in Konya were examined, and it was determined that the perceptions of the students in the groups about Entertainment, cinema - theater costs showed statistically significant differences ( $p=0,003<0,050$ ). In the analysis made with the Mann Whitney U test, it was revealed that the students between the ages of 17-23 perceived the Entertainment, cinema - theater costs in Konya to be lower than the group aged 24 and over.

In order to test the accuracy of hypothesis 4, Mann Whitney U test was used between groups formed by gender. As a result, it was revealed that the cost perceptions of the students about main consumption items in Konya did not show statistically significant differences. Therefore, the 4th hypothesis was accepted ( $p = 0,342 > 0,050$ ).

In the analysis made for the groups formed by the students according to the monthly average income for Hypothesis 5, it was revealed that their perceptions about Accommodation, Food - beverage, Clothing,

Transportation, Electricity - heating costs in Konya did not show significant differences. On the other hand, it has been calculated that their perceptions about Entertainment, cinema-theater costs show statistically significant differences. As a result of the advanced analysis, it was revealed that the group with a monthly average income level of 0-1000 TL was the group that perceived Entertainment, cinema-theater costs as the lowest in Konya, and the group with the income of 2000TL and above is the group that perceived these costs as the highest.

According to credit or scholarship status of the students, it was found that the perceptions of the students about Accommodation cost, Food-beverage cost, Clothing cost, Transportation cost, Entertainment, cinema-theater cost and Electricity-heating cost in Konya did not show statistically significant differences, therefore, the 6th hypothesis was accepted ( $p > 0,050$ ).

In the study of Hypothesis 7, students are divided into 4 independent groups according to their place of family residence (province, district, village, town). In the analysis made with the Kruskal Wallis test, it was revealed that the groups' perceptions about Entertainment, cinema-theater"and Electricity + heating costs in Konya showed significant differences ( $p < 0,050$ ). According to this, students whose family lived in "town" were the ones who perceived Electricity + heating costs as the lowest compared to other students. Students whose family lived in "village" were the ones who perceived

Entertainment, cinema - theater costs as the lowest compared to other students.

## **CONCLUSION AND EVALUATION**

In this research conducted with 939 students studying in various faculties and colleges of Selçuk University in order to determine the income-expenditure relationship and the level of perception of living costs in Konya, the following results were obtained:

As a whole, it was determined that the students found the living costs in Konya more affordable than other cities. Acaroğlu et al. (2018) had made a study in Eskişehir Osmangazi University and reached a similar result. It has been revealed that students spend approximately one-fourth of their annual income as Accommodation expenses and one-fifth as nutrition expenses. In-out of city transportation is the third item in students' expenditures, the size of the expenditures spent on tobacco and alcoholic beverages is remarkable. similar results were obtained in the studies conducted by Erkan (2014), Ada and Bilgili (2008) and Özer et al. (2010).

Students perceived Entertainment, cinema-theater costs as high in Konya according to their general cost perception in all consumption items. In terms of transportation costs, it was found that they did not perceive the costs in Konya differently from other cities.

According to the results of the analysis made by grouping the students as their residence, family residence, age groups, gender, education

levels, monthly average incomes, and credit - scholarship status it was determined that students who live in a rented house find their accommodation costs in Konya quite affordable compared to other cities. It has been revealed that there were significant differences in perceptions of students about Food and beverage costs in Konya according to their education level groups. Associate and graduate students perceived food and beverage costs in Konya as lower than undergraduate students. This difference may be due to the fact that associate and postgraduate students stay in Konya for shorter periods than undergraduate students.

It has been revealed that students' perceptions about Entertainment, cinema-theater costs in Konya show statistically significant differences according to their place of residence in Konya, age groups, monthly average incomes, and family living places. This data was evaluated as the budget they allocated or the frequency of participation in the activities may have created such large perception differences among students. It has been revealed that the factors affecting the perception of Electricity + heating costs in Konya was the family place of residence and the student 'place of residence in Konya. Students who stated their families were in "town" became the group that found the lowest Electricity + heating costs in Konya. In the interpretation of this data, it was thought that the number of apartments and collective heating solutions in "town" may be lower than others.

When the answers of the students to the questions asked to measure their saving habits were analyzed, 81% of the students stated that they could not save, while only 29% of them stated that they could save less than 10% of their monthly income. This data has been interpreted that students' saving habits were not sufficiently developed.

## REFERENCES

- Ada, Ş. and Bilgili, A. S. (2008), "The Effect of the University on the Socio-Economic Development of the City (Atatürk University Example), Dokuz Eylül University, 2nd National Economic Congress, İzmir
- Acaroğlu, H., Güllü, M., Seçilmiş, C., (2018). Spending Trends of University Students and Their Economic Relations with the Regional Economy: Eskişehir Example, Ege Academic Review, Volume 18 · Number 3 ·Pages: 507-520
- Ando, A., & Modigliani, F. (1963). The" life cycle" hypothesis of saving: Aggregate implications and tests. The American economic review, 53(1), 55-84.
- Artus, P. (2002). La nouvelle économie. Ed. La Découverte.
- Aslan,N.,(2011). Macro Economics, 3rd Edition, İstanbul
- Atik, H. (1999), "Contribution of Universities to the Local Economy: Theory and a Research on Erciyes University", Erciyes University, Journal of Faculty of Economics and Administrative Sciences (15): 99-111.
- Bocutoğlu, E. (2000). Introduction to Economic. Academy Publishing House.
- Çayın,M., Özer,H.,(2015). Contribution of Universities to Provincial Economy and Students
- Consumption Structure: Example of Muş Alparslan University, Dokuz Eylül University, Journal of Faculty of Economics and Administrative Sciences, Volume 30, Number 2 Pages:131-147
- Çakır, M., Çakır, F., Usta, G., (2010). Determining the Factors Affecting Consumption Preferences of University Students, Organization and Management Journal, Volume 2, Number 2, 2010 ISSN: 1309 -8039 (Online) [dergipark.org.tr/en/download/article-file/150952](http://dergipark.org.tr/en/download/article-file/150952), E.T.1.01.2020
- Chi Cui, C., Lewis, B. R., & Park, W. (2003). Service quality measurement in the ..... banking sector in South Korea. *International Journal of Bank Marketing*, 21(4), 191-201.
- Erkekoğlu, H. (2000), "Contribution of Regional Universities to Local Economy: The Case of Sivas Cumhuriyet University", Erciyes University, Journal of Faculty of Economics and Administrative Sciences, 16, 211-230.

- Karaca, Z., Çalmaşur, G., Daştan, H., (2018). University Students' Income-Expenditure Relationship: An Application on Erzurum Province, Atatürk University, Journal of Faculty of Economics and Administrative Sciences, Volume:32, Number:4, Pages:1155-1170.
- Karahasanoğlu, T. (1974), "Consumer Trends and An Evaluation in Terms Of Marketing In Eskişehir", Eitia Publishing, No:111/65, Ankara.
- Kasnakoğlu, Z. (1991), "Regional Consumption Patterns and Income Elasticities in Turkey: 1987", Journal of Economic Cooperation Among Islamic Countries, 12, Pages.111-116.
- Karalar,R., (2001). General Business. Eskişehir: Anadolu University
- Kaşlı, M., ve Serel,A.,(2008). A Research on Analysis of University Student Spending and Determining Their Contribution to the Regional Economies, Celal Bayar University, Faculty of Economics and Administrative Sciences, Journal of Management and Economy, Volume:15 Number:2 Pages:100-113
- Keynes, J. M., (1969). General Theory of Employment, Interest and Money, Translation: Asım Baltacıgil. Faculty Printing House, İstanbul.
- Mankiw,G.N.,(2010). Macroeconomics, Translation. Ömer Faruk Çolak, Efil Publishing, Ankara
- Merdan,K.,(2017). Spending Trends of University Students and Their Contribution to City Life: An Evaluation on Gümüşhane University Students, Social Sciences Studies Journal, Vol:3, Issue:7, Pages:325-339
- Nakip, M. (2003). Marketing Research Techniques and (SPSS supported) Applications. Ankara, Seçkin Publishing
- Özer, H., Akan, Y., Çalmaşur, G. (2010). Atatürk University Students' Income-Spending Relationship, Journal of Economics and Administrative Sciences of Cumhuriyet University, Volume 11, Number 1. Pages: 231- 249
- Paya, M. (2013). Economic policies in a global environment. İstanbul: Türkmen Bookstore.
- Pehlivanoğlu, F., and Narman, Z., (2018). Analysis of Income-Consumption Relationship among Kocaeli University Students Based on Faculties, Selçuk University. Journal of Social Sciences, (40): 103-115

- Seyidođlu, H. (2011). Fundamentals of economics (developed. 2nd edition). Istanbul: Guzem Can Publishing
- Tarı, R., alıřkan, ř. (2005). Analysis of Income Hypotheses of Consumption in Kocaeli. Atatürk University Journal of Economics and Administrative Sciences, 19(2),1-19.
- Tan, A., M. G. Akpınar and A. N. Kařođlu (1998), "A Research on the Structure of Consumption Expenditures of University Students", Journal of Marketing World, Number: 70.
- Tösten, R.; emberlitař, İ. and Gökođlan, K. (2013), "Expenditure Analysis of Dicle University Students and Its Contribution to Diyarbakır Economy", Journal of Dicle University Institute of Social Sciences, 5(10): 90-114
- Ünsal,M.E.(2010). Micro Economics, 8th Edition, Image Publications, Ankara
- Yaylalı, M., H. Özer Ve Ö. Dilek (2009), "Income-Expenditure Relationship of Selcuk University Seydiřehir Vocational School Students and the Place of Vocational School in District Economics", 10th Econometrics and Statistics Symposium, Erzurum, 27-29 May 2009.
- Yıldırım, K., & Karaman, D. (1999). Macroeconomics. Education, Health and Scientific Research Studies Foundation.
- Zhou, L. (2004). A dimension-specific analysis of performance-only measurement of service quality and satisfaction in China's retail banking. Journal of services Marketing, 18(7), 534-546.



## **CHAPTER 5**

### **AN EXAMINATION OF WHETHER THE IMPACT OF US DOLLAR ON ECONOMIC GROWTH IN TURKEY IS LINEAR**

Dr. Alibey KUDAR<sup>1</sup>

---

<sup>1</sup> Turkish Aerospace Industries, Inc., Procurement Contracts Management, Ankara, Turkey. akudar@gmail.com.Orcid id 0000-0001-7224-2891



## INTRODUCTION

Whether the increase in the exchange rate has a positive or negative effect on the economy of countries is one of the issues discussed in the literature. As stated in the study conducted by Muhammad and Rasheed (2004), increases in the exchange rate can increase companies' exports and contribute positively to the profitability of companies, but this situation is not always valid. Especially in countries which are dependent on outside financial sources, increasing borrowing costs can cause a nationwide crisis. As a matter of fact, as stated by Kendirli and Çankaya (2016), there are changes in the market that are perceived as bad data. One of the changes that are perceived as bad in the market is the increase in the exchange rate like the increase in unemployment, the increase in costs due to the increase in loans and interest rates (Kendirli and Çankaya, 2016: 308).

We can present the theoretical framework of the effects of exchange rate changes on the country's economy in terms of supply and demand channels as follows (Kandil et al., 2017: 469-470):

- In the goods market, an unexpected increase in the local currency makes exported goods more expensive while imported goods become cheaper. As a result, an overvalued local currency lowers the competitiveness of the country and as the demand for exports decreases, production and prices decrease.
- In the money market, an unexpected increase in the local currency causes the actors in the market to hold less local currency and interest rates to decrease. As a result, reduction in

production and prices are alleviated with the contraction in aggregate demand.

- On the supply side, an unexpected appreciation of the local currency reduces the cost of imported intermediate goods and hence production costs, causing prices to fall while increasing domestic production.
- On the supply side, an unexpected increase in the local currency reduces the country's competition in the foreign market and therefore the expectations of producers in foreign demand. As a result, a decrease in production occurs.

The net effect of foreign exchange rate on production and growth is determined according to the dominance of supply and demand channel.

There are several studies in the literature regarding the impact of foreign exchange rate changes on the growth for Turkey. When economic developments in Turkey are examined, it can be said that changes in the foreign exchange rates play an important role in influencing the national economy and unexpected changes in the foreign exchange rate have a significant impact on the economic activities in Turkey. One of the studies supporting this argument belongs to Kandil et al. (2017). According to this study, it is stated that the relationship between the aforementioned variables is negative and asymmetrical.

Contrary to the orthodox view which claims that the depreciation experienced in the local exchange rate has a positive impact on exports, Direkçi and Özçiçek (2010) concluded that the increase in the real exchange rate (appreciation in TL) affect GDP in Turkey positively. This finding contradicts the devaluation proposed by the World Bank and IMF to developing countries and supports that economists do not agree that the depreciation in the local currency is positive.

While Agenor (1991), Upadhyaya (1999), Ahmed et al. (2002) and Rodrik and Kennedy (2007) found out that loss of value in exchange rate has a neutral or negative effect on growth of the developing countries, Domaç (1997) concluded that depreciation of TL has positive effects on TL in Turkey and Berument and Dincer (2004) came to the conclusion that appreciation in TL affects the growth negatively (Kızılkaya, 2012: 167).

One of the significant currencies for Turkey's economy is the US dollar. If we observe the impact of US dollar on the economy of Turkey through the stock market, it can be said that the impact of an increase in the US dollar on the stock market is generally negative. For example, while the US dollar appreciated 2.5 percent against TL in January 2013 - February 2013, the loss in the national 100 index in Borsa Istanbul was 12 percent. Similarly, in the 2013 May - 2013 August period, the US dollar appreciated 9 percent against TL, while the loss in the stock market was 30 percent. While the main factor affecting Borsa Istanbul is the exchange rate with a rate of 55%, other

factors constitute the remaining 45% (Kendirli and Çankaya, 2016: 310).

Turkey is a country that has current account deficit due to foreign trade deficit. The fact that a significant amount of external borrowing is made in US dollars in Turkey and the US dollar is used as a reserve currency still today makes it important to investigate the effects of the changes in the said currency on Turkey's economy. In this study, the impact of the US dollar on economic growth in Turkey has been examined. In addition, whether the impact in question is linear has been investigated.

## **1. IMPORTANCE OF THE US DOLLAR IN THE WORLD AND TURKISH ECONOMY**

In addition to being the currency of the world's largest economy, the US dollar is also used as a reserve currency outside the USA and affects the whole world. The use of the US dollar in international trade and finance causes global effects. As a matter of fact, the US dollar constitutes more than half of the global external debt and this ratio has been stable for the last 25 years. Compared to Euro, debt in US dollars is almost twice the debt in Euro for countries other than developed countries. Similarly, it is seen that the stock of debt given to developing countries by international banks reached 1 trillion USD in 2017, and the amount of debt in reserve currencies other than dollars reached 0.4 trillion dollars (Martin et al., 2017: 1-8). Faudot and Ponsot (2016) emphasized that unlike developed countries that use their own currencies for exports, developing countries use the US

dollar in global trade. For example, with the exception of Japan, more than 80 percent of Asia's exports are invoiced with US dollars, and the use of US dollars is prominent in Latin America. In 2011, more than 94 percent of export revenues in Brazil were over US dollars.

The reliance on the US dollar in international trade and finance brings problems with it. As stated by Martin et al. (2017), when the US dollar strengthens, global growth is below average, financial risks increase and crises may be encountered. Druck et al. (2015) stated that the strengthening of the US dollar caused the asset prices in developing countries to decrease, and the demand that was suppressed with the falling income also caused a slowdown in growth rates. In the study covering the years 1970-2014, the relationship between dollar and economic activity in developing countries is expressed as follows:

- Strong US dollar is associated with lower growth rates in developing countries.
- Strong US dollar slows real domestic demand growth.
- The high US interest rate causes the dollar to appreciate.
- High US interest rate is associated with high growth rates in the US.
- Strong US dollar leads to slower growth rates in developing countries due to falling asset prices.

According to the United Nations' World Economic Situation and Prospects 2019 report, developing countries started to feel pressure in the financial markets since the second half of 2018 and the investment demand for the assets of developing countries decreased. This

situation arises from both external and internal factors. Disputes in trade, volatility in oil prices and increase in interest rates in the USA can be expressed as the external factors. Increasing interest rates cause the dollar to strengthen globally, increase the demand for secure assets and slow down capital flows to developing countries. As a result, troubles and CDS premiums increase in countries with macroeconomic imbalances (budget deficit and current account deficit) and high rate of debt as well as inflationary countries and national currencies depreciate against the dollar. For example, local currency in Argentina and Turkey depreciated 40-50% in this period and solvency risk concerns increased due to foreign debt structure and high external financing requirements. Debts of non-financial corporations in the first quarter of 2018 in developing countries reached 107,7% of national income. Chinese companies take the lead in borrowing, Brazil, Chile and Turkey and other developing countries have experienced serious debt increases. The capital that came to these countries entered the country in order to benefit from the carry trade opportunity and did not flow into productive investments and sectors. Since the high growth rates occurring in Turkey are realized by a high current account deficit is causing a rapid increase in the indebtedness of the private sector, concerns have emerged that the economy overheated. Although the International Finance Institute states that the capital flows to developing countries amounted to 1.14 trillion dollars in 2018 and that there was a moderate decrease compared to 1.26 trillion dollars in 2017, the type of capital flows and

the region of entry differ, which means it leads to differences in the behavior of capital flows.

If capital flows do not occur mostly in the form of FDI (foreign direct investment), but flows into government debt instruments and the stock market in the form of hot money, the financial structure of the country where hot money enters remains vulnerable to a sudden capital outflow and capital flight causes shocks by manifesting itself as a sudden increase in the dollar exchange rate. For example, Boratav (2004) states that Turkey exposed to a hot money shock in the amount of 15.108 million USD during the period when the country experienced a crisis in 2001 and focuses on that Turkey's getting into debt more than financing the current account deficit increases the risk of Turkey.

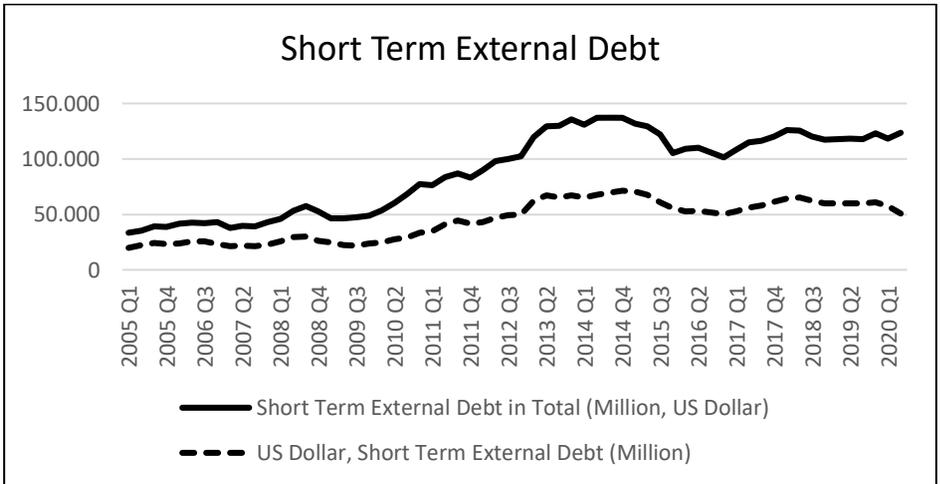
Akçay and Güngen (2019) states that economic growth in Turkey depends on the capital inflows and access to cheap credit resources. In the related study, it was stated that the financialization process in Turkey takes place in four stages. The first stage covers the period of 1989-2001 and starts with the liberalization of capital movements in order to ensure global integration. In this period, the high level of public debt is noteworthy. Banks benefit from interest arbitrage by borrowing from international markets and investing in treasury bills. As a result, Turkey's economy has become prone to crisis and has experienced the 2001 crisis. In the second stage, borrowing by households and non-financial companies increased in Turkey after the 2001 crisis. This is due to the falling borrowing costs depending on

the abundance of resources in the external world. In the same period, Central Bank of the Republic of Turkey which is independent from the government and inflation targeting draw attention. With the IMF stand-by agreement, the banking sector was restructured and financial reforms started to be implemented with the goal of joining the European Union. As a result, capital inflows to the country accelerated again. TL gained value with capital inflows, production became dependent on imports and Turkey entered into current deficit spiral. This period continued until the 2008 global crisis. In the third stage, Turkey's economy experienced contraction due to the global crisis of 2008 then re-entered the growth phase with the increase of the capital inflows. It is of great importance that developed countries go for monetary expansion as a prescription to exit the crisis. In addition, borrowing of non-financial Turkish companies with no foreign currency income was facilitated in foreign currency and the Turkish banking sector played an intermediary role between non-financial companies and international financial markets in the said period. The external borrowing of non-financial companies, which was 66 billion USD in 2009, increased to 177 billion USD in 2013. This situation made the Turkish Banking sector vulnerable again to a sudden depreciation of the TL against external shocks. The fourth stage covers the period after 2013. Advanced countries' decision to increase interest rates and worsening of international financial conditions and rising borrowing costs put Turkey in a difficult position in the economic sense. In 2015, non-financial Turkish companies' long-term liabilities exceeded their assets by USD 190 billion. With the loss of

value of TL, the structure of the companies which is dependent on imports increased the inflation and Turkey became sensitive to capital flows. The ratio of portfolio investments in financing the current account deficit increased to 51 percent in 2017. All these steps, in fact, show the extent to which Turkey's dependence on capital flows and the US dollar with respect to growth or contraction in Turkey's economy.

The importance of the US dollar in terms of Turkey's economy is seen in Turkey's short-term external debt. According to the data of Central Bank of Turkey (CBT), the main items of foreign exchange composition in Turkey's short-term external debt are the US dollar, Euro, Swiss Franc, Pound, Japanese Yen and Turkish lira and the first two items in terms of amount are the US dollar and Euro. In the second quarter of 2020, it is seen that the amount of short-term external debt in USD is approximately one and a half times of debt in Euro. This ratio has generally been stable since 2005 and it can go up to two and a half times from time to time, as in the third quarter of 2006. As seen in Figure 1, in the first quarter of 2005, total amount of Turkey's short-term external debt was 33.4 billion dollars and 19.8 billion dollars of this amount included USD type debt. Short-term external debt significantly increased in time and the importance of the US dollar continued to increase in terms of Turkey's economy. When it comes to the second quarter of 2020, Turkey's short-term external debt reached 123.7 billion dollars and 50.9 billion dollars of this amount was US Dollar type of debt.

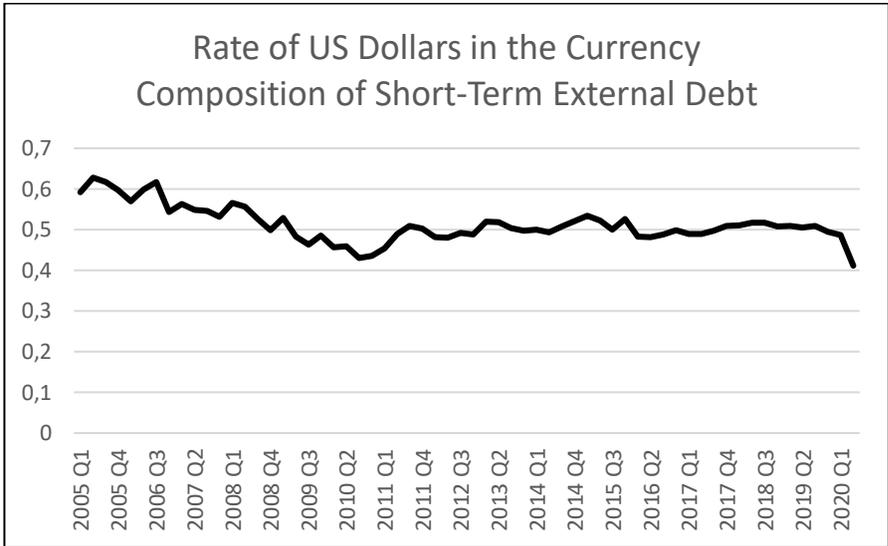
**Figure 1:** Turkey's Short-Term External Debt



**Source:** The data are obtained from The Central Bank of the Republic of Turkey

US dollar in the currency composition of short-term external debt in Turkey preserves a certain rate in general and follow a stable trend over time. As can be seen from Figure 2, in the first quarter of 2005, the rate of US dollar type short-term external debt in total short-term external debt was around 60 percent. Later, this rate advanced at 50 percent for a long time and became 41 percent in the second quarter of 2020. When the average of all periods since 2005 is taken, it is seen that the US dollar has a significant rate as 51.2 percent in short-term external debt.

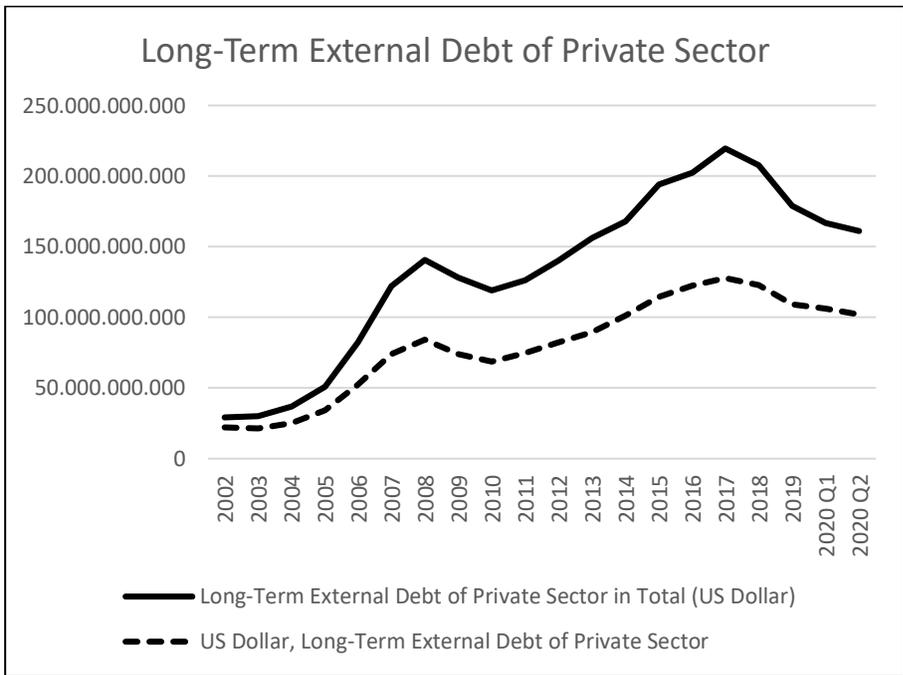
**Figure 2:** Rate of US dollars in the currency composition of short-term external debt in Turkey



**Source:** The data are obtained from The Central Bank of the Republic of Turkey

Considering the long-term external debt of the private sector in Turkey, it is seen that there is a table similar to short-term debt. As can be seen in Figure 3, the total long-term external debt of the private sector, which was 29.2 billion USD in 2002, increased to 160.9 billion USD by the second quarter of 2020. While long-term external debt increased, long-term debt in US dollars also increased just like the short-term debt. While long-term debt in US dollars was around 21.9 billion in 2002, it was 101.9 billion US dollars in the second quarter of 2020.

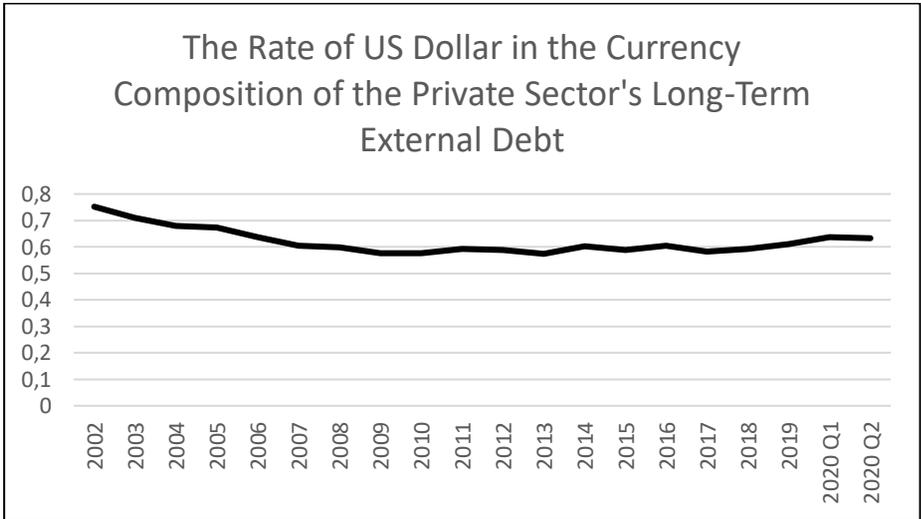
**Figure 3: Long-Term External Debt of Private Sector**



**Source:** The data are obtained from The Central Bank of the Republic of Turkey

The rate of debt of the private sector in US Dollar in total long-term external debts is much higher compared to short-term debt. As shown in Figure 4, this rate had a significant share as 75 percent in 2002. By 2020, the ratio of debt in US dollars was 63 percent. When the average of the period from 2002 to the second quarter of 2020, the said share is at the level of 62 percent.

**Figure 4:** The Rate of US Dollar in the Currency Composition of the Private Sector's Long-Term External Debt



**Source:** The data are obtained from The Central Bank of the Republic of Turkey

## 2. STUDIES IN THE LITERATURE

There are many studies in the literature on the asymmetric relationship of exchange rates on macroeconomic variables. In studies conducted by Bahmani-Oskooee and Fariditavana (2016), Bahmani-Oskooee and Mohammadian (2017), Bussiere (2013) and Delatte and Lopez-Villavicencio (2012), it was concluded that exchange rate has an asymmetric effect on inflation, trade balance and growth (Hussain et al., 2019: 3096). Ho and Saadaoui (2019) examined the symmetrical and asymmetrical effect of the exchange rate on money demand. In the literature related to asymmetric analysis of exchange rate transitivity, studies conducted by Özata (2019), Chen and Tseng (2011), Forero and Vega (2016) and Baharumshah et al. (2017) can

also be shown as an example. While the asymmetric effect of exchange rate on prices was examined in these studies, Benli et al. (2019) investigated the asymmetric relationship of exchange rate with stock market indices.

Dranev and Babushkin (2014), in their research on companies in BRIC countries, found that there is an asymmetrical relationship between exchange rate and stock returns. Stock returns react differently to increases and decreases in exchange rates. In addition, it was stated that export sales rates in other countries except Russia have an asymmetrical relationship with the exchange rate.

The assumption that the effect of change in exchange rate on the trade balance is linear has been questioned in recent studies (Benli, 2018: 196). The result that the effect of exchange rate on the trade balance is not linear raises the question of whether the effect in question has an asymmetrical impact on growth as well.

It is seen in the literature that there is no complete consensus regarding whether the effect of change in exchange rate on growth is positive or negative. There are even some cases in which a statistically significant relationship between the exchange rate and growth is not encountered. Rodrik (2008), Di Nino et al. (2011) made the inference that the weak exchange rate is beneficial for growth in their study while Noura and Sekkat (2012) could not derive an inference in this direction.

Aguirre and Calderón (2005) and Razin and Collins (1997) stated that an excessive depreciation or appreciation in the real exchange rate damages growth while a moderate depreciation has a positive effect on growth (Habib et al., 2017: 388).

Hussain et al. (2019) analyzed the period between 1972-2014 with annual data for Pakistan and found that the effect of exchange rate change on economic growth was asymmetrical. While the assumption that the relationship between exchange rate and growth is symmetrical is weak, a strong relationship has been found for the asymmetric effect.

Habib et al. (2017) examined the effect of real exchange rate against US dollar on per capita national income in their panel data study conducted for 150 countries for the period between 1970 and 2010. The result of the study shows that the effect of large decreases in real exchange rate on per capita national income is stronger compared to large increases in real exchange rate. In addition, the study emphasized that the effect of exchange rates is more important in developing countries compared to developed countries.

Alexius and Post (2008) analyzed the exchange rate and the asymmetric relationship for five countries and found that the effect of exchange rate shocks on growth and inflation was at a level which was negligible. In the study, it could not be deduced that the nominal exchange rate is a stabilizer or a disruptive factor in the economy.

One of the studies conducted to determine whether the change in the USD/TL parity has an asymmetric effect on exports belongs to Benli (2018). Benli (2018) stated that the appreciation of the US dollar against TL provides an increase in Turkey's exports to the United States; however, appreciation of TL does not create the same effect; therefore, the exchange rate and export relationship is not linear.

Kandil (2000) examined the asymmetric effect of the change in exchange rate on production in 22 developing countries. According to the results, an unexpected depreciation in the exchange rate causes a decrease in production and an increase in prices. An unexpected appreciation in the exchange rate causes a decrease in production without decreasing the price increase.

Kandil et al. (2007) studied the exchange rate and growth relationship between 1980-2014 in Turkey through annual data. Considering that the expected increases in the exchange rate will negatively affect exports, it was stated that they have a negative effect on production while unexpected exchange rate changes have a clear negative asymmetric effect on growth.

### **3. EMPIRICAL STUDY**

#### **3.1. Data**

In this study, whether the effect of US dollar on economic growth in Turkey is linear (symmetric) was examined. The data in the study were obtained from the CBT (Central Bank of Turkey) EVDS

(Electronic Data Delivery System). GDP, which is real growth data, was included in the analysis by quarters. The period researched covers the period between 1999: Q1 and 2020: Q1. The effective selling rate was used in US dollars.

### **3.2. Methodology**

The following processes were used to analyze whether the effect of the US dollar on economic growth is better explained symmetrically or asymmetrically:

For the analysis of symmetrical relationship, the effect of changes in US dollar data on GDP data was investigated with time series. Although the result of the regression analysis was supportive for the existence of a symmetrical relationship, no definite inference was made without investigating the existence of an asymmetric relationship and the asymmetric relationship was analyzed.

Analysis of the symmetric relationship is as follows in the framework of the simple regression model:

$$GDP_t = a + B USD_t + \varepsilon_t \quad (1)$$

For the determination of the asymmetric relationship, the rate of change of the US dollar against TL is primarily divided into three groups. The first group consists of data which show depreciation of the US dollar against TL. The second and third groups, on the other hand, are the data which show the appreciation of the US dollar

against TL. According to the group ranking, the rate of appreciation of the US dollar against TL increases. Considering the observations, the aforementioned groups were formed as follows:

Group 1: Data where the rate of change of the US dollar against TL is between -0.20 and 0

Group 2: Data where the rate of change of the US dollar against TL is between 0 and 0.20.

Group 3: The data where the change rate of the US dollar against TL is 0.20 and above.

For the analysis of nonlinear, asymmetric relationship, the multiple regression model was constructed as follows:

$$GDP_t = a + B_1 USDGroup1_t + B_2 USDGroup2_t + B_3 USDGroup3_t + \varepsilon_t \quad (2)$$

In order for the US dollar to have an asymmetric effect on GDP, the following two requirements were expected to be met:

- i) The adjusted R squared value obtained as a result of the regression analysis in the model numbered (1) is lower than the adjusted R squared value obtained as a result of the regression analysis in the model numbered (2).
- ii) Regarding the model number (2), rejecting the hypothesis  $H_0 = [B_1 = B_2 = B_3]$  which indicates a linear relationship and

accepting the alternative hypothesis  $H_A = [B_1 \neq B_2 \neq B_3]$ , which indicates a non-linear relationship.

The first requirement implies that the existence of a non-linear relationship between the US dollar and economic growth is stronger than the existence of a linear relationship. The second requirement indicates that different rates of changes in the US dollar against TL have different effects on growth.

### 3.3. Analysis and Evaluation of Analysis Results

The existence of the linear relationship was examined within the framework of equation (1) and the regression results were summarized in Table 1.

**Table 1:** Regression Results for Linear Relationship

Independent Variable	Dependent Variable: GDP
Constant	0.068 (1.29E-20)***
USD	-0.122 (1.14E-10)***
P-Value (F)	1.14E-10***
Adjusted R Squared	0.388

Table 1 results show that the appreciation of the US dollar against TL negatively affects economic growth. Accordingly, 1-unit increase in the US dollar reduces economic growth -0.12 percent in Turkey. The results of Table 1, which examines the linear relationship, show that the effect of the US dollar on economic growth is significant at the level of 1%. The results of Table 1 are not sufficient to be definitive

evidence for the existence of a linear relationship. Therefore, it is necessary to look at the multiple regression analysis in which changes in the US dollar are grouped at different intervals.

**Table 2:** Regression Results for Non-linear Relationships

Independent Variable	Dependent Variable: GDP
Constant	0.068 (4,14e-012)***
USDGroup1	0.021 (0.856)
USDGroup2	-0.016 (0.857)
USDGroup3	-0.130 (2,50e-09)***
P-Value (F)	5,06e-10***
Adjusted R Squared	0.412

The results of the multiple regression analysis, in which the changes of the US dollar against TL were examined through different intervals, were presented in Table 2. Table 2 was created to question the existence of a nonlinear relationship. The coefficient of the data of Group 1, where the US dollar depreciated against the TL, and the coefficient of the data of Group 2, where the US dollar gained value against the TL in the range of 0-0.20, did not appear to be significant even at the 10% level in the model. Accordingly, it has been concluded that the appreciation and depreciation of the US dollar against TL between -0.20 and 0.20 does not have an effect on economic growth. The coefficient of the data of Group 3, where the US dollar gained value against the TL in the range of 0.20 and above,

turned out to be significant at the level of 1%, negatively affecting the economic growth. Table 2 results show that the regression model as a whole is significant at the 1% level. In addition, the first requirement which is the adjusted R squared value in the model numbered (2) is higher, although it is almost the same as the adjusted R squared value in the model numbered (1). This situation makes it meaningful to use F statistics to question the existence of a nonlinear relationship.

The results of the F statistics for testing the non-linear relationship are presented in Table 3. The aim here is to test the alternative hypothesis that the slope coefficients are different, against the null hypothesis that the slope coefficients in Table 2 are not statistically different from each other as a whole. While the null hypothesis is shown as  $H_0 = [B_1 = B_2 = B_3]$ , the alternative hypothesis is  $H_A = [B_1 \neq B_2 \neq B_3]$ . Accepting the null hypothesis would mean that it would be more correct to accept the existence of a linear relationship, since it would indicate that the slope coefficients are not statistically different from each other.

**Table 3:** F Statistics for Testing Nonlinear Relationships

Null and Alternative Hypotheses	F Statistic
$H_0 = [B_1 = B_2 = B_3]$ $H_A = [B_1 \neq B_2 \neq B_3]$	2.6623 (0.076)*

In Table 3 results, the F statistic shows that it would be appropriate to accept the alternative hypothesis by rejecting the null hypothesis at the 10% level. This result indicates that it would be more appropriate to talk about a non-linear relationship instead of a linear relationship.

## **CONCLUSION**

In this study, the effects of changes in the US dollar against TL on growth of Turkey's economy was investigated. Whether the effect is linear or not was examined by regression analysis for the period between 1999: Q1 and 2020: Q1. First of all, the effect of changes in the US dollar on economic growth was evaluated in general and it was subjected to simple regression analysis, taking into account all rates of change. The results of this relationship were found to be significant. Simple regression model results show that the increase in dollar exchange rate affects the economy negatively. Then, in order to examine the non-linear relationship, the change in dollar exchange rate was divided into groups with 0.20 intervals and 3 separate groups were obtained. When the effects of these groups on economic growth were investigated, it was found that the changes in the dollar exchange rate between -0.20 and 0.20 did not affect economic growth while the increase in the dollar exchange rate of 0.20 and above affected economic growth negatively. Regression analysis results show that this model is also significant at a level of 1%. In order to talk about the existence of a non-linear relationship, this time, an alternative hypothesis, which indicates that the slope coefficients of the groups are different, was tested against the null hypothesis, which states that

the slope coefficients of the groups are not statistically different from each other. The results of the F statistics showed that the null hypothesis should be rejected and the alternative hypothesis indicating that there was no linear relationship should be accepted. In addition, the adjusted R-squared value in the results of the regression model in which the nonlinear relationship was investigated was slightly higher compared to the regression model in which the existence of the linear relationship was investigated. Both cases support that the effect of the US dollar on economic growth is not linear.

## REFERENCES

- Agenor, P. (1991). Output, Devaluation and the Real Exchange Rate in Developing Countries, *Welwirtschaftliches Archive*, Vol.127, pp. 18-41
- Aguirre, A. and Calderón, C. (2005). Real exchange rate misalignments and economic performance. Central Bank of Chile Working Papers No. 315
- Akçay, Ü. and Güngen, A. R. (2019). The Making of Turkey's 2018-2019 Economic Crisis, Hochschule für Wirtschaft und Recht Berlin, Institute for International Political Economy (IPE), Berlin, Working Paper, No. 120/2019
- Alexius, A. and Post, E. (2008). Exchange rates and asymmetric shocks in small open economies, *Empirical Economics*, Vol.35, No.3, pp. 527-541.
- Baharumshah, A. Z., Sirag, A. and Soon, S. (2017). Asymmetric exchange rate pass-through in an emerging market economy: The case of Mexico, *Research in International Business and Finance*, Vol.41, pp. 247-259.
- Bahmani-Oskooee, M. and Fariditavana, H. (2016). Nonlinear ARDL approach and the J-curve phenomenon, *Open Economies Review*, Vol.27, No.1, pp. 51-70.
- Bahmani-Oskooee, M. and Mohammadian, A. (2017). Asymmetry effects of exchange rate changes on domestic production in Japan, *International Review of Applied Economics*, Vol.31, No.6, pp. 774-790
- Benli, M., Durmuşkaya, S. and Bayramoğlu, G. (2019). Asymmetric Exchange Rate Pass-Through and Sectoral Stock Price Indices: Evidence From Turkey, *International Journal of Business and Management*, Vol.7, No.1, pp. 25-47.
- Benli, M. (2018). Asymmetric Effect of Exchange Rates on Exports: An Empirical Analysis of Exports from Turkey to the USA. *Studies on Balkan and Near Eastern Social Sciences*, 2, Peter Lang, pp. 195-203.
- Berument, H. and Dincer, N. (2004). The Effects of Exchange Rate Risk on Economic Performance: the Turkish Experience, *Applied Economics*, Vol. 36, pp. 2429-2441.
- Bussiere, M. (2013). Exchange rate pass-through to trade prices: The role of nonlinearities and asymmetries, *Oxford Bulletin of Economics and Statistics*, Vol.75, No.5, pp. 731-758

- Boratav, K. (2004). Yeni Dünya Düzeni Nereye?. İmge Kitabevi, 2.Baskı, pp. 243-263.
- Chen, T. and Tseng, Y. (2011). Asymmetric Exchange Rate Pass-through of Categorized Import Price Index - An Empirical Study of Taiwan, 2011 International Joint Conference on Service Sciences, Taipei, pp. 343-347.
- Delatte, A. and Lopez-Villavicencio, A. (2012). Asymmetry exchange rate pass-through: Evidence from major countries, *Journal of Macroeconomics*, Vol.34, No.3, pp. 833 –844.
- Di Nino, V., Eichengreen, B. and Sbracia, M. (2011). Real Exchange Rates, Trade, and Growth: Italy 1861-2011. Bank of Italy Economic History Working Paper No. 10.
- Direkçi, T. and Özçiçek, Ö. (2010). Reel Kurun Türkiye’de Ekonomik Faaliyetler Üzerindeki Etkisi, *Marmara Üniversitesi İİBF Dergisi*, Vol.29, No.2, pp. 99-109
- Domaç, İ. (1997). Are Devaluations Contractionary? Evidence from Turkey, *Journal of Economic Development*, Vol.22, No.2, pp. 145-163.
- Dranev, Y. and Babushkin, M. (2014). Asymmetric exchange-rate exposure in BRIC countries. HSE Working papers WP BRP 27/FE/2014, National Research University Higher School of Economics.
- Druck, P., Magud, N. E. and Mariscal, R. (2015). Collateral Damage: Dollar Strength and Emerging Markets’ Growth. IMF Working Paper, WP/15/179.
- Faudot, A. and Ponsot, J. (2016). The Dollar Dominance: Recent Episode of Trade Invoicing and Debt Issuance, *Journal of Economic Integration*, Vol.31, No.1, pp. 41-64.
- Forero, F. P. and Vega, M. (2016). Asymmetric Exchange Rate Pass-through: Evidence from Nonlinear SVARs, *Peruvian Economic Association*, Working Paper No. 63.
- Habib, M. M., Mileva, E. and Stracca, L. (2017). The real exchange rate and economic growth: Revisiting the case using external instruments”, *Journal of International Money and Finance*, Vol. 73, pp. 386-398.

- Ho, S. and Saadaoui, J. (2019). Symmetric and asymmetric effects of exchange rates on money demand: Empirical evidence from Vietnam. hal-02421007.
- Hussain, I., Hussain, J., Khan, A. A. and Khan, Y. (2019). An analysis of the asymmetric impact of Exchange rate changes on G.D.P. in Pakistan: application of non-linear A.R.D.L., Economic Research-Ekonomiska Istrazivanja, Vol.32, No.1, pp. 3094-3111.
- Kandil, M., Berument, H. and Dinçer, N. (2007). The Effects Of Exchange Rate Fluctuations On Economic Activity In Turkey, Journal Of Asian Economics, Vol.18, pp. 466–489
- Kandil, M. (2000). The Asymmetric Effects of Exchange Rate Fluctuations: Theory and Evidence From Developing Countries. IMF Working Papers, WP/00/184.
- Kendirli, S. and Çankaya, M. (2016). Dolar Kurunun Borsa İstanbul-30 Endeksi Üzerindeki Etkisi ve Aralarındaki Nedensellik İlişkisinin İncelenmesi, CBÜ Sosyal Bilimler Dergisi, Vol.14, No.2, pp. 307-324.
- Kızılkaya, O. (2012). Reel Döviz Kuru, Yabancı Sermaye ve Ekonomik Büyüme İlişkisi: Türkiye Örneği, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü İktisat Anabilim Dalı, Doktora Tezi, pp. 1-248.
- Martin, F. E., Mukhopadhyay, M. and Hombeeck, C. (2017). The global role of the US dollar and its consequences. Bank of England Quarterly Bulletin 2017 Q4, <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2017/the-global-role-of-the-us-dollar-and-its-consequences.pdf>
- Muhammad, N. and Rasheed, A. (2004). Stok Prices and Exchange Rates: Are They Related? Evidence From South Asian Countries, Pakistan Development Review, Vol.10, No.4, pp. 535-549
- Nouira, R. and Sekkat, K. (2012). Desperately seeking the positive impact of undervaluation on growth, Journal of Macroeconomics, Vol. 34, pp. 537-552.
- Özata, E. (2019). Türkiye’de Döviz Kuru Geçişkenliğinin Asimetrik Analizi, Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi, Vol.20, No.2, pp. 213-232.

Razin, O. and Collins, S. M. (1997). Real exchange rate misalignments and growth, NBER Working Paper No. 6174.

Rodrik, D. (2008). The Real Exchange Rate and Economic Growth. Brookings Papers on Economic Activity, [https://www.brookings.edu/wp-content/uploads/2008/09/2008b\\_bpea\\_rodrik.pdf](https://www.brookings.edu/wp-content/uploads/2008/09/2008b_bpea_rodrik.pdf).

Upadhyaya, K. (1999). Currency Devaluation, Aggregate Output, and the Long Run: an Empirical Study, *Economic Letters*, Vol.64, pp. 197–202.

#### Internet Sources

United Nations World Economic Situation and Prospects 2019 Report, [https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019\\_BOOK-web.pdf](https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf)

The Central Bank of the Republic of Turkey, <https://www.tcmb.gov.tr/>



**CHAPTER 6**

**EMERGENCY MEDICAL SERVICES  
PERFORMANCE CRITERIA:  
A COMPARATIVE STUDY**

Res. Assist. Mustafa AMARAT <sup>1\*</sup>  
Assoc. Prof. Dr. Harun KIRILMAZ<sup>2</sup>

---

<sup>1</sup> Sakarya University, Sakarya Business Scholl, Healthcare Managment, Sakarya, Turkey Orcid: 0000-0001-8954-6314

<sup>2</sup> Sakarya University, Sakarya Business Scholl, Healthcare Managment Sakarya, Turkey.Orcid: 000-0001-6055-6826



## INTRODUCTION

Today, the concept of performance is frequently used in the management literature (Koseoglu, 2007). This can be attributed to the increasing importance of effectivity, efficiency, economy, and quality for organizations as elements of performance. The concept of performance is one of the concepts used in the medical sector, as in all the other sectors, by policy makers, researchers, and organizers to enhance the service quality since the 1990s. To this end, performance criteria are used in many countries (Bratihwaite et al,2017). In this sense, it is possible to find medical system performance indicators prepared by national, international, and transnational organizations. The medical performance criteria of countries are compared by researchers on the basis of learning and utilizing the experiences and techniques of other countries (Bratihwaite et al,2017; Kirilmaz et al., 2017; Alptekin and Yesilaydin, 2015; Davis et al.,2007; Evans et al., 2001).

In recent years, the number of applications to emergency medical services has increased, and the quality of the services provided in emergency medical services has started to be investigated. Emergency medical services involve the patient's transfer to the hospital and interventions in cases of an emergency disease or injury (Altindis and Unal, 2017). In general, pre-hospital emergency medical services are offered in two different ways across the world. These are Anglo-American and Franco-German models (Timmermann et al.,2008). Basically, the Anglo-American model primarily aims to transport

patients to hospitals in the fastest way to ensure higher quality care. The USA, UK, the Republic of Ireland, Netherlands, Australia, and Canada are among the countries adopting and practicing this model. Aiming to bring the hospital facilities to the patient, the Franco-German model transports emergency physicians and advanced technology to the area where the patient waits. This model is practiced by France, Austria, Germany, Norway, Russia, Switzerland, and Finland (Paksyo, 2016). It is possible to say that in recent years Turkey is transitioning to the Anglo-American model in terms of emergency medical services. Both models have its benefits and drawbacks. The point that distinguishes these two models is the question whether to bring the patient to hospital or the hospital to the patient. In this study, there will be no comparison between these two models. Rather, it will dwell on the comparison of the key performance indicators regarding emergency medical services as set by the UK, Australian, the Republic of Ireland, the USA, and Turkey, which practice the Anglo-American model. It is believed that the results of the comparison will be guiding for policy makers and researchers.

## **1. METHODOLOGY**

### **1.1. ANALYTICAL FRAMEWORK**

In this study, the functioning of the medical systems in the abovementioned countries, the number of applications, and performance indicators are analyzed via evaluation tools that are accepted as framework of medical care quality by Braithwaite et al.

(2017), Sørup et al. (2013), and IOM (2016). The constructed themes are as follows:

- **Clinical effectiveness:** It is the degree of offering valid information and the truth to reach the intended results (Joint Commission Resources, 2004). It is defined as the degree of attaining the intended clinical results.
- **Timely treatment, Timeliness:** It refers to carrying out the treatment at the beneficial and necessary moment (Esatoğlu, 2007). It involves people who apply to emergency services' receiving clinical support at the right time.
- **Patient-centeredness: Sensitivity towards patients: customer-orientation** (quick response, access to social support, quality basic facilities, selection of service provider), patient satisfaction, patient experience (honor, privacy, autonomy, communication) (Shaw, 2020).
- **Response:** Being able to respond accurately to people who apply to emergency medical services.
- **Access:** It involves patient transportation and patients' access to emergency medical services.
- **Efficiency:** The relationship between the output and resource use while offering medical services. In other words, it is the ratio between the cost of achieving the objective and the benefit of the objective (Joint Commission Resources, 2004). It covers

the duration which patients spend in the emergency service and the duration until the standby doctor arrives.

- **Consistency:** It evaluates consistency with the performance criteria.
- **Quality:** It covers quality services offered by expert staff to patients.
- **Effectiveness:** It classifies the effectiveness of the duration until emergency medical services reach patients in centers and in rural areas.
- **Patient security:** It highlights the prevention, minimization, reporting, and analysis of medical errors that lead to negative and unintended situations while offering medical services.

## **1.2. QUANTITATIVE DATA**

Scanning method was used within the scope of the study. The reason for choosing this method is that it is not possible to obtain data from the official websites of the countries determined for the purposes of the study and to observe and negotiate to collect data (Bas and Akturan, 2017). Moreover, ethical approval is not required for the study.

To analyze the emergency medical performance criteria in the selected countries, the reports and the indicators that are available in Australian Institute of Health and Welfare, Minister of Health NSW and Queensland Health, National Health Services England, Turkish Ministry of Health, Ireland Health Services, and the Agency for

Healthcare Research and Quality are used (AIHW, 2020; NSW, 2020; NHS, 2020; SB, 2020; HSE, 2020; AHRQ, 2020).

## **2. RESULTS**

The medical systems of the countries covered in the research are different (Table-1). Among these countries, there are those offering national medical services (UK) as well as also those offering private medical services (the USA). As the medical systems of the countries included in the study cannot be examined in detail, only the context in which they are included is mentioned. Thus, it is believed that, the performance criteria of emergency medical services will be better understood.

Table 1 shows the rates referring to emergency service use in 2014 of the countries included in the study. While the highest rate of emergency service use belongs to Turkey (1.19), the lowest rate belongs to the Republic of Ireland (0.16). The structure of current emergency medical services and how they operate are revealed through the examination of official websites of the countries. Accordingly, there are three main types of emergency departments in the UK. The first is fully-equipped emergency services that operate for 24 hours. Type-2 mainly covers the facilities that are managed by a single expert. Hence, they do not offer all the services, but operate for a single area of expertise such as dental problems. Type-3 deals with stomachaches, cuts and bruises, certain fractures and lacerations, and mild injuries such as infections or rash. These facilities can be accessed without appointments. In addition, Type-3 covers “walk-in”

and “minor injury” facilities. It is seen that emergency medical services in the UK and the Republic of Ireland are similar. Emergency medical services in these countries are offered in three different centers. Extremity injuries are treated in “Injury Units,” while people apply to “Primary Care” for less urgent cases. Severe injuries, diseases, and cases with death risk are covered by emergency services of hospital that operate 7/24 (HSE, 2020).

The current emergency medical services in Turkey covers first-aid, emergency call, emergency medical services, and emergency services of hospitals. However, there are certain plans for change in offering services that will be enacted from 2019 onwards. It is seen that as of 2018, steps have been taken to offer emergency medical services first in primary care units and then to make referrals to emergency services of hospitals in Malatya, Bartın, Istanbul, and Edirne provinces of Turkey, which is a similar schema to the one in the UK ([www.medimagazin.com](http://www.medimagazin.com), 2018). The emergency medical services in the USA are divided into two. This division is based on whether medical services are offered for seven days and 24 hours or not. It is seen that emergency medical services in Australia are offered via certain health centers or emergency departments of hospitals.

**Table 1:** Demographic Characteristics of the Countries and the Qualities of Emergency Medical Services

	USA	UK	REPUBLIC OF IRELAND	AUSTRALIAN	TURKEY
Population (2014)	318,857,100	63,650,010	4,609,600	23,491,000	77,030,628
Life expectancy (2015)	82.8	81.2	83.4	84.5	80.7
Healthcare expenditure (GDP%) (rank) (2015)	17.2	9.7	7.8	9.4	4.3

**Table 1:** Continued

	USA	UK	REPUBLIC OF IRELAND	AUSTRALIAN	TURKEY
Type of Medical System	Public and private insurance – majority private insurance <sup>3</sup>	Publicly funded – NHS Voluntary private insurance available <sup>2</sup>	A mixed system of public offering and funding of health services and private insurance with the former constituting majority	Universal coverage – Medicare Voluntary private insurance available	A mixed system of public offering and funding of health services and private insurance with the former constituting majority
Emergency Medical System	The emergency medical services in the USA are divided into two. This division is based on whether medical services are offered for seven days and 24 hours or not.	There are three main types of emergency departments in the UK.	Emergency medical services in the UK and the Republic of Ireland are similar. Emergency medical services in these countries are offered in three different centers. Extremity injuries are treated in “Injury Units” while people apply to “Primary Care” for less urgent cases. Severe injuries, diseases and cases with death risk are covered by emergency services of hospitals that operate 7/24	Emergency medical services in Australia are offered via certain health centers or emergency departments of hospitals.	The emergency medical services in Turkey cover first-aid, emergency call, emergency medical services, and emergency services of hospitals

**Table 1:** Continued

	USA	UK	REPUBLIC OF IRELAND	AUSTRALIAN	TURKEY
Emergency Medical System			.		
The Number of Applications to Emergency Services (2014)	141,420,000	14,100,000	738,665	7,465,869	92,100,237

## 2.1. United Kingdom

It is seen that there are separate performance indicators for Type-1, Type-2, and Type-3 urgent care services in the UK. Moreover, they set performance criteria for integrated urgent medical services. Among the performance criteria, there is the number of discharged or dead patients within 4 hours after being offered any type of urgent care service. Table 2 shows the performance criteria for Type-2 urgent care services. In the present study, the objectives of the performance indicators in these centers were set after the researchers analyzed the indicators. Accordingly, the performance indicators can be categorized as patient-centeredness, timely treatment, and efficiency.

**Table 2:** Type-2 The Performance Indicators of Emergency Medical Centers

Type 2- Urgent	Objectives
Each patient should be attended by a specialist within 15 minutes.	Patient-centeredness, Timely treatment
Each patient should be either treated or transferred to another service within 90 minutes.	Patient-centeredness, Efficiency, Timely treatment
Patients should be informed about taking appointments for non-urgent treatments.	Patient-centeredness, Access
All patients should be discharged in less than three hours of time.	Patient-centeredness, Timely treatment

<b>Integrated Urgent Care</b>	
Calls abandoned after at least 30 seconds	Patient Security
Average time to call answer	Patient-Centeredness, Timely Treatment
Average time to urgent clinical assessment	Patient-Centeredness
Face-to-face primary medical care bookings	Patient-Centeredness
Calls closed as self-care	Patient-Centeredness / Effectiveness
Re-contacts	Patient Security
Directory of Services catch-all	Effectiveness
Compliance with advice	Patient-Centeredness / Effectiveness
Electronic transfer of referral information	Effectiveness
Average time to definitive clinical encounter	Effectiveness
Serious Incidents	Patient Security
End to end reviews	All Of Them
Helpfulness of advice	Patient-Centeredness
Satisfaction	Patient-Centeredness
If 111 was not available	Patient-Centeredness / Effectiveness

Table 2 shows the key performance criteria of integrated urgent healthcare services covering out-of-hours examination and urgent care as developed by the UK's National Health Services for 2016/2017. The objectives of the criteria set by the UK Ministry of Health. In this sense, the objectives of the criteria are security, patient-centeredness, and efficiency. Calls abandoned after at least 30 seconds create clinical risks. Average time to call answer aims to measure the average time it takes to answer the received calls. The average time is accepted as 60 seconds. Average time to urgent clinical assessment refers to compulsory on-time patient assessment without delayed call-

backs. Face-to-face primary medical care bookings measures to what extent urgent appointments made by patients are fulfilled in integrated urgent care centers. That is, patients are allowed to make appointments without going to urgent care centers. Calls closed as self-care aims to resolve the problems on-time and make patients wait for shorter periods of time. Re-contacts is designed to evaluate the success and reliability of the patient advices that are given. Compliance with advice involves complying with the advices about patients' unplanned health seeking behaviors. It takes into account patients' unplanned uses of ambulance or urgent care services. Electronic transfer of referral information measures conveying all the obtained information to the relevant organizations and institutions in a reliable way. Average time to definitive clinical encounter is about eliminating the concerns of callers about advices and reassurance or the necessary treatment in the shortest time. Serious incidents classifies the received calls based on a document published in 2015 specifying what can be deemed as severe injury (NHS, 2020). Helpfulness of advice is a poll measuring to what extent the service that was offered proved useful. Satisfaction was designed to measure the satisfaction levels of patients about the entire service process. It is projected that a protocol should be assigned to ensure that high-risk patients applying for urgent care service are examined by a specialist as soon as possible. It is expected that all the patients undergo a clinical assessment by a registered medical practitioner within 15 minutes after they reach the urgent care service. Among these standards, there is the statement that all the patients should be

discharged within three hours of time. The requirement of having the minimum equipment for diagnosis and treatment in urgent care services is among the quality criteria.

## 2.2. Turkey

In Turkey, emergency medical services are free. There are command and control centers in each province. These centers receive the calls by 112 and urge the closest ambulance station when deemed necessary. The ambulances make the necessary medical intervention in patients and transfer them to the closest hospital. It is possible to say that via 2017 emergency medical services performance program, Turkey aims to offer accessible, consistent, effective, and efficient medical services. The Ministry of Health set performance criteria for emergency departments of hospitals and 112 emergency medical services (Table 3). It is seen that these criteria involve the objectives of clinical effectiveness, efficiency, and patient-centeredness.

**Table 3:** Hospital Emergency Services Indicators and 112 Emergency Medical Services Performance Indicators (Turkey)

Criteria	Objectives
The number and ratio of patients applying to emergency services with the same complaints within 24 hours	Clinical Effectiveness
The number and ratio of patients transferred to another medical center and the distribution of diagnosis	Clinical Effectiveness, Efficiency
The duration until the consultant/standby doctor arrives at the emergency service	Efficiency, Patient-centeredness
The duration of patients in short stay unit	Efficiency, Patient-centeredness
The time to reach the case in rural areas (30 minutes)	Efficiency, Patient Security
The time to reach the case in centrums (10 minutes)	Efficiency, Patient Security
The rate of on-site intervention	Efficiency, Timely Treatment
The number of patients who are not admitted to medical institutions	Patient Security, Effectiveness, Access

The objectives specified for 112 emergency medical services are very much like the objectives of hospital emergency services. The distinguishing factor between them is prioritization of patient security objectives in hospital emergency services. In addition, there is a fund to improve the emergency interventions both in qualitative and quantitative terms. For this purpose, first aid training centers are established and the number of individuals with first aid training is aimed to be increased. Though not included in the performance criteria, it is also possible to obtain some information about service provision by looking at the accreditation objectives. Turkey's accreditation objectives for emergency medical services cover patient security, patient-centeredness, efficiency, effectiveness, and healthy working environment.

### **2.3. The United States of America**

Emergency medical systems in the United States of America involve both public and private funded systems. However, EMS (Emergency Medical Services) is not the same throughout all the US jurisdiction. The same is true for other countries as well. In the US, budgets, funds, education levels, and organizational structures and functions vary according to jurisdiction (Page et al.,2013). There fore, instead of giving the performance criteria of different regions, the basic measurement criteria for emergency situations as specified in the report named “Improving Patient Flow and Reducing Emergency Department Crowding: A Guide for Hospitals” prepared by AHRQ are presented (Table 4). In the guide, performance measurement is

built upon three main focus. These are Regulatory/Accreditation, Mission, and Rapid Cycle Change. Regulatory/Accreditation involves the core measures for Medicare and Medicaid services as well as Joint Commission standards. The mission covers all the financials data as well as data regarding quality. Rapid cycle change covers the data regarding small-scale process improvements and changes. Measurement is usually performed by the staff delivering care at the unit level.

**Table 4:** Emergency Department Measures (the USA)

Criteria	Objectives
Use of Brain Computed Tomography (CT) in the Emergency Department (ED) for Atraumatic Headache	Clinical Effectiveness, Patient Security
Head CT Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients Who Received Head CT Scan Interpretation Within 45 minutes of Arrival	Clinical Effectiveness, Patient Security
Troponin Results for ED Acute Myocardial Infarction (AMI) Patients or Chest Pain Patients (with Probable Cardiac Chest Pain) Received Within 60 minutes of Arrival	Clinical Effectiveness, Patient Security

**Table 4:** Contined

Median Time to Pain Management for Long Bone Fracture	Clinical Effectiveness
Patient Left Before Being Seen	Patient-Centeredness, Patient Security
Door to Diagnostic Evaluation by a Qualified Medical Professiona	Quality,
Median Time from ED Arrival to ED Departure for Discharged ED Patient	Efficiency, Timely Treatment, Patient-Centeredness, Patient Security
Admit Decision Time to ED Departure Time for Admitted Patients	Efficiency , Timely Treatment, Patient-Centeredness, Patient Security

## 2.4. The Republic of Ireland

The performance criteria for emergency medical services in the Republic of Ireland are divided into two as hospitals and ambulance services (Table 5) (Gannon et al.,2017). Diverging from the performance criteria of other countries, these performance criteria are mainly about medical interventions such as first analgesic time and EKG time.

**Table 5:** Hospital Emergency Performance Indicators and ambulance key performance criteria (The Republic of Ireland)

Criteria	Objectives
Time to receive first analgesic in adult ED patients	timely treatment, patient security
Time to receive first antibiotic in adult ED patients	timely treatment, patient security

**Table 5:** Continued

Criteria	Objectives
Time to first ECG in suspected cardiac chest pain	timely treatment, patient security
Time to brain CT for patients presenting within 4.5 h of onset of symptoms consistent with a stroke	timely treatment, patient security
Proportion of ED attendances with DVT that end in hospital admission	timely treatment, patient security
Number of unplanned ED attendances within 7 days of original attendance	Response,
Left before completion of treatment rate	response, efficiency, patient security
Total emergency department time	efficiency, patient security, clinical effectiveness
<b>Emergency Care and Patient Experience Time</b>	
% of all attendees at ED who are discharged or admitted within 6 hours of registration	patient-centeredness, clinical effectiveness, timely treatment, response
% of all attendees at ED who are discharged or admitted within 9 hours of registration	patient-centeredness, clinical effectiveness, timely treatment, response
% of all attendees at ED who are in ED	patient-centeredness, clinical effectiveness, timely treatment, response
% of all attendees aged 75 years and over at ED who are discharged or admitted within 6 hours of registration	patient-centeredness, clinical effectiveness, timely treatment, response
% of patients 75 years or over who were discharged or admitted from ED within 9 hours of registration	patient-centeredness, clinical effectiveness, timely treatment,

	response
% of all attendees aged 75 years and over at ED who are discharged or admitted within 24 hours of registration	patient-centeredness, clinical effectiveness, timely treatment, response
% of ED patients who leave before completion of treatment	timely treatment, response
<b>Ambulance Performance Criteria</b>	
The rate of cardiac arrest was 18 minutes and 59 seconds (Echo)	timely treatment
Response to cardiac arrest within 90 seconds following a case call	timely treatment
Life-threatening cases reached 18 min 59 seconds (Delta)	timely treatment
Respond within 90 seconds after a life-threatening case call	timely treatment

It is seen that certain quantitative data that are used in other countries are among the emergency performance criteria in the Republic of Ireland (e.g. total number of emergency services, the number of injuries). The ambulance performance criteria are divided into two as alpha and delta. While alpha criteria are valid for cardiac arrest patients, delta criteria are used for life-threatening cases. Intervention durations specified for alpha and delta calls are defined as ambulance performance criteria. clinical effectiveness, timely treatment, patient-centeredness, response, access, efficiency, consistency, quality, effectiveness, and patient security.

## 2.5. Australia

The Australian triage system involves five categories. The first category is for the most urgent patients while the fifth category deals with the patients the lowest urgency (QLD,2020).

- Rating 1 (Immediately life-threatening patients): The patient should be examined by a doctor or nurse within two minutes.

- Rating 2 (Imminently life-threatening patients): The patient should be examined by a doctor or nurse within ten minutes.
- Rating 3 (Potentially life threatened patients): The patient should be examined by a doctor or nurse within 30 minutes.
- Rating 4 (Potentially serious patients): The patient should be examined by a doctor or nurse within 60 minutes.
- Rating 5 (Less urgent patients): The patient should be examined by a doctor or nurse within 120 minutes.

In this triage system, key performance criteria are specified for hospital emergency departments and ambulance services. Among these criteria, there are those about ambulance transfer duration, the total duration people spend in emergency services, appointments for non-urgent patients, and surgical operations (Table 6). The performance criteria are compared to the data from previous year. In addition, the criterion of “How long did 50% of the patients wait?” creates another performance criterion for hospitals. This criterion shows the average minute of waiting in a month in the treatment environment. The criterion of “What percentage of the patients do not wait for the treatment?” shows the percentage of the patients who do not wait for treatment.

**Table 6: Key Performance and Ambulance Performance Criteria (Australia)**

	Objective
Transfer of Care – patients transferred from Ambulance to ED < 30 minutes (%)	Access
Emergency Treatment Performance - Patients with total time in ED ≤ 4 hrs (%)	Clinical effectiveness, Timely treatment, Response, Patient-centeredness
Emergency Treatment Performance: Patients with Total time in ED ≤ 4hrs	Clinical effectiveness
Elective Surgery Access Performance: Elective Surgery Patients Treated on Time	Access, Timely treatment
Overdue Elective Surgery Patients	Consistency, Clinical effectiveness
Electronic Discharge Summaries Completed	Consistency
The occupation of hospital emergency services	Efficiency, Access
Patients who are treated within the clinically-estimated period	Clinical effectiveness
How long did 50% of the patients wait?	Patient-centeredness, Timely treatment
What percentage of the patients do not wait for treatment?	Response
How many patients were staying in this hospital?	Efficiency
Admittance to hospital within four hours	Timely treatment
The number of the patients who do not wait for treatment	Clinical effectiveness, Efficiency, Patient-centeredness

## DISCUSSIONS AND CONCLUSIONS

This study deals with the emergency medical services performance indicators of the countries included in the study. In the study, the objectives of performance criteria of the countries were set by the researchers taking into account the information in the literature. The purpose of setting the objectives was to define the “scope and dimensions” of the performance measurement of the countries and to help policy makers, academicians, and clinicians. Table 7 shows the comparison of the emergency medical services performance objectives of the countries included in this study. Accordingly, it is possible to say that there are similarities and differences between the

countries in terms of emergency medical services performance objectives. The Republic of Ireland has the highest number of criteria regarding “timely treatment” and “patient security”, whereas the UK has the highest number of criteria regarding “patient-centeredness” and “efficiency”. Based on the common results of all the countries, it is clear that the highest emphasis is put on the objectives of “patient-centeredness”, “timely treatment”, and “patient security”. The countries with the highest number of criteria are the Republic of Ireland and the UK. It is possible to observe that even the countries with similar objectives differ in their criteria and the groups they cover. It is difficult to state an opinion on which of these criteria should be included and which should not. Many macro factors such as population, development level, and current and planned medical system of countries are influential on setting the objectives accurately and integrating them properly.

**Table 7:** The Comparison of the Emergency Medical Services Performance Objectives

	UK	the USA	The Republic of Ireland	Australia	Turkey	Total
<b>Clinical effectiveness</b>		X(4)	X(4)	X(5)	X(2)	15
<b>Timely treatment</b>	X(5)	X(2)	X(13)	X(4)	X(1)	25
<b>Patient-centeredness</b>	X(12)	X(3)	X(5)	X(3)	X(2)	25
<b>Response</b>			X(8)	X(2)		10
<b>Access</b>				X(2)	X(1)	3

**Table 7:** Contined

<b>Efficiency</b>		X(2)	X(2)	X(2)	X(4)	10
<b>Consistency</b>				X(2)		2
<b>Quality</b>		X(1)	X(2)			3
<b>Patient security</b>	X (4)	X(6)	X(9)		X(3)	22
<b>Effectiveness</b>	X(7)				X(3)	10
<b>Total</b>	28	18	43	20	16	125

As a result, it is possible to find some differences and similarities between the medical performance criteria of the determined countries adopting the same triage system. We think that these differences and similarities stem from medical system management, financing, resource supply, number of applications to emergency, and medical service use of citizens relevant to the countries. The data on to what extent the countries comply with the performance indicators they have determined and what kind of improvements they make are excluded from this study.

Future studies may aim to determine the relationship between performance criteria and processes based on the data obtained from this study. This study revealed the differences and similarities between the emergency medical systems of the said countries. In this way, policy-makers will be able to develop new policies and new indicators in light of this information and will have an idea about the current or future changes in the country's emergency system.

## REFERENCES

- AHRQ. (2020, 14 May), Emergency Severity Index (ESI): A Triage Tool for Emergency Departments. <https://www.ahrq.gov/professionals/systems/hospital/esi/index.html>.
- AIHW.(2020, 1 May), National palliative care performance indicators. <https://www.aihw.gov.au/reports/palliative-care-services/national-palliative-care-performance-indicators-r/contents/summary>.
- Alptekin, N., Yesilaydin, G. (2015) OECD Ulkelerinin Saglik Gostergelerine Gore Bulanik Kumeleme Analizi ile Siniflandırılması. İşletme Arastirmalari Dergisi, 7,137-155.
- Altindis, S., Unal, O. (2017) Acil Servis Kalite Standartlarında Turkiye'nin Durumu. Journal of Biotechnology and Strategic Health Research, 1,51-59.
- Bas, T. ve Akturan, U. (2017). Sosyal Bilimlerde Bilgisayar Destekli Nitel Arastırma Yontemleri. Ankara: Seçkin yayınevi.
- Braithwaite, J. Hibbert, P., Blakely, B., Plumb, J., Hannaford, N., Long, J.C., Marks, D.(2017) Health system frameworks and performance indicators in eight countries: A comparative international analysis. SAGE open medicine, 5,1-10.
- Davis, K., Schoen, C., Schoenbaum, S.C., Doty, M.M., Holmgren, A.L., Kriss, J.L., Shea, K.K. (2007). Mirror, mirror on the wall: an international update on the comparative performance of American health care. New York: Commonwealth Fund.
- Esatoglu, E. (2007). Hastaneler Performans Ölçumu. Ates, H., Kirilmaz, H. ve Aydın, S. (Ed.), Saglik Sektorunde Performans Yonetimi Turkiye Ornegi (358-411 pp.). Ankara: Asil Yayin Dagitim.
- Evans, D.B., Tandon, A., Murray, C.J., Lauer, J.A. (2001). Comparative efficiency of national health systems: cross national econometric analysis. BMj. 323,307-310.

- Gannon, B., Jones, C., McCabe, A., O'sullivan, R., Wakai, A. (2017). An economic cost analysis of emergency department key performance indicators in Ireland. *European Journal of Emergency Medicine*. 24,196-201.
- HSE, (2020, 1 May), The HSE's Performance Assurance Report. <https://www.hse.ie/eng/services/publications/performance-reports/2019-performance-reports.html>.
- Institute of Medicine (IOM) (2006). *Emergency Medical Services at A Crossroads*, Washington: The National Academies Press.
- Joint Commision Resources Cost- Effective Performance Improvement in Hospitals. (2004). Illinois: JRC Inc.
- Kirilmaz, H., Amarat, M., Unal, O. (2017). Turkiye ve Amerika Birlesik Devletleri Saglik Sistemlerinin Karsilastirmali Analizi. *Strategic Public Management Journal*. 3,78-104.
- Koseoglu, O. (2007). *Saglik sektorunde Performans Yonetimi içinde Performans Yonetimi uygulamalarinda Ulke deneyimleri*. Ankara: Asil Yayın Dagıtım.
- NHS ,(2020, 1 May).Why patient safety is the whole point of healthcare. <https://www.england.nhs.uk/patient-safety/serious-incident>.,
- NSW (2020, 1 May)., Health System Performance (HSP) app. <https://www.health.nsw.gov.au/wohp/Pages/HSP-app.aspx>.
- OECD (2017), *Health at a Glance (2017)*. OECD Indicators. Paris: OECD Publishing,
- Page, C., Sbat, M., Vazquez, K., Yalcin, Z.D. (2013). Analysis of emergency medical systems across the world. Worcester Polytechnic Institute, MIRAD Laboratory.
- Paksoy, V.M. (2016). Acil Saglik Hizmetlerinde Uluslararası Uygulama Modellerinin Karsilastirmasi: Anglo-Amerikan ve Franko-German Modeli. *İnonu Universitesi Saglik Hizmetleri Meslek Yuksekokulu Dergisi*, 5,6-24.
- QLD, (2020, 1 May). Health System and goverence Performance. <https://www.health.qld.gov.au/system-governance/performance>.
- SB, (2020, 1 May), Saglık İstatistik Yıllığı. <https://sbsgm.saglik.gov.tr/TR,62398/saglik-istatistikleri-yilligi-2018-yayinlandi.html>

- Sørup, C.M., Jacobsen P., Forberg J.L. (2013) Evaluation of emergency department performance—a systematic review on recommended performance and quality-in-care measures. *Scandinavian journal of trauma, resuscitation and emergency medicine*, 21,2-14.
- Stevenson, P., Taggart, K., Fulton, R. (2020, 1 May). Monitor and report activity at Emergency Care Departments in Northern Ireland. <https://www.health-ni.gov.uk/articles/emergency-care-and-ambulance-statistics>.
- Timmermann, A., Russo, S.G., Hollmann, M. W. (2008) Paramedic versus emergency physician emergency medical service: role of the anaesthesiologist and the European versus the Anglo-American concept. *Current Opinion in Anesthesiology*, 21,222-227.
- Shaw, C. (2020, 1 May). How can hospital performance be measured and monitored?. WHO Regional Office for Europe. <http://www.euro.who.int/document/e82975.pdf>.

**CHAPTER 7**  
**ROLE OF DIGITAL MARKETING FOR SMART  
AGRICULTURE: THEIR IMPLICATIONS, PRACTICES AND  
FUTURE DIRECTION**

Vikram SINGH<sup>1</sup>  
Dr. Ragif HUSEYNOV<sup>2</sup>  
Dr. Smiti JHAJJ<sup>3</sup>

---

<sup>1</sup> Research Assistant, University School of Management,  
Kurukshetra University, Kurukshetra, India

Email Id: vikramsinghwarach88@gmail.com. Contact no. +91-9466751683

<sup>2</sup> Honorary Associate Professor of Tomori Pal College, Budapest, Hungary  
Email Id: ragif1984@gmail.com

<sup>3</sup> Associate Professor, ITFT Education Group, Chandigarh, India  
Email id: smiti.jhajj@yahoo.com



## INTRODUCTION

Intelligent agriculture reflects the introduction of new ICTs into agriculture, contributing to what may be considered the Third Green Revolution.

This Third Green Revolution has taken over the agricultural world since the plant breeding and genetic revolution, which relies on combined ICT solutions such as specific equipment and the Internet of Things(IoT), sensors and actuators, geo-positioning systems, big data, aerial vehicles (UAVs, drones), robots etc.

The true promise of smart agriculture is a more detailed and resource effective approach to creating a more profitable and sustainable agricultural production. Whereas up to 80% of farmers in the USA might be using some form of SFT, it is just 24% in Europe.

From the farmer's standpoint, smart farming can give the farmer added benefit by enhancing decision-making or making exploitation and management more effective. In this regard, smart agriculture is closely tied to Smart AKIS Network's three interlinked areas of technology:

- **Information Management Systems:** Designed data acquisition, preparation, storage, and distribution systems in the form required for the conduct of a farm's work.
- **Agriculture precision:** Control of spatial and temporal uncertainty to increase economic returns after use of inputs and mitigate environmental impacts. This includes Decision Support

Systems (DSS). These include the use of GPS, GNSS, drone aerial pictures and hyperspectral imagery from Sentinel satellites, enabling the development of maps with geographical uncertainty with as many variables as possible. This includes the use of the entire farm management system to maximise the returns on input and to conserve energy.

- **Agricultural automation and robotics:** robotics application process, automated control and artificial intelligence strategies, including farmbots and farmdrones, at all stages of agricultural production.

Agriculture is a big part of the global economy; agriculture is a part of life in the world. This is because agriculture acts as an important supply of human needs. Demand for farm production has increased over the years, in particular as the world population has increased and the need to maintain food security in various parts of the world has increased. With the emergence and advancement of technologies modern farming methods have been developed that are steadily replacing certain traditional farming methods that are currently used. This article offers an in-depth study on the issue of intelligent farming and its ultimate impact on agriculture. Read all about the future of agricultural technologies in smart farming and why.

### **What Is Smart Farming?**

Intelligent farming means plant management theory, which incorporates innovative technology to boost agricultural goods'

efficiency and quantity. This includes elements such as the Internet of Things (IoT), data processing, soil scanning and GPS connectivity, among other intelligent technologies. In the course of the years, smart farming has gained use for both small- and large-scale growers, providing farmers with access to technology and devices that can optimise the output and quantities of goods while reducing farming costs.

### **Is intelligent farming agriculture 's future?**

Study carried out in 2015 showed that the land available for agricultural use was slightly decreased by around 0.7 percent. There is a need for improved production for the planet to sustain or raise its food supply and become food safe. However, with the state of the art, if conventional farming methodologies are to be practised, any improvement in productivity is not feasible without straining the climate. Smart farming, though, offers a brighter future with the advent of better farming technology aimed at lower costs , better farming productivity, and good quality and high-quality goods.

With smart farming, for example, you get the chance to track the needs of your farms efficiently, use fertilisers and pesticides well and wisely, and change how you use those farming practises to produce better and safe performance. Smart agriculture using clustering and IOT. Aher, A., Kasar, J., Ahuja, P., & Jadhav, V. (2018). Blockchain and IoT based food traceability for smart agriculture. ). Lin, J., Shen, Z., Zhang, A., & Chai, Y. (2018, July).). Internet of Things

application for implementation of smart agriculture system. Krishna, K. L., Silver, O., Malende, W. F., & Anuradha, K. (2017).

### **The Future of Smart Farming**

The chances are high for intelligent agriculture to significantly improve agriculture. The intelligent farming sector in both developing and developed countries is supposed to cross the divide entre small and big farmers. Technological development, Internet growth and the advent of smartphones have played an enormous role in the acceptance of agricultural technology. Various countries know the importance of these innovations, which is why most countries are keen to encourage the use of precision agriculture techniques.

The number of farming activities that are historically practised have certainly changed considerably today. The introduction of intelligent farming methods and methodologies such as the use of computers , software, sensors and information technology can be attributed to the technical development. Farmers currently make use of advanced technologies such as aerial photographs, sensors for humidity and temperature, GPS technology and robotics. This technology makes farming more environmentally sustainable, cleaner and effective, and not just a lucrative enterprise.

### **Significance of Smart Farming**

Perhaps the value of intelligent agriculture and agricultural science are of interest to you. Currently, pesticides, fertilisers and water are not mandatory for farmers to add consistently in the field. The advent of

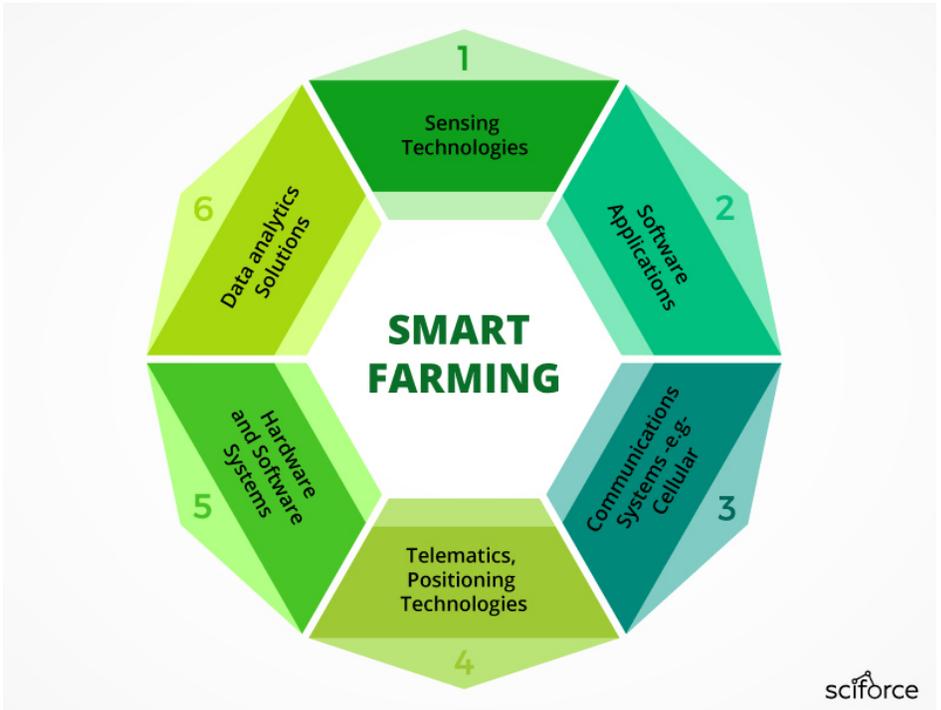
agriculture technology and especially smart farming encourages farmers to use the smallest amounts of these elements and aim or selectively apply those areas of their farm.

- Many of the advantages following the use of intelligent agriculture in agriculture include:
- High efficiency: use of better, better technology in agriculture after the introduction of intelligent agriculture ensures increased productivity, as the goal is to maximise resources and minimise waste.
- Diminution of the use of chemicals, fertilisers and water: farmers historically used water, fertilisers and pesticides often without naming the location on the field. But you can use smart water and other chemicals in the correct amounts, wherever and whenever they are needed. Reduced use of such pesticides leads to low food prices as agricultural costs decline.
- Reduce environmental stress: Intelligent farming has today implemented better methods to improve productivity while minimising loss of pesticides, water and other elements in farming. That means, if you can use them sparingly and are really important, you do not need to fill the world with unnecessarily dangerous chemicals.
- Increasing the safety of farmers and workers: intelligent farming introduces the use of machinery and improved technology which restricts workers' participation on the land, hence, the safety of farmers and workers should no longer be concerned.

- Smart farming encourages the spare use of pesticides and the introduction of environmentally sustainable farming methods. Low pesticide dispositions into groundwater and waterways. This means that contaminants in rivers and in the atmosphere in general are not to be deposited.

**Today's farmers have the following technology available:**

- Sensors: dirt, water, sun, moisture, regulation of temperature
- Tools: software applications specialising in particular farm types and using IoT platforms for agnostic case
- Cellular, LoRa and so on networking.
- Rental: GPS, sat, etc. Rental.
- Robotics: self-sufficient tractors, offices, etc.
- Data analytics: independent research solutions, downstream data pipelines, etc.



Source of Image: <https://precisionagriculture.re/smart-farming-the-future-of-agriculture-technology/>

## DIGITAL MARKETING FOR AGRICULTURE SECTORS

### What does digital marketing in agriculture offer your business?

In the United States, livestock and agriculture has grown to represent a demand in products and products worth almost 390 billion dollars. The field of agriculture and agriculture itself has extended to include sub-sectors such as machinery for agriculture, precise agriculture, pesticides, farm tools, grain processing, supplier chains and more.

Companies in these regions now have the ability to choose from conventional channels of company expansion or internet marketing.

But the fact is that, in order to improve the exposure of firms and create business-to - business, digital marketing for producers and the agribusiness industry is more effective than ever.

The proportion of operations that are carried out online will also increase as these sectors begin to grow and continue to modernise.

Right now, though, the world of agriculture is 78% smaller than the overall 88% for all other sectors for digital marketing. Digital marketing provides a means of extending organic web traffic, growing search engines rankings and increasing assumed business authority of products and vendors in the industry.

It would seem that existing KPIs may not translate as clearly into the universe of internet marketing for companies, AG services and online retailers in this region. But that's not true. That's not true. Agricultural digital marketing – including optimising the search and paying ads – offers firms opportunities for better lead B2B expansion, as well as eCommerce goods for digital marketing.

Let's just analyse that. Why.

Agricultural and agri-business companies tend to focus more on non-digital business development policies to become more accessories for digital marketing. But SEO and paying search ads provide well-established advantages for long-term market success and validated strategies. They also discuss sales of agricultural goods, wholesale

sales of products, export / import sector and eCommerce products – irrespective of the industry. Marketing strategies for local market redevelopment in this new normal Era: Opportunities and challenges (Singh, V et. al. ,2020). Internet of things for smart agriculture: Technologies, practices and future direction. Ray, P. P. (2017).

### **The potential of digital marketing for agricultural commerce**

SEO and paying search advertisements (or PPC advertising) are used in the search-engine management. BrightEdge results show that 50% of all website traffic is now from organic search and 10% more from paying search advertisements. Search engines such as Google and Bing are so critical that over 40% of online revenue is generated.

Digital marketing in agriculture and agriculture means being able to respond to the desired targets and KPIs of the sector by adapting a plan that leads both organic and paying traffic. Google's search keywords # 1 will further boost the total user share to 32.5% and more than 90% of traffic in the first search listing page – as search providers prefer substantial performance.

Why, then, should SEO think it a strategy?

A professional SEO strategy will help increase the quality of traffic visiting the web by concentrating on high-value, high-trend market keywords and then by integrating content on site with the target keywords.

Digital affects 67% of transactions for many manufacturing and industrial firms in the business-to - business industry (like agriculture and agriculture).

#### Industrial Manufacturers



of shoppers who are informed online purchase on the first visit.

#### Industrial Suppliers



of shoppers who are informed online purchase on the first visit.

#### Pack & Ship Suppliers



of customers research and buy within a day.

### **Optimizing search engines as part of agriculture digital marketing is suitable for:**

- Sustainable corporate growth and efficient revenues
- Maintain or raise the market share of the industry
- To foster brand awareness and to build the loyalty base of a organisation
- Traffic in organic, recommendation and social sectors to your website
- Enhanced page-link authority and natural backlink development
- Sales and wealth improvement without an ad expense affordable
- Generate search results and purchases for consumers in the head of the shopping cart

This helps you to watch current keyword rankings on a blog, locate similar keywords and discover LSI phrases, contribute to better

rankings in search engines overall. SEO's on-line content for farming facilities, agricultural products, company eCommerce products, and more also means an optimisation of algorithms and search-focused strategies.

There are best practises and B2B SEO techniques for agribusiness and industrial agricultural sites that can help target more appropriate traffic on their market.

For agriculture goods and agricultural machinery, digital marketing requires exact, long-tail keywords to complement the languages and terminology of industry. A specialist SEO service will align your search optimization with key content from your organisation as well as to answer keywords related to wholesale, production, food grade and more.

This also includes designing a plan to fulfil regulatory and commodity technological requirements for companies in livestock, farming, AG equipment, irrigation and agro-business fields. This method of digital commercialization in the agricultural sector is ideal for companies selling tractor parts, agricultural chemicals, food processing machinery, agricultural accessories etc. – and offers companies an ability to boost their organic rankings with on-page meta data, quality of text and technological SEO elements.

SEO features such as keyword density, page names, internal connections, web composition and more are optimised by the

organisation alongside its new content markets approach, improving the content marketing method. Since the material on site is one of the most significant signals in search ranking, SEO means that it should function within existing content to align with the new brand language as part of digital marketing in agriculture.

Search engine optimization and search engine management also allow valuable output data, traffic data, and revenue data to be gathered in order to optimise the overall web strategy.

### **Tracking KPI Data with Google Analytics and Search Console**

By fine tuning their pages, businesses may use returned data for the highest dedication, rating and conversion rate for their ads. Understanding how users visit and how they perform their website helps you to enhance your web design and to change over time your SEO campaign.

The tools of Google Analytics mean that digital agriculture marketing can track page views, sessions, sales / revenue, form-filling ins, publicity results, conversion rate percent and many more. This data helps farmers and the related industries to monitor the segments from which traffic comes, including search engines, social media, references and more, so that they can use this massive volume of data to improve their digital marketing strategies and quantify KPIs more precisely.

Google Analytics facilitates agriculture digital marketing that suits website growth and tracks traffic to help you see the effects of your marketing. This knowledge will help to monitor the attention of consumers and the increasing presence of your agri-business or eCommerce platform.

Furthermore, businesses and pages can collect accurate statistics on how their website operates through Google Search Console software. Data from the Search Console advises, preserves and perfects marketers on the digital marketing of agriculture by supplying them with details on how users access their website, what terms of search they do well on, and the high-value average rate of search click-throughs.

This data can be used over time to boost the site SEO further and further increase sales. Since the Search Console offers websites with details about how it is viewed in the Google index, it can be used to track technological SEO factors and to ensure that farmers and farmers are not penalised by mis searching.

### **Paid-ad digital marketing for agriculture**

Another choice in the management of the search engine includes pay per-click ads (or PPC) on search engines such as Google and Bing from Microsoft. The platforms offer pay-listed search advertisement options which appear next to normal organic results on search pages.

This helps companies to increase internet exposure and boost sales easily with a plan that increases CTRs and web transitions for agri-community and agricultural digital marketing.

Well-known, Google says that their search ads provide \$2 for corporations and marketers for every \$1 invested. However, the fact is that reimbursement relies on an optimised, competent election campaign that suits the priorities of your organisation. And the right keywords to target.

Pay searches can help organisations in agriculture and agriculture strive to use high-valued, industry-relevant keywords that weigh costs per click with the specific targets of a company.

The benefit of digital advertisement of this type in the agricultural sector is that paid advertisements gives companies more traffic than organic search and contributes to further increase the exposure. Paid publicity takes on Google search's top 3 spots and will earn 46% of traffic search. Visitors to the website who are clicking on an ad will even turn 50 percent more.

PPC search advertisements are also much easier than organic optimization. They offer farmers, e-commerce firms and agri-businesses the chance to win money quickly and get local traffic within a limited period of time. That's why paying search ads is successful in agriculture as part of digital marketing:

- Profits or traffic after a break or in the short season
- When a farmer ventures into a different market or niche
- Traffic for certain keywords in the industry easily
- Visibility for emerging industries and geographical markets easily
- Traffic targeting in some territories, nations, countries or cities
- Quickly produce cash or profits
- to endorse market awareness in farm / agriculture or to contend against a dominating rival
- Subsidization of a distribution firm and marketing of SEO content

The first time pay-advertising advertisements outpaced daily search revenue in the form of PPC ads with 33% of retail channel revenue, according to Wolfgang Interactive. This can be vital to modern business development with a robust digital media strategy for agriculture enterprises and websites in agriculture. In reality, paying strategies for online firms account for up to 46% of profits!

### **Marketing with paying social media**

Finally, there are social media ads paid for by search engines which operate on the same cost-per - click operation.

Popular social media networks are one of the most popular and recently expanded online marketing outlets. Platforms like Facebook,

LinkedIn and Instagram continue to deliver business-to - business and eCommerce expansion opportunities.

This also gives platforms for agriculture with the potential to improve awareness and sales online. Data from IDG indicates that business-to - business decision makers use social media in policy-making at 84 percent.

The price was 75% for B2B customers. In the agricultural industry, welfare media, social media advertising and digital marketing mean corporations now have an unexpected possibility of new development in a completely new medium.

Social networking platforms aim to offer different forms of ads, including:

User feed picture and video ads

messaging advertisements and postal ads targeted for people

Announcement tales

Digital supermarket advertising focused on Shopping and ECommerce

Moreover, these ad-platforms enable marketers to set their marketing targets, so commercials can be created for profits, brand recognition, traffic on the web, conversions and more. Professional management of social media marketing involves using those resources, like data from

your business, to perfect your paid ad campaigns and to limit your target demographic to produce the best impact. Social networking advertisements provide the potential to target viewers based on their preferences, careers, places, etc.

This is why PPC ad search strategies and social media marketing policies both allow organisations to find their target consumers at any time on the road to conversion.

Paying advertisement policy as part of digital marketing also helps internet brands to take full advantage of their overall marketing campaigns in the agricultural field. It is because SEO and material work for them.

Social network marketing and sponsored search advertising enable marketers to take advantage of their latest contents and marketing collateral in the field to boost traffic automatically over time. Increasing the traffic and increasing social activity would help SEO create back links and improve the authority to identify websites. Irrigation is an critical factor in agricultural development, 80–85% of agricultural production. In agricultural growth irrigation is an important aspect. (Huseynov, R. T., & Salik, A. W. 2018).

Both these approaches in conjunction mean that organisations with an online presence will make the most of their industries.

The report Haats as marketing hubs, by Rural marketing Association of India (RMAI), available exclusively with The Financial Express, says India's 47,000- odd haats can offer immense thrust to rural marketing with their readymade distribution network. Singh, V. and Bajaj, A. (2012).

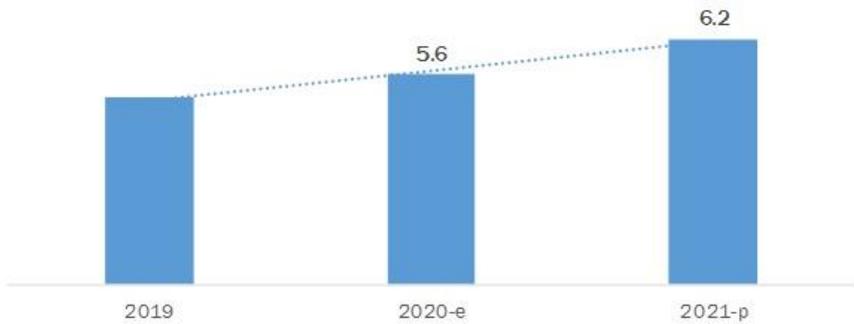
## **IMPLICATIONS**

The worldwide digital agriculture industry is expected, after COVID-19, to rise from \$5.6 billion in 2020 to \$6.2 billion by 2021, with the CAGR at 9.9%. Agricultural food goods are growing in demand and customer tastes have shifted to higher food safety and quality levels, as well as the lack of labour during COVID-19 are some of the driving forces for this sector.

Increased field mechanisation and development of digital agriculture would improve farmers' use of digital agriculture. It is projected that COVID-19 has a favourable influence on the market. The global demand for digital agriculture is expected to expand labour shortages and supply chain disturbances.

## COVID-19 Impact on the Digital Agriculture Market (COVID-19 Analysis)

COVID-19 Impact on Digital Agriculture Market (USD Billion)



Source: Press Release, Investor Relation Presentation, Annual Report, Expert Interview, and MarketsandMarkets Analysis

**"Precision agriculture is in the digital agricultural sector the most lucrative end-user industry."**

The precision agricultural market is likely to expand long-term following the COVID-19 outbreak because precise agriculture enables tracking the condition of the crops when not present physically through automation, thus reducing the need to touch others, which is crucial during these periods. This is a method in which inputs are precisely used to achieve higher average prices than conventional crops. However, COVID-19 will impact the market in the near term, and market development in the first and second quarters of 2020 will be comparatively sluggish, as a result of global slowdowns and inflation.

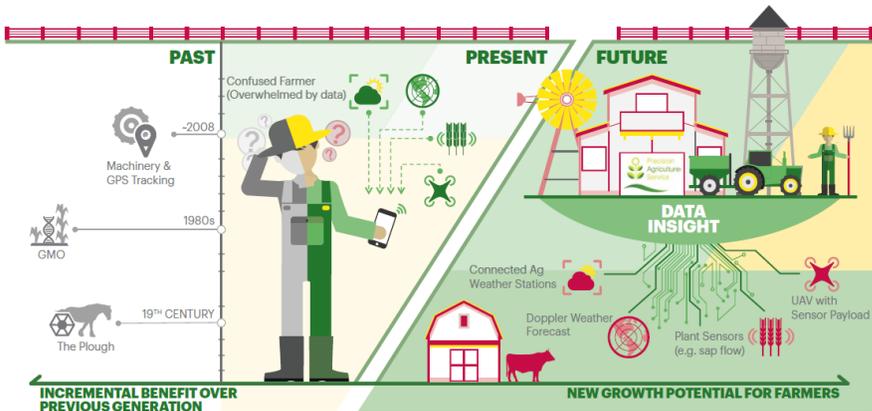
This saves time and money: minimising pesticide and pesticide costs, lowering air emissions by using chemicals less. In the monitoring of soil and plant physio-chemical conditions, the sensors may be positioned so that the optimum conditions needed for the plant growth are reached by the measuring parameters of conductivities such as electrical, nitrate, temperature, evapotranspiration, radiation and leaves and moisture. In the pandemic scenario where labour is short, these aspects tend to achieve a higher production with a small labour force which will also lead to a daily food supply to guarantee food security.

**“Farm labor management remains the worst affected market during COVID-19.”**

With the COVID-19 epidemic, management in the digital agriculture sector appears to be worst affected. The pandemic will adversely affect the living standards of millions of people involved in agricultural production in developed countries that are export-oriented and labour intensive. Owing to job shortages and a brief truce, the pandemic could also have severe effects for treatment. According to the ILO, for example, the European agricultural industry is facing severe labour shortages in the 2020 period due to the border closures which prevent hundreds of thousands of seasonal workers from entering farms depending on their jobs over the harvest period. It is expected that the effect on the industry will be long lasting. Many of Europe's leading producers are especially insecure, such as France , Germany , Italy, Spain and Poland. According to Coldiretti, the Italian

organisation representing farmers, over a quarter of the food produced in the country relies on approximately 370,000 regular seasonal migrant workers.

The good news is that emerging digital technology today allow vast quantities of vital data to be obtained and used at minimum prices, thereby enhancing the insight and potentially productivity and the efficacy of farm field activities. Investment in these emerging innovations has also started in the agriculture ecosystem. A CAGR of 12.2% is projected to raise the overall digital services industry by \$4.55 bn between 2014 and 2020.<sup>4</sup> Increased usage of digital agriculture technology is important not only to boost the financial efficiency of a farm, but also to satisfy the food needs of the increasing population. The influence of digital agricultural technologies – while improving over conventional approaches, for example-was until recently constrained by the granularity, timeliness and lack of support for the day-to-day operation of the data they are using. In compliance with the United States. The Agriculture Department provides a certain form of variable rate technology service over 60 per cent of the American agricultural input dealers. However, owing to the high cost of obtaining accurate field data, less than 20 percent of the region is handled using the technology.



**Figure 1.** The evolution of digital agriculture

## IMPROVING THE PRODUCTIVITY AND EFFECTIVENESS OF AGRO-INPUT COMPANY FIELD AGENTS

Many farms worldwide – especially in emerging markets – are small, just a few acres. This smallholder farmers prefer to practise conventional farming because they lack access to modern practise expertise. They have lived in rural parts of the world and failed to nurse crops on small areas of weak soil, overuse macro fertilisers and lack the advantages of crop and soil-specific microfertilizers. They may not know how to control the cycles of their pesticides, and therefore therefore fail to cope when an infection or infestation becomes preventable.

Products – including fertiliser, seeds and pesticides – are available to agriculture firms to allow these growers to cultivate better, more

abundant crops. But these businesses are challenged to get the ingredients and quality recommendations that they need from smallholder growers. These businesses are struggling to build aggregate demand estimates, required to minimise supply chain costs and optimise revenue, without access to meaningful business intelligence.

**Figure 2.** Ecosystem challenges for smallholder farmers

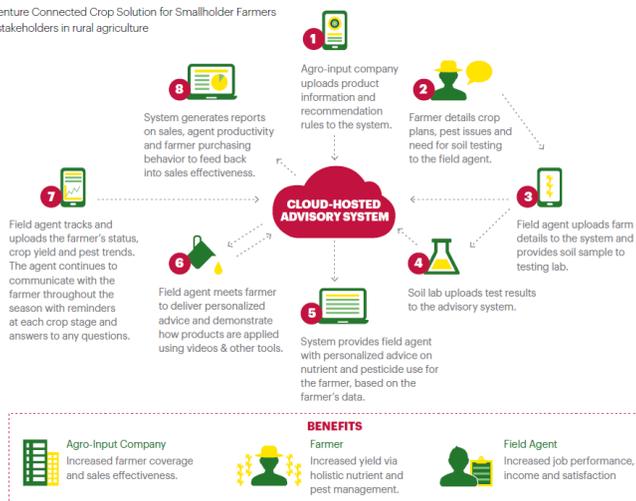


## FIELD AGENTS AND AGRO-INPUT COMPANIES FROM ACHIEVING THEIR FULL POTENTIAL IN THE AGRICULTURE INDUSTRY.

In order to increase production in agents, commodity purchases and crop profits for producers, the Accenture Related Crop Approach ties these three rural agriculture stakeholders-the field agent, the agro-input business and the farmer. Accenture Linked Crop Solution combines data in an unified hub from a variety of sources, including field staff, weather reports and UAVs, and manages it as an end-to -end farm management system. This data is then supplied in a Cloud-based research engine that makes product recommendations based on

pre-determined rules as shown in Figure 3, along with data from marketing or CRM systems of the agri-input business. In order to connect field officers to the cloud based analytical motor, the Accenture Linked Crop Solution uses a manual/ mobile framework. A field agent will gather and submit a field land and crop information as well as planting plans of the farmer to the analytics engine with this mobile application. Ongoing suggestions are made to each farmer on the daily management of nutrients for seeds, timing and quantity of application of the fertiliser, irrigation requirement and seed quality, and on the steps required to tackle particular crop problems through the application. The smartphone app also gives links to videos on subjects such as fertiliser applications for crops and crop support. The application preserves farmers 'data, which helps the farm agent to summarise farmers' and rural demographics, criteria and output on multiple farmers or farms.

**Figure 3.** Accenture Connected Crop Solution for Smallholder Farmers connects the stakeholders in rural agriculture



## **Practices for Smart Agriculture**

### **Practices incorporated**

Integrated, holistic activities involving a variety of stakeholders would ensure a more efficient use of natural and landscape systems through improved productivity in resource management. Integrating the natural capital will dramatically reduce the pressure and minimise external inputs (e.g., energy, chemical fertilisers and pesticides).

### **Production of crops**

To face the threats of climate change, agricultural development needs to adapt and become resilient to changes ( e.g. crop variety collection, vegetable breeding, cropping patterns and ecosystem management approaches).

### **The cattle are livestock**

Livestock may add greatly to the environmentally intelligent food systems. The whole value chain offers opportunities for elimination of greenhouse gases in the areas of feed management, enteric fermentation and manure.

### **Land conservation**

Climate change challenges the delivery of forests and trees necessary for food protection and livelihoods, environmental preservation and national production of products and ecological services.

## **Urban and urban forestry**

In developed countries, urban food supply networks are in tremendous demand as a result of rapid urban development. Agriculture — including gardening, planting, fishing, forests, fodder and milk — is expanding to towns and cities progressively.

## **Biodiversity and genetic capital**

The three elements of the biodiversity: habitat variability, diversity of human species and habitat diversity. Agriculture, including poultry, forestry, aquaculture and fisheries. Agriculture. Food and agriculture genetic capital are important in the provision of food protection, education and livelihoods and environmental services.

## **Aquaculture and Fisheries**

Fish and aquaculture provide essential food, sustain their livelihoods and contribute to the growth of the region. The industry, however, is failing to continue to play an important role in these regions. Rising appetite for global fish and marine food, ocean acidification, temperature and change contributes only to these problems.

## **Managing land and water**

A main feature of the CSA is land and water conservation. More sustainable and resilient agriculture needs a substantial change in managing land and water, ensuring the effective use of these resources. A wide variety of techniques and approaches, including sequestration of soil carbon and the regeneration of peatlands and

degraded fields, include strategies for sustainable land and water conservation.

### **Regulation of constructive drought**

Drought is a dynamic natural phenomenon that affects any climate and has socio-economic consequences that differ according to many variables and circumstances. Drought The first and most critically impacted industry is agriculture. Agriculture.

### **Control**

Farmers can more effectively use electricity as well as minimise reliance on non-renewable sources of energy. Well developed agricultural systems can also sustainably generate electricity without jeopardising food security and thereby lead to the transition to smart climate farming. It can be achieved only by substantially expanding current examples of energy-smart food systems.

### **Loss and waste of food**

Food loses and waste represent substantial waste losses, including water, soil, electricity, labour force and resources and contribute to climate change greenhouse gas emissions.

- Techniques for nuclear missiles
- FAO is using isotopic and nuclear approaches to promote climate-smart agriculture through its Collaborative FAO / IAEA division and its dedicated Agriculture and Biotechnology

Laboratories. This includes the use of nuclear weapons and the following:

- Agricultural production increase sustainably,
- Adapting and developing climate change adaptation of agricultural and food systems
- Reducing agricultural greenhouse gas emissions taking national and local backgrounds and goals into account.

The use of digital technologies has been recognized as one of the great challenges for businesses of the 21st century. This digitalization is characterized by the intensive use of information technologies in the different stages of the value chain of a sector. In this context, smart agriculture is transforming the agricultural sector in terms of economic, social, and environmental sustainability. (Ciruela-Lorenzo, A. M., et. al.2020) Big Data Driven Smart Agriculture: Pathway for Sustainable Development Sarker, M. N. I., Wu, M., Chanthamith, B., Yusufzada, S., Li, D., & Zhang, J. (2019). Farmers' Knowledge, Attitude, and Adoption of Smart Agriculture Technology in Taiwan (Chuang, J. H., Wang, J. H., & Liou, Y. C. 2020).

## **FUTURE DIRECTIONS IN SMART AGRICULTURE**

In all agriculture zones, from rising to forest crops, the IoT is believed to add value. This blog post addresses two broad fields in which IoT systems can revolutionise agriculture: precision agriculture and automation / robotic farming.

## **Precision Farming**

Precision agriculture is a system for IoT-based methods that make agriculture more regulated and precise. In brief, plants and cattle reliably and specifically get the care they require. The main distinction is that precision farming allows for decisions to be taken on a field per square metre or even per plant / animal.

By calculating differences specifically in a field, farmers may either maximise or selectively increase the efficiency of pesticides and fertilisers.

## **Precision Livestock Farming**

Smart Farming strategies, as in the case of precise agriculture, help farmers to properly track the individual animals' needs and change their diet accordingly to avoid disease and improve the health of herds.

In addition, large farmers may track the location, wellbeing and health of their cattle with wireless IoT applications. This knowledge helps them to recognise injured animals to be removed from the stock to avoid disease transmission.

## **Automation in Smart Greenhouses**

Traditional greenhouses manually run or proportionally monitor the environmental conditions, contributing to yield loss, energy loss and higher labour costs.

And IoT-driven, automated greenhouse intelligent monitoring and climate control reduces the need for manual action. For this function, various sensors measuring atmosphere parameters according to plant specifications are used and processed in a cloud with limited manual interference for further processing and managing.

### **Agricultural Drones**

One of the leading industries is agriculture, which combines both soil and aerial drones for the evaluation of crop protection, irrigation, crop management, crop spraying, soil and field inspection and other spheres.

Due to the fact that during the flight drones gather multispectral, thermal and visual images, the data collected provide farmers with an understanding of plant health indices, plant counting, forecast for production, plant height estimation, canopy cover maps, field tracking, scouting records, stock measurements, chlorophyll measurement, nitrogen in the wheat, drainage maps, weed pressure charts.

Smart IT targets not only large-format agriculture, but can also add value to growing developments in agriculture such as organic farming, family farming, including livestock breeding and/or production of specific or high quality crops etc., and improve customer, community and business consciousness with highly transparent agriculture. Smart IoT targets are not only broad-based agriculture operations.

## **Internet of food and farm 2020**

Why not have one for diet because we have the Internet of Things and the Web of Medical Things? A portion of the Horizon 2020 business leadership programme, the European Commission's Internet of Food and Farm 2020 project (IoF2020), examines IoT technology 's potential to European food industry and agriculture through research and frequent conferences.

The capacity of an intelligent network of sensors, activators, robots, drones, and other connected devices is believed to be unparalleled and allow a sustainable, creative environment to be developed.

## **Third Green Revolution**

The third Green Revolution takes over agriculture, focused on the combined implementation of information and connectivity methods such as precision equipment, the Internet of Things, sensors and actuators, geo-positioning technologies, biomass, intelligentsia and IoT-led agricultural goods. Smarting and IoT-driven agriculture paves the way for what can be considered a third Green Revolution.

Pesticide and fertiliser use will decrease in the future as this revolution depicts us thus maximising overall production. IoT technology would allow food to be properly traced, resulting in enhanced food safety. It would also benefit the ecosystem, for example, by better use of water or improving treatments and inputs.

Smart farming therefore have real potential, with a precision and resource effective approach, for producing a more profitable and

sustainable agricultural production. New farms will eventually understand humanity's everlasting hope to feed our rising population which by 2050 will reach 9.6 trillion.

The manuscript highlights the attempts made to determine policy alternatives and their impact on food security made by numerous food policy scholars. (Boratynska, K., & Huseynov, R. T. 2017).

## **CONCLUSION**

Clearly, smart farming is a brilliant farming philosophy, which can help farmers gain more from increased production, higher quality and lower costs if applied correctly. Such creativity, however, involves money, know-how and expertise. It is important to incorporate more than just your passion for agriculture; to analyse data, to track trends in your farm and analyse the demand and changes in prices, you are needing suitable technology and skills. You would need ample resources, on the other hand, to introduce intelligent farming on your farm. You may not need to spend a great deal in smart agriculture, because in the future you will start with one single system or technology. In short, while smart farming is important for farming and promises better yields, research into good practises that match your farming objectives and needs should be done extensively.

## REFERENCES

- <https://raddinteractive.com/digital-marketing-for-agriculture-sectors/>
- <https://www.marketsandmarkets.com/Market-Reports/covid-19-impact-on-digital-agriculture-market-222616344.html>
- [https://www.accenture.com/\\_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Digital\\_3/Accenture-Digital-Agriculture-Point-of-View.pdf](https://www.accenture.com/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Digital_3/Accenture-Digital-Agriculture-Point-of-View.pdf)
- <http://www.fao.org/climate-smart-agriculture/knowledge/practices/en/>
- <https://precisionagricultu.re/smart-farming-the-future-of-agriculture-technology/>
- <https://medium.com/sciforce/smart-farming-or-the-future-of-agriculture-359f0089df69>
- <https://www.smart-akis.com/index.php/network/what-is-smart-farming/>
- Singh, V. and Bajaj, A. (2012), "Role of haats in the development of rural markets", *International Journal of Research in Finance & Marketing*, Vol. 2 No. 2, pp. 628-638.
- Huseynov, R. T., & Salik, A. W. (2018). Environmental sustainability of irrigated agriculture in dry areas: Case study Afghanistan, a review article. *Prosperitas*, 2018(4), 72-79.
- Boratyńska, K., & Huseynov, R. T. (2017). An innovative approach to food security policy in developing countries. *Journal of innovation & knowledge*, 2(1), 39-44.
- Ciruela-Lorenzo, A. M., Aguila-Obra, D., Rosa, A., Padilla-Meléndez, A., & Plaza-Angulo, J. J. (2020). Digitalization of Agri-cooperatives in the Smart Agriculture Context. Proposal of a Digital Diagnosis Tool. *Sustainability*, 12(4), 1325.
- Singh, V et. al. (2020). Marketing strategies for local market redevelopment in this new normal Era: Opportunities and challenges. ,1057-1067.
- Sarker, M. N. I., Wu, M., Chanthamith, B., Yusufzada, S., Li, D., & Zhang, J. (2019, May). Big Data Driven Smart Agriculture: Pathway for Sustainable

- Development. In *2019 2nd International Conference on Artificial Intelligence and Big Data (ICAIBD)* (pp. 60-65). IEEE.
- Chuang, J. H., Wang, J. H., & Liou, Y. C. (2020). Farmers' Knowledge, Attitude, and Adoption of Smart Agriculture Technology in Taiwan. *International Journal of Environmental Research and Public Health*, *17*(19), 7236.
- Aher, A., Kasar, J., Ahuja, P., & Jadhav, V. (2018). Smart agriculture using clustering and IOT. *International Research Journal of Engineering and Technology (IRJET)*, *5*(03), 4065-4068.
- Lin, J., Shen, Z., Zhang, A., & Chai, Y. (2018, July). Blockchain and IoT based food traceability for smart agriculture. In *Proceedings of the 3rd International Conference on Crowd Science and Engineering* (pp. 1-6).
- Ray, P. P. (2017). Internet of things for smart agriculture: Technologies, practices and future direction. *Journal of Ambient Intelligence and Smart Environments*, *9*(4), 395-420.
- Krishna, K. L., Silver, O., Malende, W. F., & Anuradha, K. (2017, February). Internet of Things application for implementation of smart agriculture system. In *2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC)* (pp. 54-59). IEEE.

**CHAPTER 8**  
**MARGINAL EFFECTS OF SOCIAL CAPITAL OVER**  
**QUALITY OF LIFE**

Lecturer Can MAVRUK<sup>1</sup>  
Assoc. Prof. Dr. Ersin KIRAL<sup>2</sup>

---

<sup>1</sup> Niğde Ömer Halisdemir University, Niğde Vocational School of Social Sciences, Marketing, Niğde, Turkey. can.mavruk@ohu.edu.tr. Orcid id 0000-0002-4084-7447

<sup>2</sup> Çukurova University, School of Economic and Administrative Sciences, Econometrics, Adana, Turkey. ekiral@cu.edu.tr



## INTRODUCTION

Capital is conceptualized as the exploitation of social relations between two classes according to Marx's classical theory of capital (Lin et al 2008) and social capital as the investment in social relations with expected returns (Lin 2001). Theory includes some hypotheses on social capital. Whitley (1999) gives three hypotheses on societal social capital: (i) A society with high level of subjective well-being should generate high levels of trust and social capital, (ii) A society with strong moral principles should also have high levels of social capital, and (iii) Strongly patriotic society should have more social capital than a society which lacks such patriotism. Productivity commission (2003) of Australia reports six hypothesized well-being outcomes of social capital such as individual, public, vibrant civic life, area, political and economic well-being. QoL is considered as an important assessment of human health; and social capital as a vital human resource (Gao et al. 2018). WHO (2019) reports QoL to be affected by the person's six dimensions including social relationships.

Social capital literature indicates the importance of health (Hassanzadeh et al. 2006, Lucumi et al. 2015), culture (Rimaz et al. 2015), living environment or community (Islam et al. 2006, Warren et al. 2001, Saegert et al. 2002) and human needs (Costanza et al. 2007) in the effect of social capital over QoL. The impact in a small volcanic island (Petrosillo et al. (2013) or in rural (Zhong et al. 2017) would probably not be the same as the impact in urban areas (Hamdan et al., 2014). Chen et al. (2018) investigated whether vocational experiences

mediate the association of social capital with QoL, and found full mediation. Social capital was significantly related to higher QoL in males. Mohsen et al. (2008) found social capital to have a greater role in explaining QoL than income and education. Across increasing in levels of social trust, social participation and norm obligations, the quality of life was improved (Garooosi and Naghavi, 2008).

There are a large number of health related QoL studies linked with social capital in well-being literature. However, social capital assessment of QoL of Adana residents was not investigated. Previous literature shows some evidences of pairwise relations between social capital and QoL or health related social capital based on cross-sectional or structural studies. Kim and Kawachi (2007) investigated the relationship of social capital on state level with QoL in the United States. They performed a multivariate analysis of 173236 people, and concluded that promoting social capital may improve the health related QoL of Americans. Abdul-Hakim et al. (2010) investigated the relationship of social capital with QoL among rural households in Terengganu and found that the impact of social capital on household income and QoL was significant. Implication was that investment in social capital is crucial to achieve development objectives. Kawachi et al. (1999) found a positive correlation between social capital and good health. The authors found that being current smoker or obese are risk factors to living in a low social capital. Costanza et al. (2007) link QoL to social capital by emphasizing the opportunities to satisfy the demands of people in social capital form. Gao et al (2018) conducted a study to explore social capital of residents in urban West China and

the association with quality of life. The researchers found an association between social capital and higher mental health of QoL, and that enhancing social capital might promote health. Hassanzadeh et al. (2016) investigated the associations between demographic, socio-economic, social capital and health-related QoL in Tehran. In this study, socio-economic status, social capital and QoL were used as latent variables in SEM.

This study concentrates on marginal effects of social capital through demographic, socio-economic, location of living, perceived environment and income inequality factors. The aim is to investigate which SC factor and through which socio-economic variable has stronger impact on higher QoL. Positive impacts of social capital and its perceived environment on higher QoL are important for policy implications and give some opportunities to enhance QoL.

This study is structured as follows: In the methodology section, after sample size requirement, reliability and construct validity of data are checked, statistical methods are given. Hypotheses and models are stated; and dependent and independent variables are introduced. In the findings section, descriptive findings and model estimation results are tabulated. First, cross tabulation of quality of life with respect to explanatory variables is provided. Second, the relationships of social capital variables and QoL is determined. Discussion section includes the findings of this study.

# **1. METHODOLOGY**

## **1.1. Data Source**

In January and February 2019, a social survey using simple random sampling method was conducted to 980 residents in Adana. Survey includes QoL, social capital, location of living, perceived environment and income inequality factors. Minimum sample size needed is estimated to be 403.

## **1.2. Reliability and Validity of Data**

Reliability of the survey with 27 items is tested using SPSS. Cronbach alpha is estimated to be 0.702. Principal component analysis is used to test construct validity. Varimax method is used to generate rotation matrix. (Kaiser-Mayer-Olkin) KMO value is estimated to be 0.839 which is greater than 0.60. This shows sufficiency of the sample for the analysis. The Barlett test, which tests the null hypothesis of all correlation coefficients are zero, significance level  $p=0.000<0.05$  shows that the correlation matrix is not unity. Total explained variance was estimated to be 57.3%.

## **1.3. Dependent Variables**

This article used self-reported QoL social survey questions. QoL is included as dependent variable in logistic regression models. A five point scale QoL item for quality of life was adapted from Ala-Mantila et al. (2018) based on single item question: “Think about your life in the last two weeks. How would you rate your quality of life?” The five-point scale is from very bad to very good.

#### 1.4. Independent Variables

Demographic, location of living, socio-economic, social capital and perceived environment variables were included as independent variables as follows: Demographic: Age, gender, marital status, # of people living together. Location of living consists of six regions of Mavruk et al (2020). Socio-economic: health, income, employment, education, income inequality. Social capital: trust in human, and seeing relatives or friends. To the question “how often do you see a relative or a friend?” scales were from never to everyday. Perceived environment: neighborhood safety.

#### 1.5. Hypotheses and Models

The hypotheses are that (1) Higher QoL is more likely related to trust in human, (2) Social capital is more likely not related to location of living, (3) Social capital has a strong effect over QoL through health status.

We used an ordered logistic regression model (1) (Ala-Mantial et al. 2018, Mavruk et al. 2020) to confirm the above hypotheses:

$$QoL_i = \alpha_i + \beta_1 Socio-economic_i + \beta_2 Location_i + \beta_3 SocialCapital_i + \beta_4 Perceived_i + \beta_5 IncomeIneq_i + \varepsilon_i \quad (1)$$

where  $\varepsilon_i$  is the error term and  $Q_i$  is quality of life receiving a value from 1 to 5.

Ordered logistic regression model is used to find how explanatory variables affect QoL relative to their reference categories. Test of

parallel lines (the test of proportional odds) with  $p > 0,05$  shows no significant evidence to reject the null hypothesis, which indicates that the relationships are holding (coefficients are the same) across the scales on quality of life.

## **1.6. Statistical Methods**

For the parallel line (PL) assumption, brant command of Long and Freese (2001) is used after ordered logit models for global and individual Wald tests. All chi-square test statistics were insignificant, indicating that the PL assumption has not been violated. If an ordered logistic regression model includes a variable violating PL assumption, then generalized OLM is used (Williams, 2006). In all our models, all explanatory variables meet the PL assumption. Robustness of standard errors are estimated using Stata 14.

## **1.7. Marginal Effects**

The marginal effects indicate ceteris paribus how  $P(Y = j)$  changes as the categorical variables change. When the first category of the dependent and independent variable is 1 and the number of categories is  $j$ , the marginal effects (differences between estimated margins) are estimated by  $P(Y=j-1|X=j) - P(Y=j-1|X=1)$ .

# **2. RESULTS**

## **2.1. Descriptive Findings**

Percent distribution of QoL showed that 3.4 percent of 980 residents who identified as having very poor QoL, 9.9 percent as poor, 44.5

percent as neutral QoL, 37 percent as good QoL and 5.4 percent as very good QoL. Percent distribution based on residential area indicates that 22 percent of the respondents were from heavy pedestrian area, 10 percent from heavy transit junctions, 6.8 percent from the secondary pedestrian area, 13.2 percent from heavy public transport area, 44.5 percent from car dependent neighborhoods and 3.5 percent from remote neighborhoods.

**Table 1.** Descriptive Statistics Summary

	Minimum	Maximum	Mean	Std. Deviation
QoL	1	5	3.31	.850
Education level	1	6	4.56	.980
Employment status	1	8	4.96	3.21
Monthly income	1	40000	1430	1853
Min wage income inequality	0	1	.240	.427
Monthly income categorized	1	3	1.25	.450
Health	1	5	3.96	.667
Location of living	1	6	3.58	1.69
Neighborhood safety	1	5	2.93	1.19
Human trust	1	3	1.72	.725
Social contact	1	5	3.31	.950

Table 1 shows that social contact has higher mean score than human trust. QoL mean score is between neutral and good QoL. Neighborhood safety mean score is around neutral. Health mean score

is towards good. Minimum wage income inequality mean score is in the first quartile.

**Table 2.** Frequency Distribution of Social Contact

	Frequency	Percent
Never	21	2.14
Less than once a month	178	18.16
1-3 times a month	353	36.02
1-2 times a week	334	34.08
Everyday	94	9.59
Total	980	100.00

Table 2 reports that about 10 percent of respondents have social contact with their relatives or friends everyday and 34 percent 1-2 times a week.

Pairwise correlations between the variables are presented in Appendix A. Health, human trust, housing cost, neighborhood safety, income and income inequality were all positively correlated with QoL. The signs are in line with the theory. The correlations range from 0.098 to 0.292, which shows a low overlap. Overall pairwise correlations range from -0.553 to 0.577, which shows a low to moderate overlap between variables. The lowest overlap (.067,  $p < .05$ ) is between human trust and education level and the highest overlap (.577,  $p < .01$ ) is between income and income inequality. The second highest overlap (-0.553,  $p < .01$ ) is between age and education level.

## 2.2. Model Estimation Results

### 2.2.1. Social capital effects through socio-demographic variables

Table 3 reports that when the number of people living together including the respondent is held at its own value, higher trust in human relative to no trust increases the average probability of higher QoL by 21.3 percentage points (pp). When income categories are held at their own values, the impact of higher frequency of social contact on higher QoL is about 9.1 pp relative to none.

**Table 3.** Marginal Effects of Social Capital

Dependent variable: Higher QoL								
Social Capital Ref. None	Gender	Age	Education	Marital	Health	Employment	Income	#people living together
<b>Neutral Trust</b>	.114* (.030)	.113* (.031)	.108* (.031)	.112* (.031)	.083* (.030)	.113* (.030)	.113* (.030)	.115* (.030)
<b>Higher Trust</b>	.203* (.048)	.202* (.048)	.203* (.048)	.201* (.049)	.134* (.048)	.202* (.048)	.200* (.048)	<b>.213*</b> (.047)
<b>Pseudo R<sup>2</sup></b>	.0133	.0142	.0148	.0144	0.044	0.0151	.0170	.0175
<b>Lower frequency of social contact</b>	.077 (.040)	.078** (.040)	.072** (.040)	.072 (.040)	.066 (.039)	.074 (.041)	.078** (.039)	.076 (.040)
<b>Higher frequency of social contact</b>	.086** (.038)	.086** (.038)	.083** (.038)	.086** (.039)	.054 (.038)	.088** (.039)	<b>.091**</b> (.038)	.087** (.039)
<b>Pseudo R<sup>2</sup></b>	.0029	.0041	.0047	0.0042	0.0392	0.0049	.0072	.0061

\*Significant at 1%, \*\*Significant at 5%, robust standard errors are in paranthesis

### 2.2.2. Social capital effects through spatial variables

Table 4 reports that when the number of people living together and location are held at their own values, higher trust relative to not increases the average probability of higher QoL of residents by 20.9 pp. This probability decreases as spatial variables are added one by one to the model. Hence, objective, subjective and social spatial variables do not contribute to the effect of social capital over higher QoL.

**Table 4.** Average Marginal Effects of Social Capital

<b>Dependent variable: Higher QoL</b>				
<b>Social Capital</b>	SE	SE Location of living	SE Location of living Neighborhood safety	SE Location of living Neighborhood safety Income inequality
<b>Neutral Trust<sup>a</sup></b>	.115* (.030)	.111* (.031)	.105* (.031)	.104* (.031)
<b>Higher Trust<sup>a</sup></b>	.213* (.047)	.209* (.048)	.201* (.048)	.198* (.048)
<b>Pseudo R<sup>2</sup></b>	.0175	.0218	.0259	.0290
<b>Moderate frequency of social contact<sup>b</sup></b>	.078** (.039)	.079** (.039)	.074 (.039)	.077** (.039)
<b>Higher frequency of social contact<sup>b</sup></b>	.091** (.038)	.088** (.038)	.082** (.039)	.085** (.038)
<b>Pseudo R<sup>2</sup></b>	.0072	.0119	.0131	0.143

\*Significant at 1%, \*\*Significant at 5%, robust standard errors are in paranthesis, <sup>a</sup> SE is #people living together

### **3. DISCUSSION**

The study determined how quality of life of Adana residents is affected by their demographic, socio-economic, social capital and spatial factors.

Our findings is in line with previous literature that reports health status to be the most effective factor over QoL. Pairwise correlations indicated that the highest correlation was between health and QoL. However, Adana residents usually think that they are in good health condition unless a doctor reports poor health. Furthermore, they do not spend their money to better their health condition, and when their health get poorer they spend all the money they have and cannot recover. Hence, the time between good health and poor health is shorter than one can imagine.

The focus of the study is on social capital impact. Interestingly, through number of respondents living together, higher QoL is more related to higher trust. The effect of frequency of social contact over higher QoL was the strongest through income status. However, strength of the effect of social contact through other explanatory variables was not significantly different.

Overall evidence indicates that higher trust shows stronger impact on higher QoL. It seems that higher trust of respondents is important to enhance QoL. The findings indicate that higher frequency of social contact shows weaker impact on higher QoL than higher trust. Hence, respondents expect better returns from trust in human than seeing

relatives or friends. Perhaps that is a long term investment for feeling more comfortable, safer and more special.

Controlling by the number of people living together, the findings indicate that higher number of people living together somewhat decreases the probability of higher QoL. This indicates a an evidence that respondents are more likely looking for higher trust.

Limitation of this study is personal characteristics of the respondents through which social capital may positively or negatively affect QoL.

## **CONCLUSION**

Model estimation results confirmed most of the hypotheses and was in line with the theory. The hypothesis “higher QoL is related to trust in human” was confirmed by showing that effect of higher trust over higher QoL relative to no trust was stronger than that of higher frequency of social contact. Social capital is more likely not related to location and income inequality (based on min. wage) was confirmed by showing that the effects of location and income inequality were not significant. Social capital has the strongest effect over QoL through health status was confirmed by estimation results.

## REFERENCES

- Abdul-Hakim, R., Nor Azam Abdul-Razak, N. A., & Ismail, R. (2010). Does Social Capital Reduce Poverty? A Case Study of Rural Households in Terengganu, Malaysia. *European Journal of Social Sciences*, 14(4), 556-566.
- Ala-Mantila, S., Heinonen, J., Junnila, S., & Saarsalmi, P. (2018). Spatial nature of urban well-being. *Regional Studies*, 52(7), 959-973.
- Chen, X., Yu, B., Gong, J. et al. (2018). Social Capital Associated with Quality of Life Mediated by Employment Experiences: Evidence from a Random Sample of Rural-to-Urban Migrants in China. *Soc Indic Res*, 139, 327–346.
- Costanza, R., Fisher, B., Ali, S. et al. (2007). Quality of life: An approach integrating opportunities, human needs, and subjective well-being. *Ecological Economics*, 61(2–3), 267-276.
- Gao, B., Yang, S., Liu, X., Ren, X., Liu, D., & Li, N. (2018). Association between social capital and quality of life among urban residents in less developed cities of Western China. *Medicine*, 97(4), e9656
- Garooosi, S., & Naghavi, A. (2008). Social Capital and Quality of Life in Kerman City. *Refahj*, 8 (30 and 31), 61-82.
- Hamdan, H., Yusof, F., & Marzukhi, M. A. (2014). Social Capital and Quality of Life in Urban Neighborhoods High Density Housing. *Procedia - Social and Behavioral Sciences*, 153, 169-179.
- Hassanzadeh, J., Asad-Lari, M., Ghaem, H., Kassani, A., & Rezaianzadeh, A. (2016). Association between social capital, health-related quality of life, and mental health: a structural equation modelling approach. *Croat Med J.*, 57(1), 58-65.
- Islam, M. K., Merlo, J., Kawachi, I., Linström, M., Burström, K., & Gerdtham, U. (2006). Does it really matter where you live: A panel data multilevel analysis of Swedish municipality-level social capital on individual health-related quality of life. *Health Economics, Policy and Law*, 1, 209-235.

- Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stich, D. (1997). Social capital, income inequality and mortality. *American Journal of Public Health*, 87, 1491–1498.
- Lin, N., Cook, K. S., & Burt, R. S. (2008). *Social capital: Theory and Research*. New Brunswick: Aldine Transaction
- Lin, N. (2001). *Social Capital: A theory of Social Structure and Action*. New York: Cambridge University Press.
- Long, J. S., & Freese, J. (2001). *Regression models for categorical dependent variables using Stata*. Texas: Stata Press.
- Lucumi, D. I., Gomez, L. F., Brownson, R. C., & Parra, D. C. (2015). Social Capital, Socioeconomic Status, and Health-Related Quality of Life Among Older Adults in Bogotá (Colombia). *Journal of Aging and Health*, 27(4), 730-750.
- Mavruk, C., Kiral, E., & Kiral, G. (2020). Spatial effects over time framed happiness. *Journal of Happiness Studies*.  
<https://doi.org/10.1007/s10902-020-00239-3>.
- Mohsen, N., Ahmadrza, A., Shima, S., & Mehdi, K. (2008). The Quality Of Life And Its Relation With Social Capital In The City Of Mashhad. *Journal Of Social Sciences*, 5(1), 111-140.
- Petrosillo, I., Costanza, R., Aretano, R. et al. (2013). The use of subjective indicators to assess how natural and social capital support residents' quality of life in a small volcanic island. *Ecological Indicators*, 24, 609-620.
- Productivity Commission. (2003). *Social capital: Reviewing the concept and its policy implications*, Research paper, AusInfo, Canberra.
- Rimaz, S., Dastoorpoor, M., Vesali, S., Saiepour, N., Nedjat, S., Sadeghi, M., & Merghati Khoei, E. (2015). Investigation of relationship between social capital and quality of life in female headed families. *Medical journal of the Islamic Republic of Iran*, 29, 270.
- Whiteley, P. F. (1999). *The origins of social capital*. Deth, J. W., Maraffi, M., Newton, K., & Whiteley, P. F. *Social Capital and European Democracy: London and New York: Routledge*.

- Warren, M. R., Thompson, J. P., & Saegert, S. (2001). The Role of Social Capital in Combating Poverty. In S. Saegert, J .P. Thompson & M. R. Warren (Eds.), *Social Capital and Poor Communities* (pp. 1-28). New York: Russel Sage Foundation.
- Williams, R. (2006). Generalized ordered logit/partial proportional odds models for ordinal dependent variables. *The Stata Journal*, 6(1), 58-82.
- Zhong, Y., Schön, P., Burström, B. et al. (2017). Association between social capital and health-related quality of life among left behind and not left behind older people in rural China. *BMC Geriatr*, 17, 287.

## Appendix A. Pairwise Correlations

Table A1. Pairwise correlations of selected variables

QoL	1	2	3	4	5	6	7	8	9	10	11				
1.QoL	1														
2.Gender		1													
3.Age			1												
4.Marital st				1											
5.1.# living together					1										
6.2.Educ level						1									
7.3.Emp status							1								
8.4.Month inc								1							
9.5.Inc ineq									1						
10.6.Health										1					
11.7.Location											1				
12.8.Neig safety												1			
13.9.Hous cost													1		
14.10.Trust														1	
15.11.Soc cont															1

\*significant at 1%, no star: significant at 5%

## **CHAPTER 9**

### **THE POWER AND POLITICS IN ORGANIZATIONS**

Assist. Prof. Dr. Can BİÇER<sup>1</sup>

---

<sup>1</sup> Karabuk University, Safranbolu Vocational School, Department of Travel, Tourism and Leisure, Karabuk, Turkey, canbicer@karabuk.edu.tr.  
<https://orcid.org/0000-0001-7270-7417>



## **INTRODUCTION**

It's so obvious that beyond in all social entities, politics are peculiar to organizations as well. Within the concept of individuals' personality diversity in organizations, the individual and contextual differences in political behaviors highly depend on the perception of power and politics of the employees in organizations. In addition, organizations simply operate by distributing authority and roles and creating a stage for the exercise of power so employees are usually eager to secure and use power to seek a familiar and hospitable environment in organizations. Since power is a basic force of human interaction and individuals come to work with various goals, it's so common that these goals end up with conflicts and competition among employees because of the expenditure or distribution of scarce resources in organizations. It's obvious that politics are at the core of public life and so in organizations. As a result, the existence and the various types of politics and power are endemic to organizations.

Besides, it can be inferred that distribution of power is often apparent in organizations and organizations are political structures that provide opportunities for individuals to develop careers and establish an environment for the expression of individual interests and motives at workplaces. In sum, Fleming and Spicer (2014) described power as the possibility that an individual within a social or organizational structure tries to pursue his/her goal or personal interest despite any resistance. And, it has been defined that politics is the tactics and strategies individuals use to articulate this power or attempt to resist it,

especially when goals and interests in the organization are conflicted. Thus, it has been mentioned that organizational politics is still usually viewed as dirty “backstabbing” types of behavior, involving backroom deals, and the improper and irrational influence over other people in the organizations. Therefore, the power and politics in organizations will be studied in more detail in this chapter.

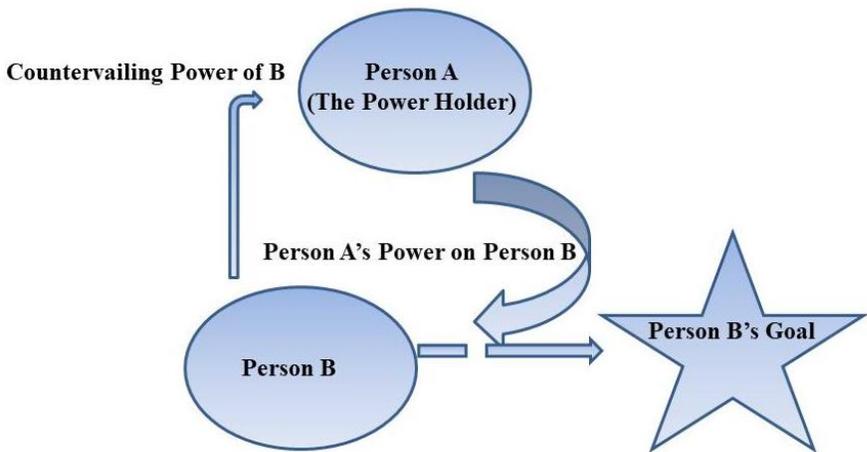
## **1. THE POWER IN ORGANIZATIONS**

Individuals use various ways to exercise power upon others and to negotiate the political interactions within organizations. Workplace is such a political arena in which employees are often faced with situations in which they should choose how to react to others that use power in the ways they do not prefer, adopt or support. Power can simply be defined as get someone to do something as the way you want done or the ability to influence the behavior of other people to get what you want. Additionally, power is associated with someone’s ability to allocate resources, and command over other individuals and commanding others mainly depends upon the ability to make other individuals do something they, on the other hand, never think of doing that. It’s so obvious that every organization has its own working environment and way of getting things done and when anyone starts a new job it’s vital that he/she should be well aware of that. In this sense, power games that were formed long before anyone starts a new position at a workplace because power games have already been in play and the new comer’s success will base on how well he/she can interpret the power games especially dealing with positional power,

resources and rewards and can select best options to respond them appropriately.

As a definition, power is the potential ability to influence behavior and to change the sequence or course of actions, to deal with the resistance and to get individuals to do things that they would otherwise never do at any time and politics and influence are the processes, the intentions, actions or the behaviors through which this potential power is used or realized in organizations. Besides, it has been argued that power is utilized more when encountering moderate interdependence and there is often no need to exercise power or influence upon others especially with little or no interdependence. On the other hand, when the interdependence is at higher levels individuals gave incentives to work together, pursue joint goals and develop cooperation and begin to coordinate their activities in organizations and when they ignore the incentives they might fail organizationally or individually in the end. Meanwhile, since interdependence is the main outcome of many things, the most critical matter is the scarcity of resources in organizations and while slack resources reduce interdependence, scarcity increases it in organizations (Pfeffer, 1994, 35-38). According to Hinck and Conrad (2018) when individuals or group of people employ their communicative abilities and strategies in order to influence others in ways that fulfill what they perceive are their own interests, within the process of insisting their wishes on less powerful individuals in the organization and from a traditional point of view, power is an instrument that endures independent of actors' perceptions and is more readily available to some people than others. In brief,

power is the capacity which A has to influence the perception and behavior of B so that B behaves or acts as the way A wishes especially when A possesses something that B requires or if B thinks that he/she is dependent on A so A has power on B. Figure 1 displays the interaction of power of A on B:



**Figure 1.** The Power Interaction in Organizations

Geppert et al. (2016) underlined Weber's point of view about power as to get others to do what you want them to do and if necessary against their will in their study and they also reminded Marxist expression that the rulers are in power and will stay in power provided that they are able to manipulate the 'real interests' of the ruled. They also stated in their study that there are four main 'faces' of organizational power that are coercion, manipulation, domination and subjectification. To make them clear, it has been concluded as coercion is associated with the one-dimensional idea of power and determined as immediate 'mobilization of power' by the individuals,

manipulation is associated with the two-dimensional idea power and refers to the attempts to ensure action and discussion occurs within accepted boundaries, domination, refers to the attempts to make relations of power seem inevitable and natural and the last one subjectification defines to form sense of self, experience and emotions and existed at the 'deeper' or 'systemic power level. From an organizational theory point of view, Fairholm (2009) remarked that power is both an enigma and a central theme in organization theory since it's a significant feature of formal and informal relationships at workplaces and it has both social and psychological dimensions. It's so clear that the organization is a social grouping that consists of at least two people involved in some common initiatives with pre-established goals, structure and methods. Indeed the allocation of power and the system of power planning in place in the organization have a substantial effect on the kind of adjustment individuals make or can make in the organization to achieve their goals and desires, the needs for achievements, power or affiliation. So since the organizational construct is in every respect one of power it cannot be considered as organization is apart from the idea of power. In sum, these three power use theory below define the three theoretical constructs:

- 1- Exchange Theory: Power within the concept of symmetry-asymmetry, as systems of control over information and affection just like an aspect of prestige. Power is a balancing of values hold by competing participants in an exchange relationship since it has been regarded as the organization is center of exchanging

the goods and services, information and insight to achieve both the individual and organizational goals or outcomes.

2-Alignment Theory: The idea of alignment depends upon the organizational culture and the culture, customs and traditions should be compatible with the individuals in some real ways and cultures that concentrate on a central power figure outline the power dynamic more than do cultures concentrating on position, task or role though power use is integral to the relationships in organizations.

3-Contingency Theory: The effects and force of contingencies in the environment on organizational and individual capacity to obtain goals are so real and parts of contingency have an effect on power use so identification and acquiring control over the critical contingencies becomes an essential reason of power use in organizations.

Additionally Omisore and Nweke (2014) indicated in their study that power is the ability to apply force and mobilize resources, energy, capacity and information on behalf of preferred goals and it has been underlined that there are various bases for using information in organizations and six major bases of power have been listed as coercion, expertise, rewards, legitimacy, referent power and information. Figure 2 displays the six key bases of power in detail:

**Bases of Power in Organizations**

<b>COERCION</b>	This implies the threat of decreasing another’s outcomes. The holder can apply punishment or sanction.
<b>EXPERTISE</b>	This is formal or specialized knowledge about particular issues or activities with an organization. The person with expertise has the status of an expert and thus is likely to be accurate.
<b>REWARDS</b>	This implies the promise of increasing the outcomes of the employer. The holder of this can give or withhold something desired.
<b>LEGITIMACY</b>	The holder of this power is viewed as right in terms of the values of the one influenced; this is tantamount to authority. Authority is power based on rights of control and concomitant obligations to obey
<b>REFERENT POWER</b>	This is more interpersonal in nature than legitimacy and power based on identification with another. This is exemplified by the power of charismatic leaders who elicit deference and are accorded credibility by others. The individual influenced desires to model his/her behavior to the source of influence.
<b>INFORMATION</b>	This consists of the access or opportunity actors have to gain information about the inner workings of the organization or about the relation of the organization to the environment. This information may or may not be related to the actor’s level in the hierarchy of authority in the organization.

**Figure 2.** The Six Major Bases of Power (Omisore, and Nweke, 2014:167)

According to the Shafritz et al. (2014) it has been emphasized that the effectiveness that power brings evolves from two main ways that the first one is access to resources, information and the second one is the capacity or skill have cooperation in carrying out what is necessary especially in managerial process. For example, during the decision-making process in a meeting or in a committee, the person who is in charge of the department or organization or who directs the meeting or keeps the minutes can have significant power to control decision making process at that time. In addition, it has been maintained that there are some certain symbols of a manager’s organizational power that influences upward and outward especially to what extent a manager:

- 1- can intercede favorably on behalf of somebody who has some problems with the organization,
- 2- can get a favorable placement for a more talented coworker or a subordinate,
- 3- can get confirmation for the spending beyond the organizational planned budget,
- 4- can get above-average income raises for the subordinates,
- 5- can get items on the agenda at policy meetings,
- 6- can get faster access to top decision-makers in organization,
- 7- can get regular, instant and closely contact to top decision-makers,
- 8- can get earlier or more instant information about administrative decisions and policy shifts.

Hence, Gencer et al. (2018) maintained in their study that since power is a source or a kind of force reserve engage in tactics and used by anyone effectively to influence or change the attitude and behavior of another one then the concept of power is the core of the interest of individuals for management and organization. Wilson (1995) stated that power is a core function of the structure in organizations and power inheres in one's structural position and it enables a kind of access to individuals, information, cooperation and financial resources (budgets) as well. So, it has been underlined that those in power stay in power by reinforcing the existing structure of the organization. Shafritz et al. (2014) emphasized in their study that when managers

think they are in powerful situations then they assume that it will be easier for them to accomplish more because they are sure that where the tools and they tend to be highly motivated and so they can easily motivate their subordinates. Plus, their actions and activities in the organization will be more likely to be on target and so they can easily and flexibly evaluate or shape policy to meet the certain fields, instantaneous environmental shifts or emergent situations. Therefore they will certainly gain the respect and the cooperation which attributed power brings and it's so clear that subordinates' skills and talents are authentic resources rather than threats or negative effects. Besides powerless live in a different world and usually have a negative point of view because lacking the supplies and resources, information or cooperation they might turn instead to the last weapon of those who don't have productive power or oppressive power and then hold other people back and punishing with any threat they can create. In sum, Table 1 shows some of the main ways in which variables in the organizations and in job design contribute to either power or powerlessness in organizations:

**Table 1.** Ways that Organizational Factors Contribute to Power or Powerlessness  
(Shafritz et al.,2014:276).

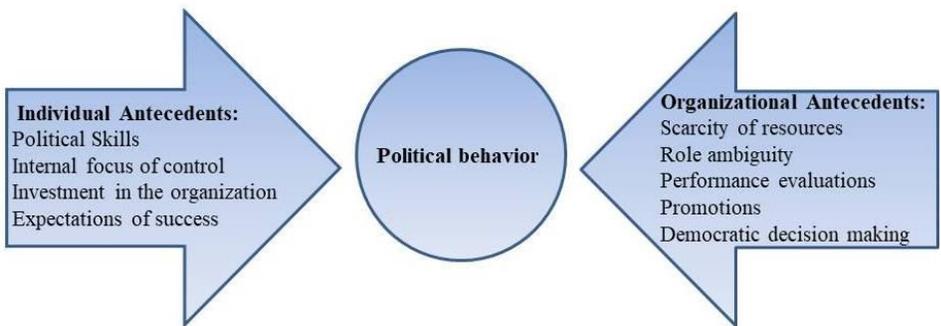
Factors	Generates Power When Factor is ..	Generates Powerlessness When Factor is ..
Rules inherent in the job	few	many
Predecessors in the job	few	many
Established routines	few	many
Task variety	high	low
Rewards for reliability/ predictability	few	many
Rewards for unusual performance/innovation	many	few
Flexibility around use of people	high	low
Approvals needed for nonroutine decisions	few	many
Physical location	central	distant
Publicity about job activities	high	low
Relation of tasks to current problem areas	central	peripheral
Focus of tasks	outside work unit	inside work unit
Interpersonal contact in the job	high	low
Contact with senior officials	high	low
Participation in programs, conferences, meetings	high	low
Participation in problem- solving task forces	high	low
Advancement prospects of subordinates	high	low

## **2. THE POLITICS IN ORGANIZATIONS**

From the traditional point of view, organizations are regarded as rational systems so it can be inferred that they are social machines that have been designed and operated just like instruments for reaching the predetermined organizational goals. So to speak organizational participants are the operators the machines, expected to carry out their jobs and duties efficiently as they are prescribed by formal rules, procedures, principles, job descriptions and contacts. Organizations are social systems but they differ from families and communities because they produce certain products or special services for the surrounding environment. On the other hand, since organizations are social systems and created and run by individuals, organizations might turn into arenas for political struggles easily because individuals work alone or as groups to obtain the best benefit that can be gained from the organization in which they are involved especially when the resources are scarce. Moreover, in this arena, any individual have some goals of his/her own that differ or contradict those of other individuals within the organization. Therefore, it's so clear that there is an ongoing over the organizational spoils between its competing individuals. In sum, politics are complex case for the organization because in one hand organization has official rules and demands for obtaining the organizational goals and on the other hand from the unofficial side that is utilitarian attitudes and behaviors of the individuals that exploit every chance to get the best for oneself (Samuel, 2018:1-3). Political behaviors in organizations imply the intentional actions that includes influence tactics, self-presentation,

impression management, voice and helping behavior to control or manage (create, maintain, modify or abandon) the shared instruments of organizational events in order to reach ambitious goals which may, on the other hand, be unfeasible. In sum, political behaviors are both self-serving and benevolent motives in employees'/managers' efforts to attain personal and/or organizational goals and such purposive behaviors, which may range from active to passive engagement, form a concept within which employees and managers act to reach their goals. It has been commonly concluded recently by the business management scholars that politics are ubiquitous and they can be destructive to most employees, work teams, and organizations and through their assumption it can be evaluated that politics as a zero-sum game where the personal interests are ran after at the expense other individuals, resulting in backstage trade-offs, allusions, backstabbing and undermining the coworkers in the organization. On the other hand, ignoring the side effects of the politics in the organization, it has also been mentioned in the management literature that there are also positive effects about politics such as higher productivity, career advancement, higher innovation, and decision making consensus in the organizations (Kapoutsis and Thanos, 2016:310). Organizational politics have been defined as informal, unofficial, and sometimes behind-the-scenes efforts to sell ideas, influence an organization, increase power, or achieve other targeted objectives. Since organizations often have limited resources that must be allocated in some way, employees and groups in the organizations usually would not be agree with how the organizational resources

should be distributed or shared, so they sometimes try to get these resources for themselves or for their interest groups, which eventually increases the political games in organizations. Therefore, employees usually fraternize themselves with other individuals who have more common likes and taste in an effort to gain the scarce resources and often exhibit behaviors such as bargaining, negotiating, alliance building, and resolving conflicting interests. It has also been underlined that organizational politics are a dispensable fact of organizational life as organizations are came together with various aims and interests which must to be adjusted and about 93% of managers surveyed stated that organizational politics exist in their organization, and 70% thought that to be successful, aa individual has to engage in politics (Bauer and Erdogan, 2012:648). Figure 3 monitors the main potential individual and organizational antecedents of political behavior:



**Figure 3:** Main individual and organizational antecedents that lead to political behavior (Bauer and Erdogan, 2012: 650).

Furthermore, Landells and Albrecht (2019) outlined in their study that the organizational politics have usually been identified such a behavior that is “self-serving, inconsistent with the organizational objectives, and deliberate to give individuals, groups or entities harm and often viewed the negative outcomes of them as the impairing, destructive, and negative effects of organizational politics effects such as stress, burnout, turnover intentions, lower levels of job satisfaction, and organizational commitment and on the other hand fewer researches found out that there are some advantages like the impact of organizational politics on employee engagement, a construct highly regarded as essential to organizational achievement and competitive advantage. Besides, Mintzberg (1985) argued that political activities in organizations are often evaluated within the concept of “games” and political games are described as not only intricate and subtle simultaneous, over-lapping but also they are guided by rules while some of them are explicit, clear and stable but some of them are implicit, fuzzy or ever changing. Table 2 displays some of the features of the political games that are commonly played in organizations:

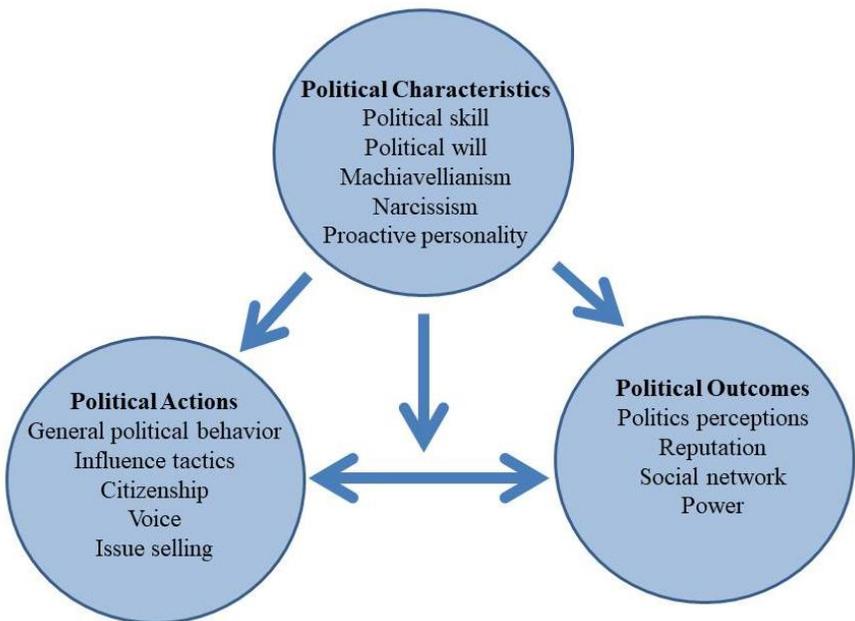
**Table 2.** Some Features of the Political Games in Organizations (Mintzberg, 1985:135).

GAME	MAIN PLAYERS	REASONS PLAYED	RELATIONSHIP TO OTHER SYSTEMS OF INFLUENCE
<b>Insurgency</b>	Unskilled operators (in large groups), lower level managers and sometimes professionals (singly or in small groups).	To resist authority (or other legitimate power)	Antagonistic to legitimate systems
<b>Counter insurgency</b>	Senior managers	To counter resistance to authority	Coexistent with legitimate systems
<b>Sponsorship</b>	Any subordinate or junior usually managers, personal staff or younger professionals	To build power base especially with superiors or seniors	Coexistent with authority or expertise
<b>Alliance building</b>	Line managers	To build power base with peers	Substitutable for legitimate systems or else coexistent with authority or expertise
<b>Empire building</b>	Line managers	To build power base with subordinates	Coexistent with authority or expertise sometimes substitutable for legitimate systems
<b>Budgeting</b>	Line managers	To build power base with resources	Coexistent with authority expertise
<b>Expertise</b>	Operators and staff specialists	To build power base with real of feigned knowledge and skills	Coexistent with expertise or substitutable for it
<b>Lording</b>	Unskilled operators and their managers (sometimes professionals)	To build power base often with authority, especially bureaucratic rules	Coexistent with authority or expertise or ideology

Guo et al. (2019) emphasized in their study that the organizational politics associate with the non-sanctioned behaviors and activities strategically planned to preserve and enhance self-interests commonly in conflict with organizational objectives and organizational politics have been outlined as a disruptive organizational characteristic that, when perceived by employees, is probably to have a destructive effect on employees' behaviors so it has been mentioned that most people perceive organizational politics as self-serving and manipulative and it will eventually jeopardize the well-being of both employees and organizations on the whole. Besides, it has been underlined that workplaces with higher levels of politics are usually expressed as

distrust, injustice, unfair decision making processes and disparity in organization. Moreover, it has been maintained that when organizational politics are perceived to be at higher levels, some employees will probably engage in political behaviors such as self-promotion and ingratiation, to protect self-interests rather than the best interest of the organization. For example, employees are often likely to engage in influencing behaviors such as self-promotion and ingratiation to get higher performance ratings from their supervisors. In sum, it has been mentioned that when the level of organizational politics is perceived to be low, highly engaged employees are more likely to be recognized by their supervisors, because supervisor evaluation is less likely biased toward employees heavily engaged in organizational politics. On the other hand, some employees will intensively show political behaviors to affect supervisor evaluations when organizational politics are perceived to be high by them. However, these employees who are opposed to organizational politics and more engaged in their duties will probably receive less favorable performance evaluation from their managers. Moreover, Kacmar and Baron (1999) stated in their study that a behavior can only be considered as political if others are made use of as resources in competitive situation, that is to say the essence of the political behavior is inherently self-centered, for example using others and political behavior in organizations are enacted to reach goals that are not sanctioned by the organization or to reach organizationally sanctioned outcomes via non-sanctioned means. Additionally, Ferris et al. (2019) stated in their study that political characteristics influence

individuals' political actions and interpretation of political effects in organizations and it has been maintained that political actions work to manage shared meaning in a manner which affects political outcomes. It has also been concluded that political outcomes also influence the ways in which individuals behave politically and politics generates effectiveness feedback, which affects decisions and whether and how to engage in subsequent self-interested behavior. Figure 4 displays the visual reorganization of organizational politics and the causes and outcomes of them:



**Figure 4.** Organizational Politics and Their Causes and Outcomes, (Ferris et al. 2019:302).

Vigoda (2000) argued that organizational politics are often viewed as self-serving behaviors by individuals to obtain self-interests,

advantages, and personal benefits at the expense of others and very often contradictory to the interests of the entire organization or work team. These behaviors have also been related with manipulation, defamation, disruptiveness, and illegitimate ways of overusing power to attain one's objectives. It has also been suggested that politics in organizations should be understood within the concept of what individuals think of it rather than what it actually represents because the higher the perceptions of politics are in the eyes of an organization member, the lower in that person's eyes is the level of justice, equity, and fairness and when employees perceive more politics in the organization, they are also likely to see the organization as less supportive of innovation. Salem (2014) suggested that organizational politics are a subjective perception and perceptions of politics may become more determinant to some extent that when employees think that their working environment as highly political, promoting self-interests of others and thereby unfair and unjust from an individual point of view so employees wouldn't be satisfied particularly when they think that the organizational decisions making regarding rewards and promotion to be unfair especially when the resources are scarce and they may lead to increased negative feeling towards others, loss of position credibility and strategic power, lower levels of job performance, higher levels of dissatisfaction and work stress, lower job performance and finally less organizational commitment. Labrague et al. (2017) maintained in their study that organizational politics consist of a sequence of intentional actions which are carried out by an individual in order to pursue only his/her own self-interests

by overlooking other people's rights and welfare or their organizations and these deliberate acts are usually hidden or can be beyond the organizational rules and regulations, on the other hand, they directly or indirectly influence the organization's functions and processes as well and it's certain that organizational politics can be observed in all organizations in varying degrees since they are used to achieve personal goals and interests, protect or enhance one's own professional career and gain resources or advantages from the organization. It has also emphasized that organizational politics are often associated with negative effects on employees such as decrease in work performance level, decreased job satisfaction, decreased organizational commitment, lowered attendance, low morale, negative attitudes and negligent behaviors such as the intention to leave and disregard of duty and organizational politics perceptions of the employees are directly related to negative emotional states such as job stress and job burnout.

In addition, according to Nawaz et al. (2019) organizational politics may result in a rather rational basis for competitive advantage, especially when individuals in organizations are appropriately politically skilled and a foresighted management may successfully direct those highly political organizational environments that are under stress and a political skill that includes an aptitude to employ actions that support feelings of trust, confidence and sincerity among employees may reduce conflicts. Moreover, it has been concluded that managers can also maintain their political behaviors to enhance justice

and equality in organizations when they perceive highly political environment at a workplace.

## **CONCLUSION**

In this chapter, power and politics have been outlined, the definitions of them have been given in detail and a condensed conceptual framework of the power and politics in organizations have been discussed. Broadly speaking, the human factor and its outcomes on the behavior of organizations in general and the individuals in particular are obvious and organizations are created and run by human beings should be always remembered. So, organizations can easily be turned into arenas for political games or power struggles since every individual may have ambitions and their own plans in order to reach their goals or gain more personal benefits in organizations. Therefore, it can be inferred that organizations also are political structures that provide opportunities for employees to develop careers and also enable platforms for the pursuit of personal interests and motives.

Additionally, accumulation of power is the instrument for transforming individual interests into activities which influence other people and a key to the development of careers for the employees as well. Power struggles come into being especially when the resources are scarce and to control the knowledge and information and decision making processes in the organizations. Hence, there is a distinct expression that politics exist in every organization so employees often engage in self-serving behaviors, organizational politics, in order to increase the probability of obtaining positive outcomes in

organizations and personal interests without regarding to their effect on the organization itself. To sum up, it must be remembered that when both individuals and groups engage in organizational politics that may be rather destructive, as individuals focus on personal interests and goals at the expense of the organization, such self-serving political efforts might negatively influence the social groupings, cooperation, information sharing, and many other organizational functions on the whole and they may lead to huge hidden costs for the organizations such as higher levels of employee turnover and employee burn out and lower levels of work engagement and work satisfaction in organizations.

## REFERENCES:

- Bauer, T., & Erdogan, B. (2012). An introduction to organizational behavior. *Creative Commons*. <https://2012books.lardbucket.org/pdfs/an-introduction-to-organizational-behavior-v1.1.pdf>.
- Fairholm, G. W. (2009). Organizational power politics: tactics in organizational leadership. Greenwood Publishing Group, ABC-CLIO, California, U.S.A.
- Ferris, G. R., Ellen III, B. P., McAllister, C. P., & Maher, L. P. (2019). Reorganizing organizational politics research: A review of the literature and identification of future research directions. *Annual review of organizational psychology and organizational behavior*, 6, pp 299-323.
- Fleming, P., & Spicer, A. (2014). Power in management and organization science. *Academy of Management Annals*, 8(1), pp 237-298.
- Gencer, M., Tok, T. N., & Ordu, A. (2018). The effect of power base games on organizational silence and organizational socialization.
- Geppert, M., Becker-Ritterspach, F., & Mudambi, R. (2016). Politics and power in multinational companies: Integrating the international business and organization studies perspectives. *Organization Studies*, 37(9), pp 1209-1225.
- Guo, Y., Kang, H., Shao, B., & Halvorsen, B. (2019). Organizational politics as a blindfold. *Personnel Review*.
- Hinck, R., & Conrad, C. (2018). Organizational Politics. *The International Encyclopedia of Strategic Communication*, pp 1-12.
- Kacmar, K. M., & Baron, R. A. (1999). Organizational politics. *Research in human resources management*, 1, 1-39.
- Kapoutsis, I., & Thanos, I. (2016). Politics in organizations: positive and negative aspects of political behaviour. *European Management Journal*, 34(3), pp 310-312.
- Labrague, L. J., McEnroe-Petitte, D. M., Gloe, D., Tsaras, K., Arteché, D. L., & Maldia, F. (2017). Organizational politics, nurses' stress, burnout levels,

- turnover intention and job satisfaction. *International nursing review*, 64(1), pp 109-116.
- Landells, E. M., & Albrecht, S. L. (2019). Perceived organizational politics, engagement and stress: The mediating influence of meaningful work. *Frontiers in psychology*, pp 10, 1612.
- Mintzberg, H. (1985). The organization as political arena. *Journal of management studies*, 22(2), pp 133-154.
- Nawaz, M., Syed, A., & Dharejo, N. (2019). Two facets of organizational politics, the constructive and destructive role of organizational politics on employee work related attitudes: A theoretical study. *Annals of Contemporary Developments in Management & HR (ACDMHR)*, Vol. 1, No. 1, pp 15-22.
- Omisore, B. O., & Nweke, A. N. (2014). The influence of power and politics in organizations (Part 1). *International Journal of Academic Research in Business and Social Sciences*, 4(7), pp 2222-6990.
- Pfeffer, J. (1994). *Managing with power: Politics and influence in organizations*. Harvard Business Press.
- Saleem, H. (2015). The impact of leadership styles on job satisfaction and mediating role of perceived organizational politics. *Procedia-Social and Behavioral Sciences*, 172(27), pp 563-569.
- Samuel, Y. (2018). *The political agenda of organizations*. Routledge, New York, U.S.A.
- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2014). *Classics of organization theory*. Cengage Learning, Eighth Edition, Printed in the U.S.A.
- Vigoda, E. (2000). Organizational politics, job attitudes, and work outcomes: Exploration and implications for the public sector. *Journal of vocational Behavior*, 57(3), 326-347.
- Wilson, P. A. (1995). The effects of politics and power on the organizational commitment of federal executives. *Journal of Management*, 21(1), 101-118.



## CHAPTER 10

### THE RELATIONSHIP BETWEEN INCOME INEQUALITY AND ECONOMIC GROWTH IN EMERGING MARKET COUNTRIES (EMCs): THE ROLE OF FINANCIAL INTERMEDIATION, EDUCATION AND TRADE OPENNES<sup>1</sup>

Assoc. Prof. Dr. Vedat CENGİZ<sup>2</sup>  
Student. Achmad Sofwan POEDJİYO<sup>3</sup>

---

<sup>1</sup> This study is based on master's thesis, entitled "Gelişmekte Olan Ülkelerde Gelir Eşitsizliği ve Ekonomik Büyüme İlişkisi: Kredi Piyasası Aksaklığı, Eğitim ve Ticaret Açıklığının Rolü", which prepared by Achmad Sofwan under the supervision of Vedat Cengiz at Kocaeli University Institute of Social Sciences in 2016.

<sup>2</sup> University of Kocaeli, Faculty of Economics and Administrative Sciences, Department of Economics, Kocaeli, Turkey. e-mail: vcengiz@kocaeli.edu.tr.  
orcid no: 0000-0001-7010-4380

<sup>3</sup> University of Kocaeli, Institute of Social Sciences, Economic Development of International Economics, Kocaeli, Turkey. e-mail: achmadsofwan@rockedmail.com.  
orcid no: 0000-0001-5432-9790



## INTRODUCTION

Economic growth can be depicted as an increase of national per capita income and product over a period of time. But, it does not mean that there is improvement in overall standards of living. Economic growth can lead to an increase of the wealth for the rich, but no progress or even less in the living standard for the poor (Gillis, 1992). This unequal spreading of income is referred to as income inequality. UNDP (2013) explained the income inequality as the distribution of income across households or individuals in an economy that is measured by using the Gini index of inequality between zero indicating complete equality and 100 indicating absolute inequality.

Over half past century, impact of income inequality has been hot issues among economic analysts, because it concerns human welfare and economic effects overalls. Braun (1991) describes the severe inequality which has 1 percent of income recipients receiving 15 percent of world income, whereas the poorest 20 percent just receive 1 percent. In developing countries, income inequality has increased by 11 percent from the early 1990s and to the late 2000s, most of households are also living in societies where income is more unequally distributed than it was in the 1990s (UNDP, 2013).

One of the most significant factors believed to be related to income inequality is the rate of economic growth. The level of poverty decline is influenced by the spreading of income changes with economic growth and initial inequalities in income. Economic growth does not

give significant impact on poverty decline when income inequality increases. So many countries reached high rates of economic growth in some periods, but poverty level does not decline significantly because income inequality increases.

As explained by Benabou (1996), South Korea and the Philippines looked similar as indicated by macroeconomic factors, including GDP per capita, primary and secondary school enrolment, populations, and urbanization, but different from their income distribution. In 1965, South Korea's Gini coefficient was 34.3 and the Philippine's Gini coefficient was 51.3. During thirty years after, South Korea's growth averaged 6 percent annually and the Philippine stagnated at 2 percent. This case shows the result invigorated the interest in the relationship between income inequality and economic growth.

Empirical studies about income inequality and economic growth relationship have been started in 1955 by Simon Kuznets. Kuznets (1955) found that as per capita income increased, income inequality also increased, reached a highest level, and then decreased as income levels increased to further. His findings were later described as an "Inverted-U Hypothesis". Forbes (2000) found that income inequality and economic growth have positive relationship in the medium and short run.

The aim of this study is to analyse the relationship between income inequality and economic growth and the role of financial intermediation, education and trade openness as moderator variables

in this relationship. By evaluating the role of income inequality determinants the relationship is analysed more details. It used moderated regression analysis (MRA) model with quasi moderator variable and panel data analysis with fixed effect model.

This paper includes BRICS (Brazil, Russia, India, China, South Africa) and MIST (Mexico, Indonesia, South Korea, Turkey) countries during the research period from 1990 to 2013. These countries are the largest emerging markets that have total output \$20 Trillion and high annual economic growth in 2014 based on World Bank data. They are also playing a growing role in the world economy expected to be even greater in the future and all of them are listed in the 20th major economies in the world (G-20).

## **1. LITERATURE REVIEW**

### **1.1. Income Inequality and Economic Growth**

By using data from USA, Germany and Britain Kuznets (1955) found that income inequality increase in the first phase of development and then decline in the course of development. Kuznets (1963) also found the same result and it concluded that economic growth and income inequality relationship takes the form of an inverted U, usually mentioned as Kuznets Curve. According to him, inequality might worsen during the early stages of economic growth because they almost always relate to the nature of structural change.

Benabou (1996) compiled the results of 23 studies completed on association between income inequality to growth or investment and

summarized that inequality is detrimental to long-run growth and a consistent one standard deviation decrease in inequality, raises the annual growth rate of GDP per capita by 0.5 to 0.8 percentage points. Forbes (2000) and Tabassum and Majeed (2008) found negative relationship between income inequality and economic growth in the long run, but positive relationship in the short run. Forbes (2000) used 45 countries as sample whose income inequality data was considered high quality and fixed effect model to analyse the relationship. Then, Tabassum and Majeed (2008) used data from 69 developing countries over the period 1965-2003.

Barro (2000) found little overall relation between income inequality and rates of growth investment by using sample from 84 countries during period 1960-1990. For growth, there is an indication that inequality retards growth in poor countries but encourages growth in richer countries. It means that income-equalizing policies might be justified on growth-promotion grounds in poor countries. For richer countries, active income redistribution appears to involve a trade-off between the benefits of greater equality and a reduction in overall economic growth. Samanta and Heyse (2006) used panel data estimation over the 1966-1991 time periods and found that developing countries with higher income inequality do not grow at a slower rate than developing countries with a more equal income distribution.

## **1.2. The Role of Financial Intermediation, Education and Trade Openness**

Galor and Zeira (1993) explored the theoretical linkage between income distribution and macroeconomics, through investment in human capital. They concluded that in the face of capital market imperfections the distributions of wealth significantly affect the aggregate economic activity. Income inequality hindered economic growth when credit market imperfections exist (Banerjee and Newman, 1993; Aghion and Bolton, 1992).

When the credit market imperfection exist the poor people do not have equal opportunity in borrowing like rich people due to lack of enough collateral and they cannot give a good education to their children, though they have competencies. They also cannot get loans to build up a business. Tabassum and Majeed (2008) found that more inequality has strong negative effect on economic growth due to credit market imperfection. Credit market imperfection is identified as the likely reason for a strong negative relationship between income inequality and economic growth in low-income developing countries.

Lewis (1970) explained when the economy grows and educational facilities spread to a larger proportion of the population, in the long run skilled workers will increase leading to the wages of the skilled workers to fall. Then, wage differentials between the skilled and unskilled workers will decrease, leading to the level of income inequality to improve. Initially education is likely to be positively

related, before it becomes negatively related to the income inequality level.

Chenery and Syrquin (1975) found that education eradicates income away from the richest 20% and raises income of the lowest 40%. In addition, primary and secondary schooling have positive effect on income share got by individuals. Ning (2010) used data from China Health and Nutrition Survey (CHNS) that covers 9 provinces for the years 1997 and 2006, and found that increasing returns to education has played a key role in explaining the rapid education expansion and the increment in income inequality.

Solow (1956) and Swan (1956) expected by lowering trade barriers, a country would have gained. By trade openness, consumers can access cheaper products and rise their purchasing power and living standard. Producers also can get cheap inputs with lower cost and increase their competitiveness. Frankel and Romer (1999) found that international trade has a statistically and economically significant effect on growth.

Dollar and Kraay (2001) by using OLS estimation found that trade openness leads to decreasing inequality between countries and decreasing poverty within countries. Economic growth in the poor countries that have reduced trade barriers and joined more in international trade over the past two decades has been accelerated. In contrast, in the developing countries that did not join in globalization economic growth fell further and further behind.

## 2. THEORETICAL FRAMEWORK AND DATA SOURCES

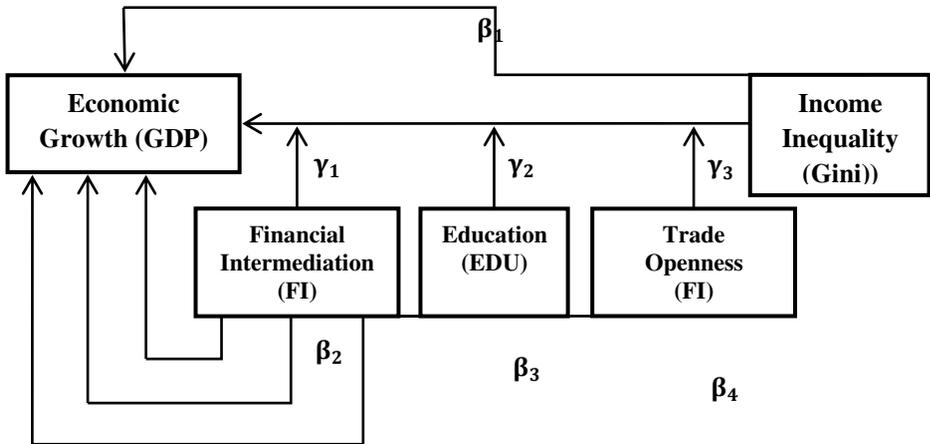
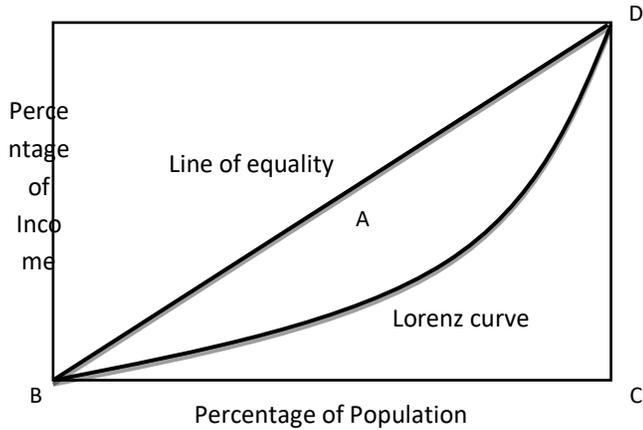


Figure 1: Design of this Research

As drawn in the Figure 1, this paper analyses the relationship between income inequality and economic growth and the role of financial intermediation, education and trade openness as moderator variables in this relationship. Economic growth is used as dependent variable and income inequality as independent variable. In this paper income inequality is measured by Gini coefficient. The data sets are obtained from UNU-WIDER (2015) and World Bank (<http://data.worldbank.org/indicator>) during period 1990-2013.



**Figure 2:** Estimating the Gini Coefficient  
**Source:** Todaro and Smith (2012: 208).

Gini coefficient is an aggregate numerical measure of income inequality. It is measured graphically by dividing the area between the perfect equality line and the Lorenz curve by the total area lying to the right of the equality line in Lorenz diagram. The higher the value of coefficient, the higher the inequality of income distribution, the lower it is, the more equal the distribution of income (Todaro and Smith, 2012). As shown in Figure 2, the Gini coefficient is the ratio of the area A to the total area of the triangle BCD.

$$\text{Gini coefficient} = \frac{\text{Shaded area } A}{\text{Total area } BCD} \quad (1)$$

Economic growth represents the expansion of country's potential GDP or national output that associated with rising average real incomes and living standard. There are four wheels or factors of growth, such as human resources, natural resources, capital formation and technology

(Samuelson and Nordhaus, 2005). Economists define the relationship in terms of an aggregate production function (APF), which relates to national output to inputs and technology. Algebraically, the APF is:

$$Q = AF(K, L, R) \quad (2)$$

where, Q = output, K = productive services of capital, L = labor inputs, R = natural resources inputs, A represents the level of technology in the economy, and F is the production function. In this paper, economic growth is measured by using annual percentage growth rate of gross domestic product (GDP) at market prices based on constant local currency that aggregates are based on constant 2005 U.S. dollars.

The level of financial intermediation is used to measure credit market imperfection in this paper. Following King and Levine (1993) financial intermediation is measured by the summation of money and quasi money (M2) as % of GDP and domestic credit to private sector as % of GDP.

$$FI = \frac{\text{Broad Money (M2)} + \text{Credit to Economy}}{GDP} \quad (3)$$

The share of broad money (M2) is money and quasi money comprising the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central

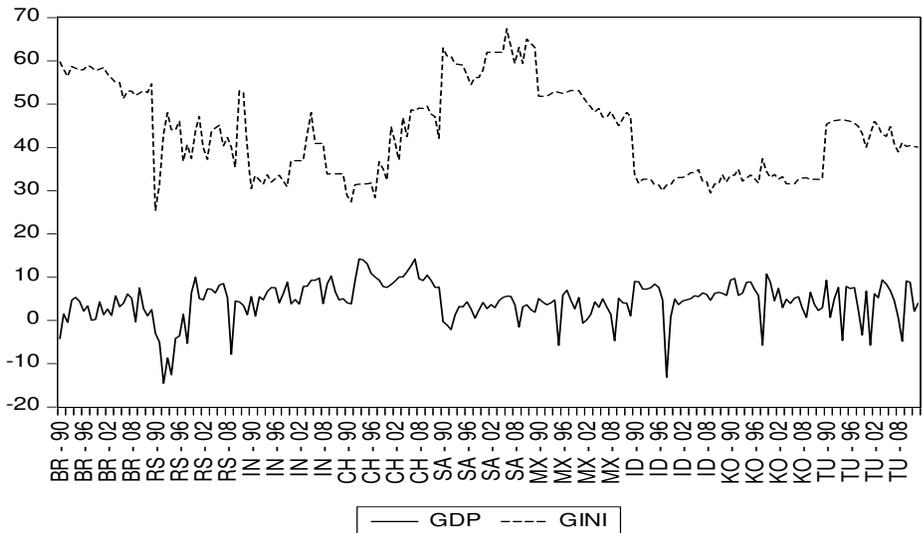
government. The credit to economy is domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment. For some countries these claims include credit to public enterprises (<http://data.worldbank.org/indicator>).

Education is measured by using school enrolment for tertiary education based on ISCED (2011) level 5 to 8 that includes short-cycle tertiary education, bachelor or equivalent, master or equivalent, and doctoral or equivalent. The data is taken from World Bank. Trade openness is measured by using the trade openness ratio (the trade to GDP) that is frequently used to measure the importance of international transactions relative to domestic transactions. This indicator is calculated for each country as the simple average (mean) of total trade (the sum of exports and imports of goods and services) relative to GDP (See OECD, 2011).

$$TO = \frac{Export+Import}{GDP} \quad (4)$$

Based on Figure 3, it looks showing that income inequality and economic growth in EMCs have positive relationship. It follows results by previous researchers like Kuznets who found that inequality might worsen during early stages of economic growth. During period 1990-2013, BRICS and MIST countries have been enjoying a

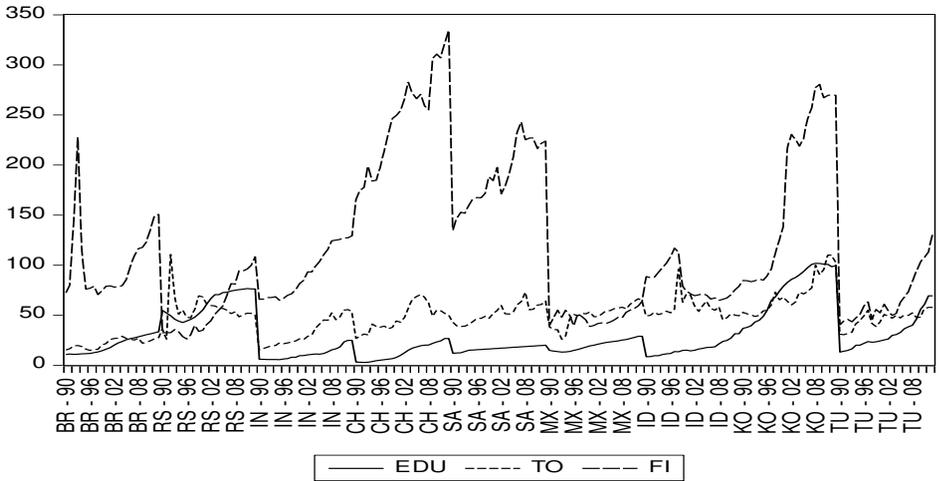
continued period of relatively robust growth although there was some period where economic growth was declining during financial crisis. Its impacts on absolute poverty has been decreasing dramatically especially in Brazil, China and Indonesia. However, this progress has been uneven indicated by income inequality has been increasing in the most countries including Russia, India, China, South Africa and Turkey.



**Figure 3:** Economic Growth and GINI Coefficient in EMCs  
**Source:** Prepared from the World Bank Data.

In Figure 4, it shows that in the same periods financial intermediation, education and trade openness in BRICS and MIST countries have been increasing although there were some periods where they were decreasing especially during financial crisis. South Korea is only one country that has highest achievement in all factors. These

achievements have been accelerating economic growth of South Korea with lower income inequality.



**Figure 4:** Financial Intermediation, Education and Trade Openness in EMCs

**Source:** Prepared from the World Bank Data.

### 3. RESEARCH METHODOLOGY

In this study moderated regression analysis is used to investigate the relationship between income inequality, economic growth and the moderator variables. A moderator variable systematically modifies either the form and/ or strength of the relationship between an independent and a dependent variable. It is classified into four types including the predictor, a homologiser, a pure moderator, and quasi-moderator (Sharma et al., 1981). To determine the best moderator variable used in the regression model, R-squared and adjusted R-squared are examined. Moderator variable that has highest both R-squared and adjusted R-squared is applied on the regression model.

The Predictor Moderator is related to a dependent and/ or an independent variable but does not interact with an independent variable, and is not considered a moderator variable.

$$Y = \alpha + \beta_1 X_1 + \varepsilon \quad (5)$$

A Homologiser Moderator affects the strength of the relationship between an independent and dependent variable. It does not interact with the independent variable, and is not significantly related to either independent or dependent variable.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \quad (6)$$

A Pure Moderator modifies the form of the relationship between the independent and dependent variables. It enters into the interaction with independent variable without being a significant independent variable and having a negligible correlation with the dependent variable.

$$Y = \alpha + \beta_1 X_1 + \gamma_1 X_1 \cdot X_2 + \gamma_2 X_1 \cdot X_3 + \gamma_3 X_1 \cdot X_4 + \varepsilon \quad (7)$$

A Quasi-Moderator also modifies the form of the relationship between the independent and dependent variables. It not only interacts with the independent variable but it is also a dependent variable.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \gamma_1 X_1 \cdot X_2 + \gamma_2 X_1 \cdot X_3 + \gamma_3 X_1 \cdot X_4 + \varepsilon \quad (8)$$

where,  $\alpha$  is the unknown intercept,  $Y$  is the dependent variable,  $X_1$  represents independent variable,  $X_2$ -  $X_4$  represent moderator variables,  $\beta$  and  $\gamma$  are the coefficient for that independent and moderator variables, and  $\varepsilon$  is the error term.

Beside moderated regression analysis, it also uses panel data analysis. There are some techniques to analyse panel data analysis such as pooled least squares, fixed effects, and random effects model.

#### a. Pooled least squares model

This model can be used when the groups to be pooled are relatively similar or homogenous. The model can be directly using ordinary least squares (OLS) on the concatenated groups. If the model yields large standard errors (small T-Stats), this could be a warning flag that the group are not all that homogenous and a more advanced approach like random effects model may be more appropriate (Joseph, 2010). The equation for pooled least squares becomes:

$$Y_{it} = \beta_1 X_{it} + \alpha + \mu_{it} \quad (9)$$

## b. Fixed effects model

This model is used to analyse the impact of variables that vary over time. It explores the relationship between predictor and outcome variables within an entity such as country, person, company, etc. Each entity has its own individual characteristics that may or may not influence the predictor variables. Fixed effect model assumes that something within the individual may impact or bias the predictor or outcome variables and needs to control. This is the rationale behind the assumption of the correlation between entity's error term and predictor variables. Fixed effect model remove the effect of those time-invariant characteristics so the net effect of the predictors on the outcome variable can be assessed.

Fixed effect model also assumes that those time-invariant characteristics are unique to the individual and should not be correlated with other individual characteristics. Each entity is different therefore the entity's error term and the constant should not be correlated with the others. If the error terms are correlated, then fixed effect model is no suitable since inferences may not be correct and needed to model that relationship, this is the main rationale for the Hausman test. The equation for the fixed effects model becomes:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it} \quad (10)$$

Another way to see the fixed effects model is by using binary variables:

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \dots + \beta_k X_{k,it} + Y_2 E_2 + \dots + Y_n E_n + \mu_{it} \quad (11)$$

### c. Random effects model

In the random effects model the variation across entities is assumed to be random and uncorrelated with the predictor or independent variable included in the model. Significant difference between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastics or not (Green, 2008: 183). If there is reason to believe that differences across entities have some influence on dependent variable, then should be used random effects. An advantage of random effects is time invariant variables can be included. In the fixed effects model these variables are observed by the intercept. The random effects model,

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it} + \varepsilon_{it} \quad (12)$$

where,  $\alpha$  is the unknown intercept,  $\alpha_i$  is the unknown intercept for each entity,  $Y_{it}$  is the dependent variable,  $X_{it}$  represents one independent variable,  $\beta_1$  is the coefficient for that independent variable,  $\mu_{it}$  is the error term (between entity error), and  $\varepsilon_{it}$  is within entity error.

## 4. RESULTS AND FINDINGS

### 4.1. Moderated Regression Analyses

As shown in Table 1, by analysing coefficient determination test and examining R-squared and Adjusted R-square values of all type moderator variables, it is concluded that the best moderator model applied in this moderated regression model is a Quasi-Moderator with the value of R-squared and Adjusted R-squared 22.19%-24.72%. This value is the highest both for R-squared and Adjusted R-squared.

**Table 1:** Moderator Variables

Moderator Variable	R-squared	Adjusted R-squared
The Predictor Moderator	0.0612	0.0568
A Homologiser Moderator	0.2281	0.2134
A Pure Moderator	0.2096	0.1947
A Quasi Moderator	0.2472	0.2219

### 4.2. Panel Data Analysis

To determine the best model between pooled least square, fixed effect and random effect model applied in panel data analysis, Chow Test and Hausman Test are used. Table 2 shows that probability value of cross-section F (Chow Test) and cross-section random (Hausman Test) are less than 0.01. It indicates fixed-effect model is more appropriate to be applied in this regression than pooled least square and random effect model. The regression model used to analyse the relationship between variables in this study is as follow:

$$\begin{aligned}
\text{GDP}_{it} = & 4.69 - 2.21\text{BR} - 6.79\text{RS} + 2.28\text{IN} + 7.76\text{CH} - 1.99\text{SA} \\
& - 2.04\text{MX} + 2.8\text{ID} + 1.37\text{KO} - 1.19\text{TU} + 0.1\text{GINI}_{it} \\
& - 0.01\text{FI}_{it} + 0.09\text{EDU}_{it} - 0.05\text{TO}_{it} + 0.0002\text{GINIFI}_{it} \\
& + 0.002\text{GINIEDU}_{it} + 0.004\text{GINITO}_{it}
\end{aligned}$$

As a moderator variable are multiplying result between independent variable with other independent variable, it has good chance that those two variables will be highly correlated (Allison, 2012). However, this correlation is not affected by the multicollinearity. It can be greatly reduced by centering the variables or subtracting their means as applied in this regression model. In this panel data regression, cross-section SUR or Panel EGLS model is also applied to minimize heteroscedasticity and autocorrelation problem that may exist as moderator variables used in this regression model.

Based on the Table 2, it is concluded that income inequality (GINI), financial intermediation (FI), education (EDU), trade openness (TO), and interaction of moderator variables data represent 69.50% variance in the economic growth (GDP). F-statistic value is about 33.63 or higher than F-table value 2.06, and probability value of F-statistic is less than 0.05. It means that simultaneously income inequality, financial intermediation, education, and trade openness both as independent variable and as moderator variables have significant impact on economic growth.

**Table 2: Fixed Effects Model**

<b>Dependent Variable: GDP</b>			
<b>Independent Variables</b>	<b>Fixed Effects Model</b>	<b>Fixed Effects (Cross)</b>	<b>Intercepts</b>
GINI	0.10	BR	-2.21
	2.11**	RS	-6.79
FI	-0.01	IN	2.28
	-1.99**	CH	7.76
EDU	0.09	SA	-1.99
	3.11***	MX	-2.04
TO	-0.05	ID	2.80
	-3.01***	KO	1.37
GINIFI	0.0002	TU	-1.19
	0.62		
GINIEDU	0.002		
	0.98		
GINITO	0.004		
	2.99***		
R-Square	0.716		
Adjusted R-Square	0.695		
F-Statistic	33.63		
Chow Test	4.41***		
Hausman Test	28.47***		

\*indicates the variable is significant at the 0.1 level

\*\*indicates the variable is significant at the 0.05 level

\*\*\*indicates the variable is significant at the 0.01 level

Table 2 also shows that only income inequality and education have positive and significant relationship with economic growth (GDP) in emerging countries during period 1990-2013, while financial intermediation and trade openness have negative and significant relationship. In addition, in this regression model only trade openness has significant effect on moderating the relationship between income inequality and economic growth, whereas financial intermediation and education do not have any significant effect.

**Table 3:** Regression Analysis for BRICS and MIST Countries

Country	GINI	FI	EDU	TO	GINI FI	GINI EDU	GINI TO
Brazil	0.501	-0.274	-0.059	-0.239	0.020	0.022	0.005
	0.229	-1.739*	-0.052	-0.199	1.834*	0.231	0.056
Russia	-2.473	-0.289	0.797	-0.173	-0.015	0.052	-0.036
	-0.956	-3.286***	4.482***	-1.962*	-0.814	1.127	-2.183**
India	-7.399	1.158	-4.975	-0.623	0.111	-0.442	-0.087
	-2.544**	1.814*	-2.847***	-0.842	1.729*	-2.413**	-1.236
China	1.632	-0.056	0.023	0.117	-0.004	0.058	-0.025
	1.543	-1.017	0.070	1.166	-0.918	1.757*	-2.040*
South Africa	-6.444	-0.259	7.816	-0.958	0.013	-0.401	0.059
	-1.609*	-0.891	1.631*	-0.981	0.829	-1.591*	1.029
Mexico	4.562	0.122	-5.877	3.258	-0.026	0.633	-0.363
	1.086	0.192	-1.634*	2.467**	-0.363	1.553*	-2.486**
Indonesia	1.718	0.166	1.112	1.153	0.013	0.111	0.129
	1.113	0.543	1.401	2.014*	0.537	1.544*	2.667***
South Korea	-3.936	-0.490	2.961	-4.229	-0.043	0.274	-0.386
	-1.805*	-2.131**	3.134***	-4.775***	-1.974*	3.047***	-4.744***
Turkey	3.516	-0.260	0.265	0.032	0.060	-0.166	0.091
	0.712	-1.083	0.913	0.111	0.688	-1.265	0.651

\*indicates the variable is significant at the 0.1 level

\*\*indicates the variable is significant at the 0.05 level

\*\*\*indicates the variable is significant at the 0.01 level

Table 3 shows that in Brazil financial intermediation has positive and significant effect on moderating income inequality and economic growth relationship. It indicates more inequality in Brazil relatively having more developed financial intermediation, it promotes economic growth. However, partially financial intermediation has negative and significant effect on economic growth. In Russia, education has positive and significant effect on economic growth, while financial intermediation and trade openness have negative and significant effect. In addition, trade openness as moderator variable has negative and significant on moderating income inequality and

economic growth relationship. Education attainment that is relatively high in Russia has promoted economic growth for past decades. However, declining of commodity price and worsening in geopolitical tensions has hampered economic growth and increased income inequality.

In India, income inequality and education have negative and significant impact on economic growth, while financial intermediation has positive and significant on economic growth. Moreover, education has negative and significant effect on moderating income inequality and economic growth. Tertiary education attainment that is relatively low in India compared to other EMCs has increased income inequality though economic growth has expanded. In China, education has positive and relatively significant effect on moderating the relationship between income inequality and economic growth, while trade openness has negative impact. Access to tertiary education that increases sharply in China has accelerated economic growth though income inequality has increased too. In South Africa, education has positive and significant effect on pushing economic growth slightly although income inequality is still high.

In Mexico, trade openness has negative and significant impact on economic growth expansion when income inequality increases. While in Indonesia education and trade openness have positive and significant effect on accelerating economic growth though income inequality increases slightly. In South Korea, with very high tertiary education attainment, economic growth has expanded fast and income

inequality is relatively stable. However, financial intermediation and trade openness have negative and significant effect on moderating the relationship between income inequality and economic growth. In Turkey, all variables do not have significant relationship with economic growth.

## **CONCLUSION**

In this paper, the relationship between income inequality and economic growth is analysed. The relationship is analysed more details by evaluating the role of income inequality determinants as mentioned by Cornia and Court (2001) including financial intermediation, education, and trade openness as moderator variables. Moderated regression analysis (MRA) with quasi-moderator variable and panel data analysis with fixed effect model are used to analyse these relationships.

Income inequality, financial intermediation, education, trade openness and interaction of moderator variables data represent 69.50% variance in the economic growth (GDP). Based on F-statistical test, all components of variables simultaneously have significant effect on economic growth. Based on statistical hypothesis results, income inequality and education have positive and significant relationship with economic growth, while financial intermediation and trade openness have negative and significant relationship. Trade openness also has positive and significant effect on moderating income

inequality and economic growth relationship, while financial intermediation and education do not have any significant effect.

Based on statistical hypothesis results, to accelerate economic growth with low income inequality in emerging market countries especially BRICS and MIST countries, government or policy makers in these countries should increase credit distribution especially to poor people and build advanced financial systems to prevent or minimize financial crisis impact. They also should give better quality and more equitable spreading education to all people because it can eradicate skill differentials which decrease wage differentials and enhance higher labour productivity. In addition, they should protect local products that do not already compete in international market by applying taxes, customs, tariffs or trade barriers policies.

There are some suggestions that should be applied to get better and more accurate results in the next research. In this paper three moderator variables used to analyse the relationship between income inequality and economic growth. Coefficient of determination value about 69.50% indicates that there are still some variables which are not included in this paper. So in the next research, it is suggested to use another factor for example as mentioned by Barro (2000) that include political economy, socio political unrest, saving rates and technological change.

## REFERENCES

- Aghion, P., and Bolton P. (1992). Distribution and Growth in Models of Imperfect Capital Markets. *European Economic Review*, Volume 36, pp 603-611.
- Allison, P. (2012). When Can You Safely Ignore Multicollinearity?. <http://statisticalhorizon.com/multicollinearity>. (last accessed 8 February 2017).
- Banerjee, A.V. and Newman A.F. (1993). Occupational Choice and the Process of Development. *Journal of Political Economy*, Volume 101, No. 2, pp 274-298.
- Barro, R. (2000). Inequality and Growth in a Panel of Countries. *Journal of Economic Growth*, Volume 5, No. 1, pp 5-32.
- Benabou, R. (1996). Inequality and Growth. NBER Working Paper, No. 5658, pp 1-50.
- Braun, D. (1991). *The Rich Get Richer: The Rise of Income Inequality in the United States and the World*. Chicago: Nelson- Hall Pub.
- Chenery, H. and Syrquin, M. (1975). *Patterns of Development 1950-1970*. Published for the World Bank by Oxford University Press.
- Cornia, G. A. and Court, J. (2001). Inequality, Growth and Poverty in the Era of Liberalization and Globalization. UNU / WIDER Policy Brief, No. 4, pp 1-38.
- Dollar, D. and Kraay, A. (2001). Trade Growth and Poverty. World Bank Policy Research Working Paper, No. 2615, pp 1-45.
- Forbes, K. J. (2000). A Reassessment of the Relationship Between Inequality and Growth. *American Economic Review*, Volume 90, No. 4, pp 869-887.
- Frankel, J. A. and Romer, D. (1999). Does Trade Cause Growth?. *American Economic Review*, Volume 89, No. 3, pp 379-399.
- Galor, O. and Zeira, J. (1993). Income Distribution and Macroeconomics. *The Review of Economic Studies*, Volume 60, No. 1, pp 35-52.
- Gillis, M. (1992). *Economics of Development*. USA: W.W Norton,
- Green, W. H. (2008). *Econometric Analysis*. USA: Prentice Hall.

- ISCED (2012), International Standard Classification of Education ISCED 2011, UNESCO, Institute for Statistics, Canada. (<http://www.uis.unesco.org/Education/Documents/isced-2011-en.pdf>)
- Joseph, J. V. (2010). Pooled Regression. <http://joyjoseph.com/pooledreg.htm>.
- King, R. G. and Levine, R. (1993). Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics*, Volume 108, No. 3, pp 717-737.
- Kuznets, S. (1955). Economic Growth and Income Inequality. *American Economic Review*, Volume 45, No. 1, pp 1-28.
- Kuznets, S. (1963). Quantitative Aspects of the Economic Growth of Nations: VIII Distribution of Income by Size. *Economic Development and Cultural Change*, Volume 11, No.2, Part II, pp 1-80.
- Lewis, W. A. (1970). *Theory of Economic Growth*. New York: Harper and Row.
- Ning, G. (2010). Can Educational Expansion Improve Income Inequality in China? Evidence from the CHNS 1997 and 2006 Data. *IZA Discussion Paper*, No.5148, pp 1-36.
- OECD. (2011). [http://www.oecd-ilibrary.org/sites/sti\\_scoreboard-2011-en/06/06/index.html?contentType=&itemId=/content/chapter/sti\\_scoreboard-2011-60-en&mimeType=text/html&containerItemId=/content/serial/20725345&accessItemIds=/content/book/sti\\_scoreboard-2011-en](http://www.oecd-ilibrary.org/sites/sti_scoreboard-2011-en/06/06/index.html?contentType=&itemId=/content/chapter/sti_scoreboard-2011-60-en&mimeType=text/html&containerItemId=/content/serial/20725345&accessItemIds=/content/book/sti_scoreboard-2011-en).
- Samanta, S. K. and Heyse, A. (2006). Income Distribution and Economic Growth in Developing Countries: An Empirical Analysis. *Indian Journal of Economics and Business*, Volume 5, No.2, pp 243-254.
- Samuelson, P. A. and Nordhaus, W. D. (2005). *Economics*. Boston: 18. Edition, McGraw-Hill/Irwin.
- Sharma, S., Durand, R. M. and Gur-Arie, O. (1981). Identification and Analysis of Moderator Variables. *Journal of Marketing Research*, Volume 18, No.3, pp 291-300.
- Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, Volume70, No.1, pp 65-94.

- Swan, T. W. (1956). Economic Growth and Capital Accumulation. *Economic Record*, Volume 32, No. 2, pp 334-361.
- Tabassum, A. and Majeed, M. T. (2008). Economic Growth and Income Inequality Relationship: Role of Credit Market Imperfection. *The Pakistan Development Review*, Volume 47, No.4, Part II, pp 727-743.
- Todaro, M. P. and Smith, S.C. (2012). *Economic Development*. 11. Edition, Addison Wesley.
- UNDP. (2013). *Humanity Divided: Confronting Inequality in Developing Countries*, UNDP Bureau for Development Policy. USA. (<http://www.undp.org/poverty>).
- Unu-Wider. (2015). *World Income Inequality Database*. <https://www.wider.unu.edu/database/world-income-inequality-database-wiid34>, (last accessed 25 February 2015).
- World Bank. <http://data.worldbank.org/indicator>, (last accessed 25 February 2015).







**ISBN: 978-625-7279-47-5**