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**15th RSEP International Conference on Economics,  
Finance & Social Sciences**

## **Conference Proceedings BOOK OF FULL PAPERS**

Editors

Assoc. Prof. M. Veysel Kaya  
Dr. Patrycja Chodnicka-Jaworska

ISBN: 978-605-80676-8-4/December 2019

UNIVERSITY OF WASHINGTON ROME CENTER  
26-28 November 2019  
Rome, ITALY

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## **Language and Business Two Meeting Roads: The Case of Business E-mails as a New Emerging Discourse**

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### **Abstract**

In daily life one devotes a lot of time to communicating and interacting. We can communicate in several ways as in reading, writing, gesturing, and drawing. Actually, we can distinguish two different forms of communication, and language is a powerful means to express our thought and knowledge to other people. Language serves both business and communication; therefore, persons who have strong oral and written communication skills are highly demanded. Indeed, the ability to communicate increases productivity, it allows the perception of stakeholders' needs whatever the function is: working for an employer, investing in a company, buy or sell products; communication skills determine the success of business. E-mails which are part of computer-mediated-communication have brought their own emergent forms of discourse that need to be described and understood. The purpose of this study is to analyze the characteristics of e-mails used in business communication. This newly emerged medium is a new type of discourse; it is developing its own language. Electronic language is regarded as a new variety with specific features; therefore, the researcher wonders how e-mail as a new emerging communicating genre affects the choice of the language. The analysis based on the corpus which consists of 100 e-mails has revealed the use of a wide range of abbreviations and syntactic reductions. In fact, the function which the language serves is considered as a feature of variation in language use, this is the case of e-mails.

**Keywords:** Business, communication, discourse, computer mediated communication ,e-mails , communication skills.

### **Introduction**

English has become the international lingua franca, this is due to geo-historical reasons and social cultural ones. Actually, English as a tool for research explains the expansion and the domination over different domains as international business, technology, and science. Cyberspace is another field where English is present and this is due to early developers of computational machines' nationality. In fact, language is hugely important in business environment. It is necessary to speak a common language; the choice has fallen on the English language because it is also the trade language of the business world.

As a matter of fact, language is the most important means of human communication and communication is the most important function of language. Business is the common platform where both communication and language are great enabler. Ten years ago, companies were not as global as they are now; however, with the advances in technology all companies are able to be global and have a global audience. Business communication in the company concerned is mainly performed through e-mails. The analysis of the corpus will reveal the language characteristics of this new channel for communication which is far to be just a new medium, but a new style of communication as well.

### **English Language as a Lingua Franca**

English has been chosen to the language of communication that takes place between people who do not share the same mother tongue. This situation is due to several features that are stated as follow:

### *The geo-historical and the socio-cultural reasons*

The British empire controlled the seas during the 19th century. If one goes back to history, one finds that by the beginning of this century, Britain became the world leading industrial and trading nation. Britain's economic growth was beyond the reach of any nation. Actually, most innovations of the Industrial Revolution were of Britain origin. Similar development took place in America which had overtaken Britain as the world's fastest growing economy. Consequently, when the American research is added to the British one, it results in the scientific and technological dominance. In fact, the output in these fields were written in English in the period between 1750/1900. In this respect (Cooks, 2008, p.200) declares: "English is a requirement for scientific writing and reading: few scientists can make a proper contribution to their field with having access to English, either in person or through translation of one kind or another". The linguistic consequences of these achievements were far-reaching. Indeed, the new terminology of technological and scientific advance had an immediate impact on the language; tens of thousands of new words were added to the English lexicon, and more importantly, most innovations are originated from English speaking countries. Therefore, those who wished to learn about them would need to learn English. This language is considered as a symbol of modernization, a key to expanded functional roles and unavoidable arm of success and mobility. English language embraces people from different countries, they need to learn the hyper-central language and this is explained by (Cook, 2008, p. 191): "The reasons for acquiring the hyper-central language are the global demands of work; international business becomes difficult without English and the native speaker is only one of the types of people that need to be communicated with."

### **English and Internet**

The domination of cyberspace by English is not only the result of the global expansion of English as a lingua franca, but the historical development as well. The early developers of computational machines were English speakers. In fact, Charles Babbage, the inventor of the analytical engines, and Alan Turing, the inventor of the Universal engines, were both English. Besides, the development of twentieth computers has been almost an American affair.

Computer languages have inevitably influenced by the mother tongue of programmers and this has largely been English. (e.g. the US computer entrepreneur Bill Gates). In addition, the Internet was an outgrowth of the Advanced Research Project Agency Network(ARPANET), the network developed by the US Department of Defense.

The communicative transaction which occurs through the use of two or more networked computers is embedded under an umbrella term: Computer-Mediated-Communication (CMC); actually, this term was coined by Hiltz and Turoff (1978) in their classic study of computer conferencing. The term has been confined to electronic communication; however, other researchers include communication via bulletin in boards, Internet Relay Chat (IRC), chat-rooms and E-mail; this latter is widely used in personal and business communication.

### **Language, Business and Communication**

The word "communicate" comes from the Latin verb "communicare" that means to impart, to participate, to share or to make common. Therefore, communication is defined as the process of portraying or transmitting a message from one person to another. Robert Park (2012) defined communication as a network which makes agreement possible besides understanding among individuals. Indeed, communication is an active process influenced by all the complexities and ambiguities of human behavior. In this respect (Clampitt, 2005, p 8) notes: "We actively construct meanings within unique vortex that includes the word used, the context of the utterances, and the people involved".

Business communication includes basic features, which are crucial for an effective communication process. Indeed, business in isolation will be restricted to unshared stagnant business concept. If we lived in the world without language, we would be limited to non-verbal communication. Actually, communication through a language can be infinite and can transmit huge information. Language makes a communication system wider in scope and able to accomplish very complex communication goals. It is important to mention that communication

is a basic social process, it is essential to the growth and development of the individuals, to the formation and continued existence of groups, and the interrelations among groups; these are characteristics which exist in business organizations. In fact, they bring individuals together to work for a common cause, form them into groups of departments, and provide formal communication links among the different groups. However, business in isolation would be meaningless without communication. Creating new enterprises, selling a product, opening a new outlet or developing a new market, these are all forms of communication with a given audience. The human tendency to communicate gave birth to business conduction and a vice versa relationship. All forms of communication are concretized through business; therefore, business, language, and communication are closely linked. This latter is the backbone of business. Actually, communication itself is not stagnant and has been subjected to changes over time. Organizations are exploring the impact and the development of Information Technology (IT), now usually known as Information and Communication Technology. Many organizations are more aware of the use and development of computing. Internet-based communication is used to refer to all sorts of communication that take place via the internet computer network. It is essentially a human communication that people engage into for different purposes and through different modes; either synchronous or asynchronous communication. In this vein, (Crystal, 2001, p.p. 134,135) explains: "Individuals contributions to a group are saved and distributed as they come in, which may be at any time and separated by any period of time (...) whereas in face-to-face communication pragmatic effects are typically immediate and direct, in an asynchronous list, the effect of contribution is preserved over an indefinable period of time.", this is the case of e-mail.

### **Business Communication through E-mails**

Electronic mail is electronically transmitted via computer; the transmission of the data takes few seconds or minutes; this depends on the size that is weighed in bytes. A major element of e-mail is its asynchrony as mentioned above, an e-mail can be produced, sent and read anytime from an internet connected computer. Aside from its use in direct interpersonal communication, it is also used for communication among groups that share common interests or goals.

E-mails, as an example of electronic medium, has assumed functions which are in some cases associated with spoken language and in other cases associated with formal writing. However, in order to better assimilate the linguistic features of e-mails, it is important to take into consideration the relationship between writing and speech as a continuum and not as a dichotomy (Crystal, 2004).

### **Method**

The researcher collected a corpus of one hundred business e-mails for a discourse analysis written in English by twenty Algerian employees at different organizational level. The language of business e-mails has been researched from different perspectives providing different views on this emerging communication genre. In this study, the analysis of the corpus is based on Baron's and Gimmenez's methodology.

### **Data Analysis**

The analysis is based on 100 business e-mails, many features are taken into consideration as the use of upper and lower cases, abbreviations, syntactic reductions and deletions.

Each e-mail contains a "header", a "body" and a "signature", in fact the structure of an e-mail message follows a fixed pattern of functional features that are designed by the mailer software. The body is the main written part of the e-mail; the presentation of the text is usually less formal than in a letter, some features are exhibited to reveal this difference, although it concerns business matters. Many items used makes this genre less formal.

Through the analyzed corpus, it is noticed that among the 100 e-mails there is no case where the use of upper or lower case letters is global. Correct upper and lower case letters is found in 75 e-mails, this result shows that both upper and lower case letters are used appropriately. Actually, capital letters are used for names of people, places and organizations. Inconsistent use of capitalization and lower case is spot in 25 e-mails. Indeed, 200 words are inappropriately written in terms of capitalization. Consequently, 30% of these words, lower cases are used instead of upper case letters. Regarding upper case letters, they are incorrectly used in ten words, which means 5%. The upper case use for emphasis is spot in 130 words, 65%. Upper case letters are used in order to

emphasize on a given information or show that the instruction is of great importance. In speaking, we transform intentions, thought, and feelings into fluently articulated speech by the combinations of tones units and prosodic units. We show and transmit a mood, intentions and a state of mind. We need to exhibit the same features in electronic communication, the upper case conveys intonation. The table below illustrates these data:

**Table 1:** Inconsistent use of capitalization and lower case

Case	Number of words	Percentage %
Lower case instead of upper case	<b>60</b>	<b>30%</b>
Upper case instead of lower case	<b>10</b>	<b>5%</b>
Upper case for emphasis	<b>130</b>	<b>65%</b>

The use of abbreviations is a frequent case and allowed in business e-mails. Based on the analyzed corpus, they are used by the employees of the company since they share the same discourse community i.e. the world of business. Three main categories are revealed: consonant spelling which is an economic means in computer mediated communication; indeed, consonants usually have more semantic value than vowels, acronyms, which stand for items related to the company's activities, and letter and number homophones. These latter are shortening that can be done through a single letter which phonological content equals a word eg: U You. All these forms are related to the spelling of the word; the frequency of use is illustrated by the table below:



**Table 2:** Different kinds of abbreviations

Different kinds of abbreviations	Number of words	Percentage %
- Consonant spelling	<b>114</b>	<b>47,30%</b>
- Acronyms	<b>79</b>	<b>32,79%</b>
- Letters and number homophones	<b>48</b>	<b>19,91%</b>

Through the analysis one notices that mediated computer communication imposes a specific style of writing, it shapes the characteristics of such a medium. Actually, consonant spelling is the most frequent kind of abbreviations, over 241 words we revealed 114 cases, acronyms are repeated in use 79 times, and letter and number homophones, there are 48 cases among 241 words.

Abbreviations are used when they are shared by members of the same discourse community, this is necessary to understand a message full of abbreviations. The employees share the same activities and the same means of communication; however, they could have difficulties to decode an e-mail full of abbreviations, in this case they can consult the electronic dictionary provided by the company. The use of abbreviations compensates for not being able to speak fast enough, this implies that electronic medium requires speed.

Concerning grammatical features, they are represented by syntactic reductions and modals use. Another feature of economy represented in the corpus is lack of coordinating or subordinating conjunctions. This result in asyndetic sentences. They are considered as a feature of economy, it resembles brief notes. There is a case of 45 asyndetic sentences: the conjunctions are deleted and substituted with an appropriate punctuation which implies the function. In fact, linking words are omitted; yet, the messages remain understandable since the receiver can fill in the missing semantic information. This phenomenon is repeated in 40 e-mails.

Subject pronouns deletion is the most frequent, 45 cases have been revealed in the corpus. Censoring the “I” avoid personal involvement and shows the group mind in achieving business affairs. The examples below explain the case:

-----Will keep you informed

-----Will devote an appropriate code

-----have checked with my colleague

In order to make the information coherent and relevant, we need conjunctions, these latter show the objective of each statement in business. Coordinating conjunctions are the most frequent, 50 cases are revealed since sentences in e-mails are of simple sequences. Subordinating conjunctions characterize the informational discourse, they are used in 30 e-mails. They are considered as markers of stance, justification for action or conditions for actions. All these situations are frequent in business and expressed in the corpus selected for this analysis.

Modal verbs in business e-mails selected for this study are headlined under three categories: modals to express permission/possibility/and ability; obligation and prediction. All these actions are prominent in a business context. In fact, modal verbs alleviate the mood of a sentence and help the employees to sound polite and diplomatic, they also show openness to other people ideas. These features may flourish the relationship and facilitate any business deal besides other important features as having a business plan, creating short term goals and willing to change.

Regarding discourse, the most typical modals of conversation according to Biber (1999) are can/could as well as will and would. The modal verbs that are equally common in use are prediction modals and permission/possibility/ability modals, the frequency is 44% and 36% respectively. The less frequent are obligation/necessity modals as it is illustrated in the table below:

**Table 3:** Modal verbs in e-mails

Modals	Number	Percentage %
Permission/possibility/ability		
- Can	<b>31</b>	<b>31%</b>
- Could	<b>13</b>	<b>13%</b>
- Prediction		
- Will	<b>27</b>	<b>27%</b>
- Would	<b>9</b>	<b>9%</b>
Obligation/ Necessity		
- Have to	<b>3</b>	<b>3%</b>
- Must	<b>2</b>	<b>2%</b>
- Should	<b>15</b>	<b>15%</b>

The analysis based on 100 business e-mails has exhibited some new features that characterizes the e-mail comparing to business letter. The immediacy of the electronic channel has imposed the use of certain language exponents. A wide range of abbreviations is frequent. The syntactic reductions represented by the deletion of subject pronoun and conjunctions as well. Actually, language copes with new functions, this is the case of computer based media. In this respect, e-mail has assumed function which associate spoken language and formal writing.

## **Conclusion**

English is the language that makes the world go round. The importance of a language relies on the domains where it is used. Actually, English language controls vital knowledge about the miracles of science and technology. The world of business does not exclude the use of English because it is conducted on a global scale. Employees in international companies must be able to work together and communicate effectively, technology is a great enabler. The analysis based on the corpus that consisted of 100 e-mails reveals language features that make up the pattern of business e-mails reveals language features that make up the pattern of business e-mail, it also shows that the electronic channel has an impact on the choice of the language exponents. A wide range of abbreviations that is represented in letter and number homophones besides consonant spelling. Syntactic reductions as the deletion of subject pronoun and conjunctions have a space in these e-mails. Indeed, the function which the language serves is considered as a factor of variation in language use. E-mails as a new emerging medium is a new type of discourse; it is a discourse that is developing its own language, a language that is suitable for the immediacy of real time written communication.

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## **Pre-Service Teachers' Views about the Importance of Technology in Science Teaching: A Case Study in Biology Education**

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### **Abstract**

The changing needs of the society depending on the information and communication technologies have touched almost every piece of our life. Teachers have to be well trained to meet contemporary teacher standards. Not only the qualified teachers should be equipped with the subject matter of the field and with pedagogical information, but also they should have expertise in technological information. Pre-service teachers who have expertise in biology teaching regarding the interaction between educational technologies, are going to be one of the most important and essential investments for the humanity. In this respect, the major concern of this research is to observe the views of pre-service teachers' about the importance of technology in biology teaching. The research is conducted with the microteaching method with integrated technology applications in biology lessons. The research method is based on case study method with content analysis technique. The data was collected from semi-structured interview form. Before the application, the importance of technology was asked to the participants. The views were coded and categorized into five groups: effective learning, laboratory applications, integrated to the era, information and time. After the application, the advantages, disadvantages and difficulties of the technology were asked in detail and all sections were all categorized like as the beginning groups and more. In the findings part all coded answers with frequency of pre-service teachers were given with tables and some examples of the views are also presented. As a result of the research, benefits of technology integration in the teaching process were identified and the pre-service teachers were all aware of the advantages, importance and necessity of these technologies for biology lessons.

**Keywords:** Educational technology, biology teaching, importance

### **Introduction**

The changing needs of the society depending on the information and communication technologies have touched almost every piece of our life. Teachers have to be well trained to meet contemporary teacher standards. Not only the qualified teachers should be equipped with the subject matter of the field and with pedagogical information, but also they should have expertise in technological information. Information and communication technologies can lead to significant educational and pedagogical outcomes in the schools, and bring major benefits to both learners and teachers (Jonassen 2006; Webb,2005). Pre-service teachers who have expertise in biology teaching regarding the interaction between educational technologies, are going to be one of the most important and essential investments for the humanity. The introduction of educational technologies into classroom settings, teacher education has faced the challenge of preparing pre-service teachers for successful integration of educational technologies into their teaching and learning practices (Sang, Valcke, Braak& Tondeur, 2010). It is to ensure that as a necessity of the era technology use is very important in accordance efficient educational environments. Studies have indicated that when teachers believe technology uses are valuable, they are more likely to incorporate those uses into their practices (Ottenbreit Leftwich, Glazewski, Newby & Ertmer, 2010) and it plays a critical role in general instructional practices (Pajares, 1992) as well as specific technology integration practices (Ryba & Brown, 2000). Effective teacher preparation is a requirement and it is an important factor for pre-service and in-service teachers in education (Becta, 2004, Jimoyiannis & Komis, 2007). When the common technologies in education are examined after the millennium, educational materials, smart (interactive) board, digital experimental instruments, Web 2.0 tools, interactive educational tools, animation and simulations could be some examples. As a result of these tools uses showed that teachers conducted the lesson more effectively and created an active learning environment for students. Thus the



students' motivation was increased and they were affected positively in learning process (Armstrong et al., 2005; Bell, 2002; Brown, 2003; Glover, Miller, Averis & Door, 2007; Higgins, Beauchamp & Miller, 2007). In this respect, the major concern of this research is to observe the views of pre-service teachers' about the importance of technology in biology teaching.

#### **Method of the research**

The research is conducted with the microteaching method with integrated technology applications in biology lessons. Allan(1966) defined microteaching is a teacher training programme which reduces the teaching situations to a simpler and more controlled encounter achieved by limiting the practice teaching to a specific skill and reducing time and class size (Kumar, 2016). Case study is an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a "real life" context. (Simons, 2009: 21).

#### **Participants of the research**

The participants of this research are thirty-nine pre-service biology teachers who are affiliated to pedagogical formation certificate program for biology in one of the university in Turkey.

#### **Data Collection and Analysis**

The data have been collected via semi-structured interview forms before and after the applications. All data have been submitted to ATLAS.ti package program. ATLAS.ti is one of the qualitative data program. As a result of this the data were coded and categorized in tables.

#### **Findings and Results**

The findings were observed into two sections: Before the microteaching applications and after the microteaching applications.

Before the application, the importance of technology was asked to the participants. According to the views of them, they were coded and categorized into five groups: effective learning, laboratory applications, integrated to the era, information and time. The frequency of the codes (f=89) was shown in Table 1.

According to the answers of the pre-service teachers', they pointed out the importance of technology in biology classes especially on effective learning (f = 62). In this category, it was emphasized that the technology enables students to ensure permanent learning (f = 16), presenting visual materials (f = 15) and facilitating the concretization of some abstract concepts in biology in particular (f=14). They also stated that with the use of different technologies in biology courses, students learn subjects more easily (f = 3), attract the students attention to the lesson (f = 3) and provide a learning environment by doing (f = 3). In addition, they stated that the content of the course was enriched (f = 2) and the technologies make the learning process fun (f = 2).



**Table 1 :** The distribution of codes and categories related to the importance of technology in biology teaching

CATEGORIES	CODES	FREQUENCY	TOTAL
EFFECTIVE LEARNING	Ensuring permanent learning	16	62
	Presentation of visual materials	15	
	Concretization	14	
	Easy learning	3	
	Attracting students' attention	3	
	Learning by doing	3	
	Preparation of presentation	2	
	Making the learning process fun	2	
	Material design	2	
LABORATORY APPLICATIONS	Enriching content	2	11
	Conducting experiments	4	
	Discovering new creatures	3	
	Using it in experiments	2	
ADAPTATION TO THE ERA	Conducting research	2	8
	Tracking the developments	7	
INFORMATION	Adaptation to the era	1	6
	The emergence of new information	3	
	Accessing to information	2	
TIME	Sharing the information	1	2
	Good evaluation of time	2	

According to this category, some examples given by pre-service teachers are as follows:

B1: *"In order to better explain biology, we need to connect biology with everyday life. This can be quite difficult in direct narration. Experiments or slide presentations with using technology provide a better understanding of the subject matter and make it permanent."*

B4: *"For example, when students are told about the structure of cells, retention cannot be achieved if information is transmitted only through verbal expression. To prevent this, teaching biology becomes more fun if it is supported by computers, visual presentations, animations, or technology."*

B10: *"... Since most topics in biology are easily forgettable, the persistence of this can be achieved by transferring them to the student by using technology..."*

B25: *"Biology is very suitable for the use of technology in abstract information to made the subject into concrete. For example, showing an animation is very effective while describing intracellular life and the cell transforms. This makes learning easier and more permanent. It also attracts student interest into the course"*

The participants also stated the importance of technology in biology classes in laboratory applications (f = 10). Accordingly, they emphasized the necessity of technology in conducting experiments (f = 4), discovering new creatures (f = 3), conducting research (f = 2) and using them in the laboratory (f = 2).

Some examples about this category as below:

B23: *"Since biology is a more experimental and observational course, it is important to use technological methods in the laboratory"*

B37: *"Biology is one of the science lessons that constantly evolving and changing. It is an area where visual and auditory materials should be used. At this point, technology should be utilized. Much more effective applications can be made by using technological test materials in the laboratory."*

Third category, the integration of the era, addressed the codes of tracking the developments (f=7) and adaptation to the era (f=1). The related answers of the participants as below:

B13: *“Technology is a requirement for the advancement of biology. Because the use of technology is very important for the development of our field...”*

B15: *“I think technology is essential in biology teaching. Because our field is developing and progressing day by day. In this case, we will be able to adapt to our age with technology more permanently.”*

Pre-service biology teachers emphasized the technology's importance in biology courses; they have a role in the emergence of new information (f= 3), accessing to information (f= 2) and sharing information (f= 1). Some of the statements given by the pre-service biology teachers regarding the combination of coded expressions under the information category (f = 6) are as follows:

B11: *“...Easy access to information through technology accelerates the process of turning to new research.”*

Pre-service biology teachers also mentioned the importance of using technology in biology teaching to evaluate the time well (f = 2). The statements given by them are as follows:

B6 : *“...Teaching some abstract subjects using technology reduces time loss and enables effective learning as soon as possible”*

After the microteaching application, the advantages, benefits, disadvantages and difficulties of the technology were asked to the participants in order to define the importance of technology in biology teaching.

In accordance with the answers about the advantages of technologies given by participants were coded and categorized in Table 2 (f=88). In this table the categories names were created as the same as Table 1. The most mentioned category was again found as the effective learning (f=57). And respectively the other categories were time (f=11), information (f=10) and adaptation to the era (f=3).

**Table 2:** The distribution of codes and categories related to the advantages of technology in biology teaching

CATEGORIES	CODES	FREQUENCY	TOTAL
EFFECTIVE LEARNING	Ensuring permanent learning	14	57
	Attracting students' attention	13	
	Easy learning	10	
	Presentation of visual materials	6	
	Making the learning process fun	6	
	Activating students	4	
	Concretization	2	
	Easy teaching	2	
TIME	Saving on time	11	11
INFORMATION	Fast access to information	6	10
	Updating the information	4	
ADAPTATION TO THE ERA	Adaptation to the era	3	3

According to Table 2, pre-service teachers stated the advantages of using technology in biology lessons especially under the category of effective learning and teaching (f = 57). Accordingly, it was emphasized that the students achieved a permanent learning with the use of technology (f = 14), provided their attention the lesson (f = 13) and that the subjects were learned more easily (f = 10). In addition, it was emphasized that the use of technological tools creates visual richness in the teaching process (f = 6), the learning process becomes more fun (f = 6) and the students are more active (f = 4). It has also been stated that technology is used in relation to the concretization of some abstract subjects (f = 2), and that the use of technologies by teachers provides teachers with ease in teaching (f = 2). Some example statements are as below:

B9: "... We can make the students learn permanently by showing, using or practicing with technological tools. For example, teacher can use presentations, or can show videos or draw a graph via a smart board. Thus, the teacher can teach and the students can learn easily."

The participants also emphasized about the advantages of using technology about saving on time in lessons (f=11), fast access to information (f=6), updating the information (f=4), and adaptation to the era (f=3). Some examples of these expressions are given as below:

B15: "I find it advantageous in terms of keeping information in mind and providing permanent learning by students. Also time loss is reduced by using educational tools..."

B31: "I think it's always useful as long as we make good use of technology in the biology lessons. It takes less time to teach for the topic. It enables the student to concentrate more easily in the classroom. Students can also keep their attention at the highest level. It enables the teachers to continuously improve his / her own technological knowledge and to adapt the era."

B32: "...Using technology increases students' interest to the lesson and updating information by using technologies can provide students to learn easily and make much permanent learning. "

The benefits of educational technologies were also categorized into two sections as for the teachers and the students. As a result of the statements, the codes were shown in Table 3. According to this, they stated the benefits for students (f=72) more than the benefits for teachers (f=60).

According to Table 3, pre-service teachers emphasized the most benefits of technologies for students ensuring permanent learning (f=18), enriching the teaching process (f=15) and facilitates learning (f=14). The other benefits for teachers were emphasized mostly that saving time (f=20), attracting students' interest more easily (f=14) and making an effective teaching (f=12).

**Table 3:** The distribution of codes and categories related to the benefits of integrating technology in biology teaching

CATEGORIES	CODES	FREQUENCY	TOTAL
Benefits for students	Ensuring permanent learning	18	72
	Enriching the teaching process	15	
	Facilitates learning	14	
	Ensuring the realization of the subject	9	
	Students become more active in the classroom	9	
	Making the course more fun	7	
Benefits for teachers	Saving time	20	60
	Attracting students' interest more easily	14	
	Effective and efficient teaching	12	
	Easy use of technological instruments	7	
	Facilitating teacher's work	5	
	Understanding the necessity of technology	2	

Some examples were given as below:

B25: "We have the opportunity to present the course more vividly and visually richer by the technological products. So we have the chance to embody abstract concepts and events in the course. The student listens to the class on a material that he sees, hears or even looks at. Thus, learning takes place fully and permanently."

B40: *“It was advantageous in terms of the implementation of the lesson plan, better evaluation of time and the interest of the student during the lesson.”*

B11: *“In my opinion one of the most important benefit is that time has been saved and time has been used more effectively. For the students, learning became easier, reinforcing the knowledge better, and also helped with persistence learning. They aroused more interest than the classical methods, brought vitality to the class, they had a lot of fun.*

B29: *“It prevented the loss of time by drawing figures. The pictures with smart board make permanent understanding for students while they were imagining.”*

The disadvantages of the technology use in biology lessons were also asked to the pre-service teachers. In accordance with the answers, the codes were categorized in Table 4 and it defined as information, education, inequality, costs, technological problems and time.

Table 4: *The distribution of codes and categories related to the disadvantages of technology in biology teaching*

CATEGORIES	CODES	FREQUENCY	TOTAL
Information	Access to ready-made information	8	10
	Access the wrong information	2	
Education	Distracting students	5	8
	Passivation of teachers	3	
Inequality	Lack of equal opportunities in schools	5	5
Cost	High cost	4	4
Technological problems	Malfunction	1	2
	Radiation	1	
Time	Time loss for teachers while preparing the lesson	1	1

The participants stated the disadvantages of using technology in the teaching process, especially in terms of information (f = 10) category, in addition the others are about education (f = 8), inequality (f = 5), cost (f = 4), technological problems (f = 2) and time (f = 1) categories. Under the information category; some of the disadvantages of the technology are coded as students' access to ready-made information (f = 8), and Access the wrong information (f = 2). It was emphasized that the use of technology in the education process distracted the students (f = 8) and made teachers more passive (f = 3). In the cases where the technologies provide inequality in education because all schools in our country do not have equal opportunities (f = 5). Other statements were less about the malfunction (f=1), radiation exposure (f=1) and causes time loss for teachers while preparing the lesson (f=1)

Some of the answers of participants according to the disadvantages of technology in the teaching process are as follows:

B10: *“ ... Students can access a lot wrong information from the internet.”*

B13: *“ ...Technology can sometimes distract students very quickly.”*

B15: *“...The fact that schools in our country do not have equal opportunities can be seen as a disadvantage since it will have different effects on the learning process of the students in these schools.”*

B22: *“ ... installation of technological systems cost too much. If there is no opportunity in every school, there will be no equality in education...”*

Finally after the applications the difficulties of the technology were asked to the participants while they were presenting their lessons. Half of the participants stated that they had some troubles while they were using technology but half of them did not. According to the given troubles the statements were shown in Table 5. Problems categorizes into four sections: related to the use of Technologies (f= 9), personal problems in the use of Technologies (f=7), time problems (f=5) and physical environmental problems (f=2).

Table 5: *The distribution of codes and categories related to the difficulties of technology in biology teaching*

CATEGORIES	CODES	FREQUENCY	TOTAL
Problems related to the use of technologies	Transferring the microscope image to the screen	3	9
	Using LabQuest	2	
	Animations are usually in foreign languages	2	
	Difficult to find educational software	1	
	Lack of animations on the subject	1	
Personal problems in the use of technologies	Problems in using new technologies	4	7
	Inadequate feeling about the use of technology	1	
	Inadequate feeling about preparing animations	1	
	Inadequate feeling about preparing simulations	1	
Time Problems	Insufficient time	5	5
Physical environmental problems	Power cut-off	2	2

Some example expressions about the difficulties of the participants had on the lessons are given as follows:

B18: "I had some difficulties in transmitting the microscope image to the screen first but after I solved the problem, the result was really good. I was able to show the microscope image to the whole class at the same time."

B38: "I had some problems about finding the related animations and simulations on my subject. I have come across many animations in a foreign language which I think was a big shortcoming."

B33: "Since I have never used (or never seen) the LabQuest, I was hesitant to use it. But when I learned how to use it, I hesitated."

B25: "During the presentation, the electricity was cut off 3 times in a row. Computer and projection shut down. We reopened it every time. This resulted in a waste of time."

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## **Determination of Prospective Biology Teachers' Cognitive Structures on the Concept of Smart Board and Animation**

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### **Abstract**

The aim of this study is to determine the cognitive structures of prospective biology teachers about smart board and animation concepts by using word association test. The use of technological tools is very important in biology education to provide permanent learning and concretization of abstract concepts. In addition to the use of classical technological tools, it has been aimed to reveal the cognitive structures of prospective biology teachers' about smart board and animation concepts which are actively used in the classroom in recent years. Content analysis technique, which is one of the qualitative research methods, was used in the research. The data of the research was obtained by using Word Association Test (WAT) which was applied as pre-test and post-test to prospective teachers in instructional technology and material development course. Data were analyzed by using Atlas.ti program. The answers of the teachers were coded and categorized into the groups, the frequency and percentage tables were also formed for two concepts. In addition, pre-test and post-test frequencies were compared according to the mind map models. As a result of the research, the answers obtained from the pre-test were calculated as 113 and the post-test was 194 for smart board concept. The codes related to this concept are grouped under 3 categories; technology, advantages and education. The positive change between these categories was found in the advantages category. The answers obtained from the concept of animation were calculated 126 in the pre-test and 195 in the post-test and 4 categories were classified as function, entertainment, education and image features. According to these categories, the highest change was found in the education category. As a result of the research, it was found out that prospective teachers' cognitive structures were changed in a positive way and they all were created the related words more easily and conveniently about the two concepts.

**Keywords:** Cognitive Structure, Smart board, Animation, WAT.

### **Introduction**

In education, Ausubel's learning theory brings that the most important factor of affecting learning is the student's current knowledge and this should be uncovered and the teaching should be planned accordingly According to this theory most of the learning takes place verbally and this causes meaningful learning. (Ausubel, 1968). The other important theory about learning in education is Piaget's theory based on mental development which accepts learning as an age-related process. There are two major aspects to this theory: the process of coming to know and the stages we move through as we gradually acquire this ability. As a process of cognitive developments process interested in how an organism adapts to its environment, intelligence, and behavior is controlled through mental organizations (Piaget, 1972). In learning process, the developed cognitive structure of the individual brings him to perceive the related new information easily. In recent years, the word association tests, which are among the alternative measurement and evaluation techniques, determine the cognitive structures of the students and reveal the relationships between the concepts (Bahar, Johnstone & Sutcliffe, 1999; Cardellini & Bahar, 2000; Işıklı, Taşdere ve Göz, 2011; İstifçi, 2010; Nakiboglu, 2008; Ruiz-Primo, Li, Ayala & Shavelson, 2004). By revealing the relationships between the concepts, it is revealed whether the students provide meaningful learning in the learning process.

Determining students' knowledge structure is important for assessing what a learner knows about a domain of knowledge. The aim of this study is to determine the cognitive structures of prospective biology teachers about smart board and animation concepts by using word association test. The use of technological tools is very important in biology education to provide permanent learning and concretization of abstract concepts.



### Methodology of the research

In this study, content analysis technique, which is one of the qualitative research methods, was used. Rather than being a single method, current applications of content analysis show three distinct approaches: conventional, directed, or summative (Cohen et al,2007; Strauss & Corbin, 1990; Yıldırım & Şimşek, 2009). The participants of this research are thirty-nine pre-service biology teachers who are affiliated to pedagogical formation certificate program for biology in one of the university in Turkey. The data of the research was obtained by using Word Association Test (WAT) which was applied as pre-test and post-test to prospective teachers in instructional technology and material development course. Data were analyzed by using Atlas.ti program.

### Findings of the research

In this section, before the microteaching applications Pre-test of WAT and after the applications Post-test of WAT on the concept of animation were asked to the prospective teachers. The frequencies of the concepts were shown at Table 1 and the related concepts were categorized into four section: function, entertainment, education and, image features.

*Table 1: The frequency of pre-test and post-test on the concept of animation*

CATEGORIES	PRE-TEST of WAT			POST-TEST of WAT						
	Concepts	f	Total	Concepts	f	Total				
FUNCTION	Visual Wealth	13	31	Visual Wealth	26	85				
	Computer	8		Instructive	12					
	Animation	5		Vitalization	11					
	Attention	4		Computer	10					
	Embodiment	1		Embodiment	10					
				Attention	9					
				Creation	5					
		Presentation	2							
ENTERTAINMENT	Cartoons	24	53	Video	16	29				
	Video	10		Cartoons	5					
	İnternet	8		İnternet	4					
	Short films	3		Documentary	2					
	Games	3		Film	2					
	Film	3								
	Documentary	2								
EDUCATION	Easy Learning	7	14	Subject matter	20	64				
	Subject matter	4		Easy learning	17					
	Lesson	3		Permanent learning	11					
				Education Software	9					
				Biology	4					
		Summary of the lesson	3							
IMAGE FEATURES	3D	11	26	Animated image	9	17				
	Colorful	7		Colorful	4					
	Animated image	6		3D	4					
	Brightness	2								
TOTAL					124					195



According to the Table 1 frequency of the function category was found as a significant difference in favor of the post test. The frequency of the about the function category pre-test was  $f=31$  before the applications, the post test was  $f=85$  after the application.

The frequencies associated with entertainment category were  $f=53$  in the pre-test and  $f=29$  in the post-test. There is a regression about the related concepts about the animation due to the application. In education category the participants associated with less concepts before the applications but after the process the concepts were increased from 14 to 64.

The relationship between animation and image features was 26 in the pre-test and 17 in the post-test. In total the related concept about the animation frequency was found 126 in the pre test and 195 in the post test. As a result of the microteaching applications the prospective biology teachers had realised more about the importance about the animation as an educational technology.

The pre-test and post-test results of the percent frequency distributions of the participants' responses according to categories about animation were shown in Figure 1.

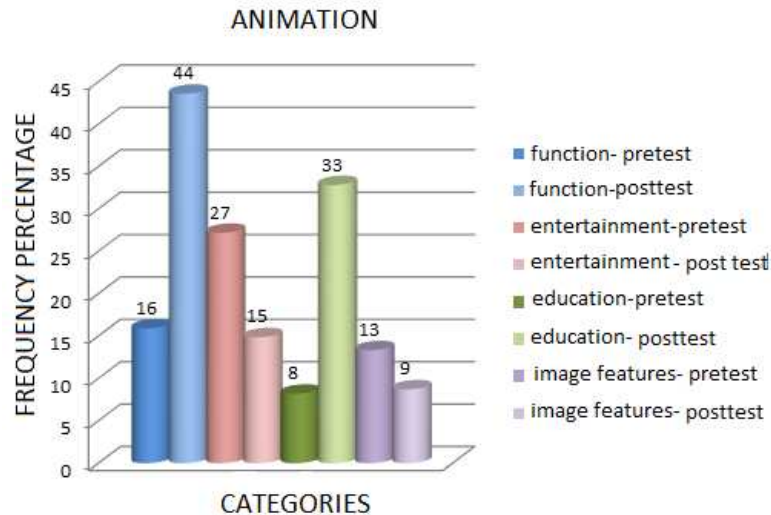


Figure 1: The frequency percentage distributions about the animation's categories

According to Figure 1, the relationship about the function category of the pre-test was reached from 16% to 44% at the end of the application. When the related concepts are examined, the increase of students who emphasize the functions directly related to education is interpreted as a positive development. While 27% of participants was associated animation with entertainment before the application, this ratio decreased to 15% at the end of the application. As a result of the integration of the concept of animation into the educational process the ratio about this category increased from 8% 33%. The percentage change in the proportions of concepts associated with animation about the image features decreased by 4% in post test. In the total of all categories, it was found that pre-test teachers associated animation with 20 concepts in pre-test and 22 concepts in post-test. According to this, it was obtained that there was not too much change in the cognitive structure of the prospective teachers about animation. Instead there was a decrease in the concepts related to entertainment and there were increase with more concepts related to education after the application.

The other applied concept about the application in WAT was smart board. Before the microteaching application pretest of WAT was applied and after the application posttest of WAT was applied to the prospective teachers. According to the answers about the related concepts were categorized into three sections: technology, advantages and education and it was showed in Table 2.

*Table 2: The frequency of pre-test and post-test on the concept of smart board*

CATEGORIES	PRE-TEST of WAT		POST-TEST of WAT	
	Concepts	f	Concepts	f
TECHNOLOGY	Technology	17	Technology	25
	Touch screen	9	Touch screen	16
	Computer	8	Projection	12
	Internet	8	Computer	10
	Smart Pen	1	Internet	9
	Tablet	1	Smart Pen	1
ADVANTAGES	Presentation	13	Easy usage	21
	Easy usage	9	Presentation	16
	Time Saving	9	Visual Wealth	11
	Visual Wealth	5	Video watching	6
	Video watching	4	Recording	6
	Drawing	1	Time saving	4
	Enjoyable	1	Remarkable	4
	Colorful	1	Enjoyable	3
			Functional	3
			Diversity	2
		Productivity	2	
EDUCATION	Lesson	6	Effective Teaching	10
	Teacher	6	Learning	10
	Student	4	Education	5
	Fatih Project	2	Lesson	3
	Class	4	Interactive	3
	Interactive	1	School	3
	High School	1	Applied Teaching	3
	Material	1	Teacher	3
Question-Answer	1	Fatih Project	2	
TOTAL		113		194

According to the Table 2, the prospective teachers were associated 6 concepts both pretest and posttest in technology category but the pre-test frequency was found as 44 and the post test was found as 73. The most related about concepts were technology and touch screen. When the advantages were examined, it has seen that the prospective teachers associated the concepts with smart board  $f=43$  in the pre-test and  $f=78$  in the post test. Easy usage and the presentation concepts were mostly associated by the participants in favor of the advantages category. In addition, when the concepts related to education were examined, the frequency increased from 26 to 43. As a result of the answers the total frequency was calculated as 113 in the pre-test and 194 in the post-test. The increase in the words related to education in terms of the concepts associated with the smart board reveals that prospective teachers have a cognitive development in terms of the smart board.

The pre-test and post-test results of the percent frequency distributions of the participants' responses according to categories about smart board were shown in Figure 2.

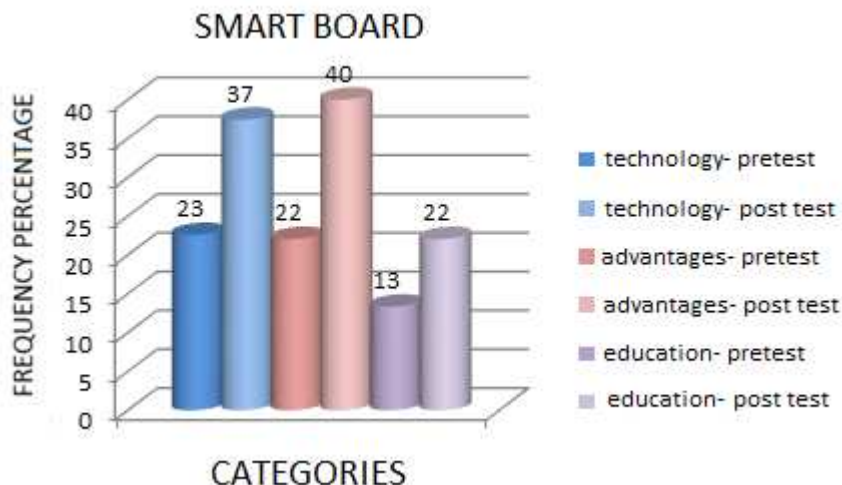


Figure 2: The frequency percentage distributions about the smartboard's categories

According to Figure 2, the relationship about the technology category concepts of the pre-test was reached from 23% to 37% at the end of the application. While 22% of participants was associated smart board with advantages before the application, this ratio increased to 40% at the end of the application. In addition, the percentage of words directly associated with the concepts related to education is around 13% in the pre-test and 22% in the post-test.

As a result of the research, it was found out that prospective teachers' cognitive structures were changed in a positive way and they all were created the related words more easily and conveniently about the two concepts.

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## **The Impact of ERP System Effectiveness on Firm Performance and The Mediating Role Of Agile Supply Chain: Evidence From Jordan**

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### **Abstract**

Even that no one can deny that the integration between information technology, management and accounting is not an option anymore in organizations, but the benefits of such costly systems implementation are still questionable. This study examines the association between the effective implementation of the enterprise resource planning systems and organizational performance by examining the mediating role of the agile supply chain. Attaining the study objectives, the population entailed all employees working in manufacturing firms listed in the Amman Stock Exchange and the significant retail firms in Jordan. The study used a purposive sample consisted of enterprise resource planning, and supply chain specialists work in firms adopt the system and implement the agile supply chain approach, a total of 367 self-administered questionnaires were distributed accordingly. The results reveal that enterprise resource planning is widely implemented in mid- and large-sized organizations. With a confidence level of 95%, they show that the effective implementation enhances the firms' performance. Also, they indicate that applying agile supply chain helps in responding successfully to the customer demands, and this confirms the mediating role of it since the relationship between enterprise resource planning and performance turns out to be stronger when implementing this approach. The study recommends consulting experts about the best practices to implement enterprise resource planning in parallel with agile supply chain methodology. Further research needs to shed lights on system effectiveness and agile benefits.

**Keywords:** ERP Effectiveness; Agile Supply Chain; Financial Performance; Manufacturing and Retail firms; Jordan.

**JEL Classification:** M40; L16; M1; L21; L25; L60.

### **Introduction**

Enterprise resource planning (ERP) is a business process management system that allows organizations to use a set of integrated applications to manage the business and automate many back-off functions related to technology, services, human resources and others (Madinis, 2011). Notably, thousands of companies are running ERP successfully worldwide. Also, there are masses of ERP vendors, but the top-rated ones are the SAP, Peoplesoft, and Oracle. For instance, SAP's market share exceeds (50%) in the chemical and pharmaceuticals industries due to its capabilities and superior functions (Stratman and Roth, 2002; Mabert et al., 2003). ERP systems are characterized by having standard business processes, real-time synchronization, ability to offer a reporting system to observers and internal auditors on a daily/weekly/monthly basis, and on-demand. Also, it is characterized by high transparency as it delivers a crystal-clear business circle that will never change and assertive preventive built-in controls developed according to supervision on duty (SOD) rule, in which no transactions can pass through the system without being approved and authorized (Curtis and Payne, 2008; Kotb and Roberts, 2011; Hsiung and Wang, 2014).

The agile supply chain is considered a modern practical approach to managing supply networks and developing flexible capabilities to satisfy fast-changing customer demand. Thus, agile supply chains are based on sensitivity to consumers demand and responsiveness to consumer's unstable needs. As Christopher (2016) explains, the agile supply chain has four primary dimensions: market sensitive; virtual supply chain; process in a generation; and network (Christopher et al., 2016). An agile supply chain is a promising integrated part with ERP solutions adopted by several firms. The approach needs to interact with several suppliers and partners to obtain the raw

materials and resources at the right time and in the right amount to bring finished goods to market (Almahamid and Hourani, 2015). Hence, firms are actively concentrating on supply chain agile approaches to improve productivity, enhance product quality, and cut down on manufacturing costs, all of which may lead to better financial performance.

The main goal of this study is to explore the relationship between ERP systems effectiveness and enhancing the organizational performance by examining the mediating role of agile supply chain approach. This research comes as a response to the gaps in the empirical literature about the study variables in the context of emerging markets (Jordanian manufacturing and biggest ten retail firms as an example), also it is a pioneer expansion to the knowledge by analysing the intervening role of the agile supply chain. These results, in turn, will answer the questions that senior management tries to figure out while approving the ERP projects that cost money, efforts and usually requires experts' consultations. Thus, this will help practitioners to apply their directions and strategic transformational changes in their organizations.

According to the conclusions and findings of the presented literature, also in response to the gaps that need to be investigated, this study aims at answering the below questions:

- Is there a relationship between ERP systems effectiveness and firm performance?
- Is there a mediating (intervening) role of the agile supply chain on the relationship between ERP system effectiveness and firm performance?

This study tries to respond to the gaps in the literature by showing the association between the effectiveness of ERP systems and organizational performance, also by evidencing the intervening role of the agile supply chain as a new approach to manage inventory and operations. Even that the ERP system has resulted in the publication of many papers, but the agile supply chain is still not widely discussed, especially as an intervening variable. Even that no one can deny that the information technology turns to be an essential part of organizations, there is a need for empirical results to support the managerial decision towards allocating high investment costs and efforts towards ERP and agile supply chain application across firms, especially in the emerging markets.

### **Theoretical Background and Literature Review**

ERP systems are complicated; this fact leads to difficulties in their implementation (Finney and Corbett, 2007). Nevertheless, the adoption of an ERP system leads to financial advantages to companies by improving overall liquidity and accounts receivable management, also, it helps managers to have systems planning, automation and read non-financial performance indicators, which, in turn, encourages them to invest in the system (Matolcsy et al., 2005; B. Wier et al., 2007; HassabElnaby, 2012 and Gholamhosein, 2010; Badewi et al., 2018).

ERP system projects must be analysed carefully due to the high deployment expenses and complications. The majority (about 70%) of ERP system failures worldwide were related to inappropriate implementations, even though, some of these failures took three years and happened in big organizations like Apple, Dell, and Whirlpool (Hsiung and Wang, 2014; Chakravorty et al., 2016). Once the benefits of the ERP were revealed, auditors started cooperating to improve their identity.

Several studies have examined the extents of ERP systems implementation concluded that the degree of adoption of such systems differs across developed and developing countries. The latter are still adopting partial or limited implementation, whereas developed countries show noticeable investments in the adoption and upgrading projects (Hasan et al., 2011; Abbasi, 2014; Jagoda, 2017; and Huang, 2001).

As an example of emerging markets, Elbardan and Ali (2012) provided initial evidence of the value-relevance of ERP to internal auditing functions in multinational organizations in Egypt. The paper deployed a case study style and nine interviews with organizations that were already using ERP systems. The results indicate that any failure to guarantee the effectiveness of internal controls in the new ERP system working environment leads to legitimacy issues for internal auditing. Thus, it is essential that the organizations manage internal auditing in the working environment of the ERP system because it is critical to the fulfilment of its responsibility towards a

sound governance system and sustaining its legitimacy. Abu-Shanab and Saleh (2014) examined the effectiveness of ERP systems from financial and non-financial perspectives using elements of the Technology Acceptance Model (TAM), which are the usefulness and ease of use of ERP systems. Then, they added other dimensions to TAM, including quality of information, quality of the system itself, and financial and operational developments. These studies in Arab developing countries support the gaps and the significance of investigating the association between ERP systems and performance, even that they provided a foundation about ERP implementation, their conclusions still not sufficient to explain a comprehensive evaluation of ERP implications especially on the performance dimensions, also none of them came across the agile supply chain.

Another study investigated the main factors that affect the success in ERP implementation, the main factors entails the organizational culture; top management support, project management, users' perception towards ERP, computers' efficiency, corporate support, training, knowledge capability, social capital, and post-training quality (Gargeya and Brady, 2005; Alberto et al., 2015; Rajan and Baral, 2015; Evenpri, 2015; Matende and Ogao, 2013; and Chou, et al. 2014). On the other hand, some new studies attempted to know the reasons behind ERP failures; they came across many factors like psychological variables (i.e., the illusion of control and selective perception) and organizational lack of strategic planning (Chakravorty et al., 2016; Zare Ravasan and Mansouri, 2016).

Regarding studies that tackled the effects of ERP systems on organizational performance, individually, the literature has examined financial and non-financial performance, but financial measurements were prevalent. The studies indicated that the adoption of ERP systems improves business performance, reduces inventory, improve customer services and improves communications (HassabElnaby, 2012; Kharuddin, 2015; Kale, 2010; Velcu, 2007; Hong, 2016; Yang and Su, 2009; Galy and Saucedo, 2014; and Madapusi and D'Souza, 2012). Forslund, 2010 also examined the association between ERP systems and supply chains, the studied ERP systems are found overall to have excellent supply chain capabilities. Most supporting systems are Oracle and iScala. Shatat and Udin (2012) pointed out that the successful application and practical usage of ERP systems could improve supply chain management performance. Several studies suggested that the adoption of ERP results in enhance organizational capability and supplier capability (Yulong Li et al., 2017; Hwang and Min, 2015; Huang and Handfield, 2015; Ekman et al., 2014 and Teittinen, 2013). Thus, all of these pieces of literature support the need to investigate the same issue in the context of developing countries (Jordan as an example), also to inquire the mediating role of agile supply chain rather than the traditional supply chain as a response to the gap in the literature. According to this, the following hypothesis is developed

*H1<sub>1</sub>: There is a statistically significant relationship between ERP effectiveness and firm performance at  $\alpha \leq 5\%$ .*

As a piece of evidence from Jordan, [Almahamid](#) (2019) developed and circulated a questionnaire to investigate the impact of an ERP system on firm performance considering the mediating role of psychological empowerment. They developed a purposive sample entails actual ERP users as they are the most relevant source of information across Jordanian commercial banks. The results signify that ERP systems significantly impact agile capabilities. Also, the results show a mediating role of the psychological empowerment. Further, Pool et al. (2018) investigate the impact of business intelligence on the agile performance in the supply chain based on the technology-organization-environment (TOE) framework. They used the structural equation modelling (SEM) for the analysis and concluded from the analysis results that the business intelligence adoption directly enhances the agile performance. Thus, the below hypothesis will be examined

*H1<sub>2</sub>: There is a statistically significant relationship between agile supply chain and firm performance at  $\alpha \leq 5\%$ .*

*H1<sub>3</sub>: There is a mediating role of agile supply chain on the relationship between ERP effectiveness and firm performance at  $\alpha \leq 5\%$ .*



Figure 1 illustrates the study model, it shows the ERP effectiveness as an independent variable, the firm performance as a dependent variable, and suggests the agile supply chain as an intervening variable in the model.



*Figure (1): The study model*

## **Study Methodology**

### ***Population and Sample***

The study population entails all manufacturing firms listed in the Amman Stock Exchange (ASE) and the most prominent retail firms operating in the Jordanian market. The manufacturing firms include Pharmaceutical and Medical, Chemical, Paper and Cardboard, Printing and Packaging, Food and Beverages, Tobacco and Cigarettes, Mining and Extraction, Electrical, Textiles, Leather and Clothing, and finally Glass and Ceramic sectors.

This study uses the purposive sample, ERP and supply chain specialists are nominated as respondents, including the production lines manager, procurements specialist, or any employee of relevance to the duties of these position holders. Thus, the unit of analysis is the employee under the mentioned criteria.

To guarantee that the respondents are consistent with the purposes of this research and to disregard any factor that could cause an error or bias that will affect the conclusions, the chosen firms should meet the following conditions.

- 1) The firm must be a manufacturing firm that is listed in ASE per the company guide. Also, top retailers are included.
- 2) The selected firm must implement the agile supply chain approach by asking key questions in the interview, explain the agile concept in the introduction, also by confirming the study scope while taking required approvals from the sampled firms.
- 3) The ERP system passed the implementation stage.
- 4) The representative respondent must have the appropriate knowledge about the variables of interest based on the relevancy of their work duties to the variables, also based on having a decent experience in the field.
- 5) More than one response from the same firm was considered.
- 6) Consent to conduct interviews has been given.

### ***Pilot Sample and Validity***

Ensuring the content validity, a pilot sampling approach has been applied by implementing "Q-sort" method. Thirty expert managers were asked to give feedback about the instrument's suitability. Based on the responses, some items were either added or amended to obtain a higher level of coherence with the Jordanian environment and then to generalize the conclusions in developing countries.

### ***Data Collection Procedure***

The data was collected between January and August 2018. First, using Google Forms, a web-based survey was designed and circulated to the targeted firms with explanation instructions after obtaining the approval to contact the employees directly. Second, 50 paper questionnaires were distributed additionally. The surveys were designed in both Arabic and English languages.

The researchers mainly distributed 367 questionnaires; the return number was 144 out of 367 (return rate was 39.23%). Out of the returned questionnaire, 111 was valid for analysis (valid rate 77.08%). During the data



collection, a routine follow-up procedure has been followed to ensure the clearness of the items and to answer inquiries.

### **Measurement Model and Questionnaire Development**

#### ***The Independent Variable: ERP Effectiveness***

Measuring the independent variable (ERP effectiveness), the information systems success model of DeLone and McLean, 2003 was adopted after a review of several alternatives (DeLone and McLean, 2003). One of the model's advantages is that it is the top-cited models one in this field (Bernroider, 2008). Furthermore, this model delivers a holistic and comprehensive vision within the organization by providing a detailed classification of system dimensions. Finally, testing the validity of the model's dimensions of ERPs' success has been confirmed (Bernroider, 2008; Abu-Shanab and Saleh, 2014; Tsai et al. 2015).

The used dimensions of DeLone and McLean (2003) are the quality of the system, service, and information, which all impact the level of user satisfaction, effectiveness and the end users' intention towards using it. Accumulatively, the higher purpose to user satisfaction will, in turn, enhance the final net benefits (DeLone and McLean, 2016). For this study, the effectiveness of ERP systems will be measured by four out of six measures; information quality, system quality, user satisfaction, and personal impact, distributed into (10) items. The remaining model dimensions will be eliminated because they are associated with the technology acceptance model (TAM).

The items evaluated using a 5-point Likert scale, where (1) represents the highest level of disagreement, and (5) represents the highest level of agreement. As exploratory research, the variable will be estimated based on factor analysis. The questionnaire items adapted from DeLone and McLean (2003) to measure the ERP's effectiveness were slightly altered to align with the Jordanian business environment. The items are also translated into Arabic language to enhance the understandability.

#### ***Demand-driven Supply Chain (Agility Supply Chain)***

The agile supply chain is about the firm's ability to meet dramatic changes in customers' needs with full consideration of the supply network. Most supply chains still suffer from a lack of processes appropriateness and gaps in methods and tools. Many researchers and practitioners have agreed that the supply chain should be agile, that is, responding quickly to volatile demand and short production life cycles. The agile supply chain approach is exceedingly vital because it does not depend on forecasting. It is designed for rapidly introducing new products, adequately reacting to rivals, and changing delivery requirements of a quantity within time limitations (Stefanovic and Milosevic, 2017).

For this study, the agile supply chain was measured using the integrated views of Qrunfleh and Tarafdar (2014) and Ralston et al. (2015) to make it more comprehensive and to fit it with the Jordanian business environment. The items were rated using a 5-points Likert scale, with (1) representing the highest disagreement and (5) representing the total agreement. As exploratory research, the variable will be analysed using the exploratory factor analysis.

#### **The Firm Performance**

As a result of growing competition and the urge for continuous funding, researchers have made tremendous efforts on inspecting ways that will enhance firms' performance. Liao and Kuo (2014) developed a measurement scale as an integrated view from three previously presented scales of a firm's performance. This scale is comprised of financial, business, and organizational performance. Liao and Kuo (2014) devoted more considerable attention to the financial performance indicators, including profitability (implicitly measured by ratios of the return on investment (ROI), return on sales, return on equity (ROE), growth of sales, and earnings per share).

For this study, as a sort of balancing mechanism, business performance will be measured by market shares, quality of products, expansion (by designing new products), marketing effectiveness, and value-added manufacturing. The questionnaire items are evident from table 4.3 in the results section.

## Results

### *The Reliability Test*

The reliability test ensures the consistency in the responses, Cronbach's alpha was examined for all variables of interest, the results exceeding the accepted cut off point of 0.70 (Pallant, 2005). Hence, the items are reliable as per Table (1) and then they are acceptable to a broader scientific community.

(1).	<b>ERP effectiveness</b>	10 questions	0.940
(2).	<b>Agile supply chain</b>	10 questions	0.869
(3).	<b>Firm's performance</b>	8 questions	0.920

### *Normality Test*

Generally, normality tests are implemented to validate the generalizability of results from the sample to the entire population. Also, normality is a crucial assumption for structural equation modelling (SEM) (Kline, 2012; Salkind, 2016). The Skewness and Kurtosis results confirmed that all items are normally distributed.

### *Descriptive Statistics of Study Sample*

Table 2 presents the diversity in the targeted sectors on both the manufacturing and retail industries. Most respondents came from the pharmaceutical and medical sector, followed by the retail sector. The minority came from the tobacco and paper industries. These percentages are consistent with the number of employees in these firms.

Around 85% of the firms are medium and large-sized (i.e., based on the total assets) that either produce or import more than 35 products as a sign of complexity in their operations and firm size. These figures are consistent with the theory and literature that stress the fact that ERP systems and agile supply chain methodology are not adopted effectively in small firms (Qrunfleh and Tarafdr, 2014).

There is a noticeable gap between the percentages of ERP software developed by international and local software providers. According to feedback from some sampled managers, local ERP systems are criticized for their weak functionalities, limited features, and absence of sound business logic, but these limitations are accepted due to their low cost.

The respondents' information reflects that the majority of the sample members are experienced, well educated, working at senior managerial positions, and holding several professional certificates, which, in turn, indicates a solid knowledge towards ERP paybacks. These results give better creditability to the findings and conclusions. Lastly, 69% of the sample were willing to receive a copy of the results as evidence to worthy of future ERP upgrade systems and confirmation to the study significance.

Table (2) : Demographic Statistics for the Study Sample			
		Frequency	Percentage
Sector of the Firm	Textiles industries	2	1.80%
	Chemical industries	4	3.60%
	Tobacco and cigarettes industries	4	3.60%
	Glass and ceramic industries	5	4.50%
	Printing and packaging industries	5	4.50%
	Paper and cardboard industries	6	5.40%
	Electrical industries	7	6.30%
	Leather and clothing industries	7	6.30%
	Food and beverages industries	10	9.00%
	Retail	18	16.20%
	Pharmaceutical and medical Industries	20	18.0%
Mining and extraction industries	23	20.70%	
Size of the Firm (based on the total assets)	Small firm	16	14.4%
	Medium-sized firm	46	41.4%
	Large firm	49	44.1%
Number of Products Produced by the Firm	1-5 products	23	20.7%
	6-10 products	17	15.3%
	11-20 products	14	12.6%
	20-25 products	19	17.1%
	More than 35 products	38	34.2%
Provider of the ERP Software	The ERP is provided by a local firm.	47	42.3%
	The ERP is provided by and international firm.	64	57.6%
Years of Experience	0-3 years	14	12.6%
	4-7 years	23	20.7%
	8-12 years	36	32.4%
	More than 12 years	38	34.2%
Position Level	<b>Employee.</b>	14	12.6%
	<b>First level management.</b>	16	14.4%
	<b>Mid-level management.</b>	40	36.0%
	<b>Senior level management.</b>	38	34.2%
	<b>Other</b>	3	2.7%
Total Sample		111	

### *Descriptive Statistics of the Study Variables*

The descriptive analysis of the study variables shows that the mean value of the ERP effectiveness (i.e., an independent variable) is 4.05. The highest mean value over the items is 4.16 for the statement " Using the ERP system increases the quality of decision analysis." While, the lowest arithmetic mean is (3.87) for the statement " Using the ERP system reduces the time needed to solve problems." The mean values of all items reflect a high level of importance.

According to the agile supply chain (i.e., mediating variable), the mean is (3.70). The highest mean value is (3.96) for the item " My firm can track and understand customers' requirements by interfacing closely with the market." The lowest mean is 3.29 for the question, " My firm deploys significant stocks of parts to tide over unpredictable market requirements." The mean value for firm performance is 3.80. The highest mean value was 3.99 for the item "Implementing the ERP system and agile supply chain helps increase the market share of

products." The lowest mean is 3.65 for the article "Implementing the ERP system and agile supply chain helps increase product sales growth rate."

The values of the standard deviation of all items and variables are low and mirror a high level of harmonization between the answers, which gives higher credibility to the generalization of the results. Table 4.3 shows the questionnaire elements.

Table 3: questionnaire elements	
<b>The Questionnaire Items of ERP Effectiveness</b>	
1	The information and outputs I get from the ERP system are clear and accurate.
2	The ERP system provides me with up-to-date information.
3	The ERP system provides me with enough information in the reports that seems to be just about exactly what I need.
4	Most needed functions are included in my organization's ERP system.
5	The ERP system processes transactions quickly.
6	I feel that the ERP system meets the information processing and reporting needs of the business.
7	Overall, I am satisfied with the ERP system.
8	Using the ERP system increases the quality of decision analysis.
9	Using the ERP system improves personal productivity and performance.
10	Using the ERP system reduces the time needed to solve problems.
<b>The Questionnaire Items of Agile Supply Chain</b>	
11	<b>My firm can track and understand customers' requirements by interfacing closely with the market.</b>
12	My firm aims to produce any volume (and not just the optimal capacity utilization volume) and deliver simultaneously to a wide variety of markets.
13	My firm provides customized products with short lead times (i.e. focuses on responsiveness).
14	My firm deploys significant stocks of parts to tide over unpredictable market requirements.
15	My firm reduces lead times for customer's specifications and requirements.
16	My firm deploys excess/buffer capacity to ensure that raw materials/components are available to manufacture the product according to market requirements.
17	My firm produces modular designs by using a limited number of basic components and processes that can be assembled into different products.
18	My firm's supply chain can respond to changes in demand without overstock or lost sales.
19	My firm's supply chain can leverage the competencies of our partners (suppliers) to respond to market demand.
20	My firm's supply chain can respond to real market demand.
<b>The Questionnaire Items of Firm's Performance</b>	
21	<b>After implementing the ERP system and agile supply chain, we realized growth in the firm's profits.</b>
22	After implementing the ERP system and agile supply chain, we realized that operating costs declined.
23	After implementing the ERP system and agile supply chain, we realized enhancements in the firm's overall competitive position.
24	Implementing the ERP system and agile supply chain helps in increasing the market share.
25	Implementing the ERP system and agile supply chain helps in increasing sales growth rate.
26	Implementing the ERP system and agile supply chain helps in increasing customers' satisfaction.
27	After implementing the ERP system and agile supply chain, our new products are much more capable of meeting customers' changing in demands.
28	After implementing the ERP system and agile supply chain, our new products are much more capable of meeting the needs of customers from different industries.

### Exploratory Factor Analysis (EFA)

The EFA approach is adopted to identify the correlation among the dataset variables. It indicates the structure of the factor by grouping the variables by the robust correlations. Usually, conducting EFA identifies the variables that will be used for SEM. The EFA has a higher ability to discover any problematic variables before the confirmatory test. EFA results summarized in table (4.4).

The results show that all EFA conditions have been satisfied. As an explanation, Bartlett's tests of Sphericity results are significant ( $\alpha < 5\%$ ). The factor loadings were above 0.40 for all items. The Eigenvalues (accountable for the most variance) are above one. The Chi-square results, which reflect how much the sample data matches a population (as a fitting indicator) are also significant. Lastly, the KMO value indicates sample appropriateness of the factor analysis.

	ERP Effectiveness	Agile Supply Chain	Firm Performance
<b>Kaiser-Meyer-Olkin (KMO) Test</b>	.904 (Adequate)	.846 (Adequate)	.903 (Adequate)
<b>Bartlett's Test of Sphericity</b>			
- <b>Sig.</b>	.000 (Sig. Pass)	.000 (Sig. Pass)	.000 (Sig. Pass)
<b>Initial Eigenvalues</b>	Factor 1 [6.523] >1	Factor 1[4.687] >1	<b>Factor 1 [5.139] &gt;1</b>
<b>Chi Square</b>	.000 (Sig. Pass)	.000 (Sig. Pass)	.000 (Sig. Pass)
<b>% of Variance</b>	Factor 1 [65.234]	<b>Factor 1 [46.874]</b>	<b>Factor 1 [5.139]</b>
<b>Factor Loading</b>	All factors loaded into one factor with factor loading >0.4		

### Confirmatory Factor Analysis (CFA)

CFA confirms the factor structure of a set of observed variables and the results of factor loading. The Chi-square test, the Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) are the fitting indicators (Hox and Bechger, 2007; Harrington, 2009). The fit indices determine the model's adequacy as per the results in Table (4.5) according to the below rule:

- The Relative/Normal Chi-Square (Discrepancy Function): Its value is computed by dividing chi-square/degrees of freedom. Satisfactory values are  $< 5$  (Arbuckle, 2008).
- The CFI: Its satisfactory value is above (0.85) (Bollen, 1989), and the obtained values exceed this level.
- NFI: Its values fall between zero and one. For instance, when NFI values are 0.70, this means that the used model improves the fit level by 70%.

All values in the model satisfy the conditions.

	ERP	Agile Supply Chain	The Firm's Performance
Chi Square (CMIN)	91.514	78.625	64.874
Probability Level (P)	.000	.000	.000
Degrees of Freedom (df)	35	25	20
Chi Square / DF	2.615	3.145	3.2444
CFI	.928	.913	.919
NFI	.829	.733	.889

### Hypotheses Testing

Concerning the theoretical foundation and the objectives of this research, the results of hypothesis testing are in Table (4.6) show that all sig-values are significant (0.000) at ( $\alpha \leq 0.05$ ). This indicates that ERP's effectiveness (i.e., independent variable) has a significant effect on the firm's performance (i.e., dependent

variable). Also, the  $Ch^2/DF$  for all relations falls in the acceptable intervals, reflecting proper levels of harmonization (Arbuckle, 2008). Similarly, the results of the NFI and the Hoelter index are satisfactory (Hair et al., 2010).

To confirm the indirect relationship between the ERP effectiveness and firm performance with the existence of an agile supply chain as a mediating variable, the conditions need to be met.

- 1) The significant value between the ERP's effectiveness and the firm's performance should turn out to be insignificant with the presence of an agile supply chain (in the case of full mediation). But, if it is still significant and decreased, this means a partial intervention as is the case in this study.
- 2) The impact value of agile supply chain on the firm's performance should become significant.
- 3) The average variance extracted must be increased (Baron and Kenny, 1986).

According to Table (4.6), the effect of the ERP's effectiveness on the firm's performance is significant at (0.05). Also, it is obvious that an agile supply chain has a significant effect on the firm's performance at (0.05). Furthermore, the results reveal that the effect of the ERP's effectiveness on the supply chain is significant at (0.05) as well. Nevertheless, the effect value of the ERP's effectiveness on the firm's performance in the presence of an agile supply chain shrank rather than in its absence. This indicates that the internal audit performance plays the role of partial mediation.

	ERM on IAP	ERM on CGQ	IAP on CGQ
Chi Square (CMIN)	1356.86	987.530	580.921
Probability Level (P)	0.000	.000	.000
Degrees of Freedom (df)	593	433	188
Chi Square/DF	2.288	2.281	3.090
CFI	0.823	0.853	0.810
NFI	0.732	0.744	0.733
Hoelter Index (0.05)	77	82	64

## Discussion

This study investigates the relationship between ERP effectiveness and firm performance, also the mediating role of the agile supply chain. The study population entails all employees working in industrial and retail firms in Jordan, while the purposive sample involves 111 ERP and supply chain specialists in these firms. The study has two main goals, first; to reduce the gaps in the literature about the topic by investigating these important variables for accounting literature concerning scholars who can never ignore the interaction between information systems and accounting. Second, this study will answer questions upsetting managers who balance between the cost of ERP systems, the changes in culture and workflow of the agile supply chain and the benefits of such systems.

The study results answer the study questions by indicating that there is a direct relationship between ERP effectiveness and firm performance. Also, there is a partial mediating role of the agile supply chain (as per table 4.6), which means accepting all alternative hypothesis and reject  $H0_1$ ,  $H0_2$ ,  $H0_3$ , and  $H1_1$ ,  $H1_2$  and  $H1_3$  will be accepted. The logic of the results that the ERP system has many integrated with accounting ledgers, inventory management, and reporting modules, all together aims to provide timely and accurate information about the status of account receivables, account payables, cash flow, and others. All, in turn, will help the decision-makers to have clear, timely, and comprehensive information to correct any biases and enhance the performance.

Correspondingly, it is essential to stress the effectiveness of using the ERP system not only implementing it without gaining the benefits of most of its functionalities to enjoy better performance. The agile supply chain mainly focuses on responding to customer needs and orders immediately, which will exploit the benefits and inputs of ERP systems to increase the performance in a better way in comparison to firms that only have ERP system and apply the old supply chain methods as a confirmation of its intervening role.

The main implications of these results supporting the pieces of literature that investigated the ERP and other variables of interest, also, it shed light on the intervening role of the agile supply chain. Moreover, the study results provide obliging insights to the managers in the mid and large-sized firms that either currently implement the systems or have future projects with the same purpose in the developing countries, even that they will cost money, efforts, and resources in the short run, but they will enhance the performance in the long run.

The main limitation of this study is related to sample size, as there is a lack of firms that satisfied the sampling criteria. Also, there are gaps in awareness about the ERP functionalities limits exploiting the benefits of using the system. Thus, it is needed to conduct in-depth analysis about the systems especially in the early adoption phases from international IT company which usually provides a standardized product to align with all firms regardless of the country and the sector, so there is a need for a comprehensive gap analysis as much as possible. These results were compatible and added value and more comprehensive answers to the conclusions of Rajan and Baral (2015), Elbardan and Ali (2012), Jagoda (2017) and others.

For the future research, it is suggested to use the mixed method by using both of questionnaire and interviews to analyze the ERP system and its implications, as some details would be clearly and comprehensively discussed in interviews like the differences between international and local ERP software. Also, it is recommended to shed lights into the cultural changes that shall be aligned with technology and workflow changes before agile supply chain and ERP adoption.

## Conclusions

Jordan is a developing country with limited resources and modest economic indicators, and the industrial sector contributes majorly to the economic, employment, and export rates. Hence, there is an urge to enhance the performance of this sector. Nowadays, the integration between information technology and accounting is mandatory as this saves time, efforts, increase accuracy, and information integrity. Even that the researchers have landed on the same ground about the benefits of ERP system, but the justification of its high cost is still a debatable concern, as there is a need for a study to do the cost-benefit analysis.

Also, none of the firms can work in an isolated manner without having backward and forward integration. The new directions in the supply chain stress on applying the agility, which means timely response to the customer needs with zero inventory. Such an approach will extensively benefit from the information, reporting capabilities, and inputs of ERP systems. Hence, this study tries to answer if there is a relationship between ERP effectiveness not only implementation and the firm performance, also the intervening role of the agile supply chain by analyzing a purpose sample of specialized employees.

From the researchers' perspective, Jordanian organizations need a radical shift in their culture towards agile supply chain also the governmental organizations ought to regulate and easy this sort of integration. Also, there is a need to study the behavioral aspects while using the ERP systems to reduce the resistance, and there is a need to dig deep in the system functionality rather than a shallow usage.



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## Trade –Energy Consumption-Carbon Emissions Triangle in Turkey: Evidence from Directed ACYCC Graphs and VAR

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### Abstract

This paper examines the causal relationships between trade, economic growth, energy consumption and carbon emissions in Turkey for the period 1960 – 2014 by estimating Directed Acyclic Graphs (DAGs) and employing an innovation accounting analysis. In doing so, we attempt to investigate both the direct and indirect contemporaneous and dynamic causal relationships between these variables. The resulting DAG patterns and forecast error variance decompositions (FEVDs) suggest that the main determinants of carbon emissions in Turkey are income per capita and energy use in contemporaneous time, and trade becomes one of the driving forces of carbon emissions in the short- and the long-run. The empirical evidence also suggests that income per capita largely contributes to trade, and energy use and carbon emissions do not account much for both the trade and income per capita over the estimation period.

**Keywords:** Economic Growth, Trade, Energy Consumption, Carbon Emission

**JEL Classification:** F18, O4, Q3, Q4, Q5

### Introduction

The acceleration in global integration has been one of the most important cornerstones of economic development over the last decades. The same period has also been characterized by significant economic growth in the global economy and even faster growth in global trade. As a matter of fact, trade liberalization has not only been considered to be one of the most important contributors to the globalization process, but also the globalization has materialized in significant growth in international trade.

It is well documented in the literature that trade liberalization is a significant potential factor promoting long run economic growth and productivity. From this perspective, it can be argued that trade not only stimulates global production but also transforms the global economy. Understanding this process and the transformative role of trade is of obvious importance as these benefits of free trade does not come without costs, it has also important environmental consequences through its substantial effect on energy consumption. As with the expansion production following trade liberalization after the 1980s, the energy consumption and carbon emissions per head have substantially increased in the last couple of decades and this upward trend is also expected to continue in the future. This rising trend has also been experienced in Turkey as Turkey's greenhouse gas emissions in 2017 increased by approximately 140% compared to 1990 (Turkish Statistical Institute).

Theoretically, the effect of trade on energy demand and thus carbon emissions can be decomposed into a scale, composition and technique effects (Antweiler, Copeland and Taylor, 2001). Other things being the same, trade increases economic activities, thus in turn stimulates industrial production and hence might escalate the level of energy use and carbon emissions (so called the scale effect). The composition effect, on the other hand, refers to structural change in an economy's industry composition. An industrial shift towards highly energy related sectors might result in higher energy demand and thus increase energy consumption and pollution. On the

contrary, trade in less energy related sectors, such as services, might cause increase in energy savings, and hence reduce energy consumption. It can be argued that reductions in trade barriers increase the comparative advantage of energy- and pollution-intensive production in countries with less stringent environmental regulations (often the case in less developed economies), while reducing the comparative advantage of such production in countries with relatively strict environmental policies (often the case in developed countries). This phenomenon is also called as pollution haven hypothesis (PHH) suggesting that trade liberalization would encourage multinational firms engaged in such production to outsource their activities to countries with lenient environmental standards (Keho, 2016). Furthermore, free trade enables transfers of energy-efficient production techniques and energy-saving technologies. The adoption of advanced technologies raises production levels, while leading to less energy consumption and carbon emissions (so called technique effect). The net effect of free trade on energy consumption and thus CO<sub>2</sub> emissions would depend on the relative weights of these forces (Antweiler, Copeland and Taylor, 2001).

To sum up, trade and energy consumption and thus pollution are clearly related. However, theoretically, the association between them is complex and controversial. The similar ambiguity is also present in the empirical literature. The trade-energy-emissions triangle has been extensively studied over the last decades, yet the channels and even the direction of causality have remained unresolved in theory and empirics. However, as shown in the brief literature review presented in Table 1 suggests a causality running from trade and economic growth to energy consumption and carbon emissions in the case of Turkey. In light of these findings and theoretical arguments stated earlier, in this study, we attempt to shed light on the contemporaneous relationships between trade, economic growth, energy consumption and carbon emission in Turkey. We believe that understanding these relationships is important as it might have significant policy ramifications.

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Authors	Period	Country	Variables	Methodology	Direction of Causality
Hossain (2011)	1971-2007	Brazil, China, Malaysia, Mexico, India, South Africa, the Philippines, Turkey and Thailand	Carbon emissions; Energy consumption; Economic Growth, Trade Openness; Urbanization	Granger causality	$EG \rightarrow E$ $EG \rightarrow C$ $T \rightarrow C$ $T \rightarrow EG$ $U \rightarrow EG$
Altintas (2013)	1970-2008	Turkey	Energy consumption; Carbon emissions; Economic Growth	Granger causality	$EG \rightarrow C$ $E \rightarrow C$
Arouri vd. (2012)	1981-2005	12 Middle East countries and North African countries (MENA)	Energy consumption; Carbon emissions; Economic Growth	Granger causality	$E \rightarrow C$
Altinay and Karagol (2005)	1950-2000	Turkey	Electric consumption; Economic Growth	Granger causality	$E \rightarrow EG$
Jobert and Karanfil (2007)	1960-2003	Turkey	Energy consumption; Economic Growth	JJ cointegration Granger causality	$E-EG$
Lise and Van Montford (2007)	1970-2003	Turkey	Energy consumption; Economic Growth	Cointegration	$EG \rightarrow E$
Karanfil (2008)	1970-2005	Turkey	Energy consumption; Economic Growth	Granger causality and Cointegration	Cointegrated relationship between E and EG $EG \rightarrow E$
Erdal vd. (2008)	1970-2006	Turkey	Energy consumption; Economic Growth	JJ cointegration	$E \leftrightarrow EG$
Halicioglu (2009)	1960-2005	Turkey	Carbon emissions; Energy consumption; Income; Foreign Trade	ARDL cointegration	Cointegration relationship between EG and E
Soytas ve Sari (2009)	1960-2000	Turkey	Energy consumption; Carbon emissions; Economic Growth	Toda-Yamamoto Causality	$EG - E$ $C-EG$ $C \rightarrow E$
Ozturk ve Acaravci (2013)	1960-2007	Turkey	Energy, Growth, Openness and Financial development; Carbon emissions	ARDL Cointegration	Cointegrated relationship between EG, C and E
Yavuz (2014)	1960-2007	Turkey	Carbon emission, Energy consumption, and Economic Growth	Johansen and Gregory Hansen Cointegration	Cointegrated relationship between EG, C and E

Notes:  $\rightarrow$  : unidirectional causality;  $\leftrightarrow$ : bidirectional causality;  $-$  : no causality . Abbreviations are defined as follows: EG: Economic Growth, E: Energy Consumption, C: Carbon Emission, T: Trade Openness, U: Urbanization.

## Data and Empirical Analysis

In this paper, we investigate the dynamic relationships between trade, economic growth, energy consumption and carbon emissions based on the contemporaneous causal structure of the innovations in the VAR modelling framework derived from directed acyclic graphs (DAGs). To do so, we employ time series Turkish data on trade (imports and exports as % of GDP), energy use (kg of oil equivalent per capita), CO<sub>2</sub> emissions (metric tons per capita), and GDP per capita (constant 2010 US\$) for the period 1960 – 2014. The availability of the data series is the criteria for the selection of the time period. All series are extracted from World Development Indicators (WDI) provided by the World Bank and included in the analysis in the form of their natural logarithm.

DAGs are the most widely used graphs in causal modeling and proposed by Pearl (1995 and 2000) and Spirtes et al. (2000) as an alternative to examining causal relationships. The distinctive feature of DAG is that it accounts for the effects of conditional interdependencies found in the observational data. DAGs are simply directed graphs (digraphs) representing the causal flows (or lack thereof) among a set of variables, with no directed cycles. Variables are represented by a set of vertices (nodes) and a set of directed edges (arrows) connect the vertices. Connected vertices are said to be adjacent. Since cyclic graphs are not identifiable we discuss only acyclic graphs in this study (Li, Woodard and Leatham, 2013).

DAGs are graphical representations of conditional independencies implied by the linear recursive product decompositions (Pearl, 1995):

$$\Pr (v_1, v_2, v_3, \dots, v_n) = \prod_{i=1}^n \Pr (v_i | pa_i) \quad (1)$$

where  $pa_i$  denotes the realization of some subset of the variables that precede  $v_i$  in order  $(v_1, v_2, v_3, \dots, v_n)$ . The conditional independencies can be graphically characterized using d-separation (directional separation) (Verma and Pearl, 1988)<sup>1</sup>.

The PC algorithm is one of the tools to build directed graphs using the concept of d-separation, developed by Spirtes et al. (2000). The PC algorithm commences with creating a complete undirected graph where all the variables in the system are connected to one another with an undirected edge. Then, these edges (e.g. residuals from a VAR) are sequentially removed based on Fisher's z test of zero-order correlation or partial (conditional) correlation. The PC algorithm, then, assign directions to the surviving edges using the concept of sepset (separation sets). The sepset of the variable(s) whose edge has been removed is the conditioning variable on the removed edge between the two variables (Bessler and Akleman, 1998). The discussion of the details of the algorithm can be found in Spirtes et al. (2000). The PC algorithm and its extensions and all the other algorithms are available in TETRAD VI, the software program we use in this study to identify DAGs.

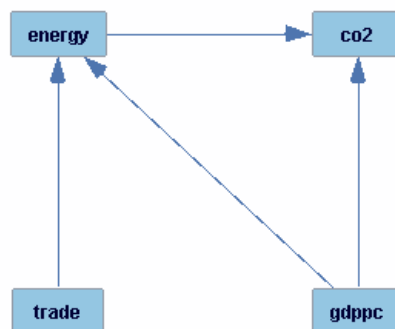
Based on Monte Carlo simulations, the PC algorithm may make mistakes of edge exclusion/inclusion, and may assign the directions of edges incorrectly, especially for small sample sizes (i.e. less than 100). Yet, higher significance levels (e.g. 0.1 at sample sizes which are between 100 and 300 and 0.2 or 0.3 at sample sizes less than 100) may improve the performance of the PC algorithm (Spirtes and Others, 2000). Given our 55 time series observations (1960-2014), we choose the 30 per cent significance level as the cut off for the removal of edges, which provides an unambiguously directed ordering for our set variables.

The resulting patterns derived from the PC algorithm at the 30% significance level are presented in Figure 1. The resulting DAG pattern suggests that per capita income has a directed and contemporaneous impact on both energy consumption and carbon emission and trade also seems to be the direct cause of per capita energy use. The pattern also reveals that per capita carbon emission follows energy consumption per capita whereas both

<sup>1</sup> The definition of d-separation can be found in Pearl (1995).



trade and per capita income cause innovations in carbon emissions through a mediating factor, per capita energy use. Surprisingly, in contrast to the trade literature, the algorithm does not identify any significant path from trade to income or vice versa. It is worth noting that this may due to the insufficient number of observations or the exclusion of potential variables from the analysis, which may mediate the relationship between the two.



*Figure 1.* The directed graph at 30% significance level (PC algorithm)

Time series studies in economics mostly use vector autoregression (VAR) or the error correction model (ECM) to identify and measure the structure and parameters of economic models which primarily rely on economic theory (Bernanke, 1986; Sims, 1986). Zhang et al. (2006) argue that DAG could be a good data driven alternative to the standard Cholesky factorization and structural VAR (SVAR) when theory is too heterogeneous to identify the underlying causal structure (see also Swanson and Granger, 1997; Awokuse and Bessler, 2003). The standard Cholesky factorization is statistically motivated and may be sensitive to the ordering of economic variables (Diebold and Yilmaz, 2015).

Therefore, based on the contemporaneous causal pattern presented in Figure 1, we conduct forecast error variance decomposition (FEVD) to investigate the dynamic relationships between our variables and summarize the results in Table 2. In determining the ordering of Cholesky factorization of contemporaneous innovations, the DAG pattern presented above is used to specify the causal path. FEVD determined the amount of information each source of innovation contributes to the variance of the h-step ahead forecasts error for each endogenous variable. The causal strength of the innovation is represented by the magnitude of the FEVDs (Awokuse, 2006).

**Table 2.** Forecast error variance decomposition based on the DAG pattern in Fig. 1

<i>Variance Decomposition of CO2:</i>					
Period	S.E.	CO2	ENERGY	GDPPC	TRADE
1	0.045	32.601	33.619	30.491	3.288
4	0.074	50.089	14.770	19.866	15.275
6	0.081	52.327	12.668	17.568	17.437
10	0.086	51.043	11.253	20.571	17.133
15	0.088	49.700	11.104	22.680	16.516
<i>Variance Decomposition of ENERGY:</i>					
1	0.035	0.000	47.813	46.320	5.867
4	0.049	8.104	30.484	44.420	16.992
6	0.051	11.484	28.061	40.956	19.499
10	0.053	12.991	26.595	40.625	19.789
15	0.053	13.142	26.183	41.228	19.447
<i>Variance Decomposition of GDPPC:</i>					
1	0.037	0.000	0.000	100.000	0.000
4	0.058	0.162	5.867	93.043	0.928
6	0.061	0.276	8.788	90.010	0.926
10	0.063	1.471	10.313	87.157	1.059
15	0.064	2.566	10.336	85.760	1.338
<i>Variance Decomposition of TRADE:</i>					
1	0.155	0.000	0.000	4.788	95.212
4	0.236	0.012	2.134	36.364	61.490
6	0.258	0.043	4.758	43.632	51.566
10	0.275	0.798	7.523	46.082	45.597
15	0.282	2.069	8.021	46.114	43.796

In order to evaluate the effect of each variable on another in the short- and long-run, we report the FEVDs at 1 (contemporaneous time), 4 and 6 (short), 10 and 15 (long) year horizons. The results indicate that energy consumption and income are the most prominent explanatory factors of carbon emissions whereas trade also has a significant effect on emissions over time. Specifically, in contemporaneous time, nearly 65% of the variation in emissions is explained by energy use and income while trade openness accounts for only 3%. In the short- and long-run, on the other hand, the innovation accounted for by trade escalates up to 17% and that of energy use and income declines to 30%. In the long run, the high proportion (50%) of the variation in emission is explained by its own innovation (past levels of emission). The results shown in Table 2 also indicate that energy consumption is largely dependent on income in contemporaneous time and this is the case in the short- and long-run while trade openness accounts for only a 5% and carbon emission does not account for any of the variability in energy use in contemporaneous time. However, trade and emissions have also significant effect on energy use in the long run and their contributions increase up to 19% and 13%, respectively. The results of the VAR framework based on the variance decomposition also imply that per capita income is largely explained by its own past variations as expected. On the other hand, it is surprising that the contribution of trade is very low even in the long run. However, variance decomposition of trade shows that the variation in trade is largely influenced by per capita income implying that the causality might be running from economic growth to trade, not vice versa. Finally, carbon emissions explain a negligible of variations of trade and income while energy consumption explains less than 10% of variation in trade and about 8% of that in per capita income.

## Conclusion

The relationships between trade openness, economic growth, energy consumption and carbon emissions have been extensively studied over the last decades, yet the nature of the relationship between them and the direction of causality has remained unresolved in both theory and empirics. In this study, we reexamine both the contemporaneous and dynamic causal relationships between these variables using Turkish data over the period 1960 – 2014. To do so, we employ DAGs as well as an innovation accounting analysis. The empirical results from DAGs and FEVDs analyses suggest that, the main determinants of carbon emissions in Turkey are income energy use in contemporaneous time, and trade becomes one of the driving forces of carbon emissions in the short- and the long-run. The empirical evidence also suggests that income per capita largely contributes to trade, and energy use and carbon emissions do not account much for both the trade and income per capita over the estimation period. We believe that the contributions of this paper to the related literature provide important ramifications in trade and environmental policies.

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## Global Income Inequality and Poverty Reduction: Trends and Remedies

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### Abstract

There is a global consensus that world economy needs not only grow faster, but also grow in a way that the poor receive a greater share of the benefits of that growth. It is well documented that income inequality is on the rise, with the richest 10% earning up to 40% of total global income. The poorest 10% earn only between 2% and 7% of total global income. After long time of neglect, inequality has re-entered the mainstream development policy agenda at both national and global levels indicating that relevant policies should be universal in principle paying attention to the needs of disadvantaged and marginalized populations. As highlighted in almost all SDG's documents, income inequality is a global problem that requires global solutions. This involves improving the regulation and monitoring of financial markets and institutions, encouraging development assistance and foreign direct investment to regions where the need is greatest. Facilitating the safe migration and mobility of people is also key to bridging the widening divide. SDG 10 encompasses 10 targets with the objective of promoting social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. Achieving SDG 10 reaffirms that the 2030 development Agenda will focus not only on eradicating poverty but also on tackling inequalities in all its forms through adopting sound policies to empower the bottom percentile of income earners, and promote economic inclusion of all regardless of sex, race or ethnicity. This paper analyses the recent status of income inequality and its relationship with economic growth and poverty in selected developing countries. The paper highlights that there is a triangular relationship between income distribution, poverty and economic growth; while accelerated economic growth is a primary factor in reducing poverty, inequalities can constrain poverty reduction significantly. Empirically, the study finds:

- A negative correlation between income inequality and average economic growth indicating a higher Gini coefficient associated with lower growth over the medium term.
- A weak negative correlation between economic growth and poverty rate, indicating that the impact of growth on poverty reduction has been very low as it is only one of a number of factors affecting poverty.
- A positive correlation between income inequality and poverty rate indicating that the more unequal societies tend to have higher levels of poverty.
- While high-income countries are home to 19.5% of the world's population, they account for almost 57% of global GDP that means high global inequality.
- The standard deviation of GDP per capita of 230 countries has been increasing over the last two decades indicating that richer countries have been experiencing higher growth in per capita income leading to more international income inequality.
- Estimated Lorenz curve clearly displays a considerable degree of income inequality among selected developing countries. The bottom half of population in these countries just enjoys around 18.2% total GDP per capita and 75% of population is just responsible for around 21% of total GDP per capita in 2015.
- Available data also shows that the depth of poverty in rural areas is deeper than the urban areas indicating that poverty is mainly a rural phenomenon in developing countries.

**Keywords:** Income, poverty, economic growth

### Introduction

Disparities in income, education, health and other dimensions of human development continue to persist across the world, within and among countries despite marked progress in economic growth in many countries over the last two decades. In advanced economies, the gap between the rich and poor is at its highest level. Inequality trends have been more mixed in emerging markets and developing countries, with some countries experiencing declining inequality, but pervasive inequities in access to education, health care, and finance remain (IMF,

2015). The economic and social fallout from the global financial crisis and the resultant headwinds to global growth and employment have added urgency to address inequality and its consequences. There is a global consensus that world economy needs to grow faster, but the bigger challenge is to grow in a way that the poor receive a greater share of the benefits of that growth. In this context, the Global Development Community, in adopting the 2030 Agenda, pledged to create a more equitable world through integrated policies that are complemented by equity-enhancing strategies and interventions. Inequality has many dimensions; however, this paper reviews the current situation of income inequality at OIC member countries and makes some recommendations at OIC level and its member countries to address various aspects of it. Section II discuss briefly the impact of inequality on economic growth and social development. Section III introduces inequality as one of the main objectives in sustainable development goals (SDGs). income inequality: scope and definition is presented in section IV. Section V present the status of income inequality in OIC member countries estimating Lorenz curve. VI. briefly presents Islamic Development Bank's activities to reduce income inequality in OIC member countries. Finally, Section VII presents conclusion and recommendations.

### Why Economic Inequality Matters?

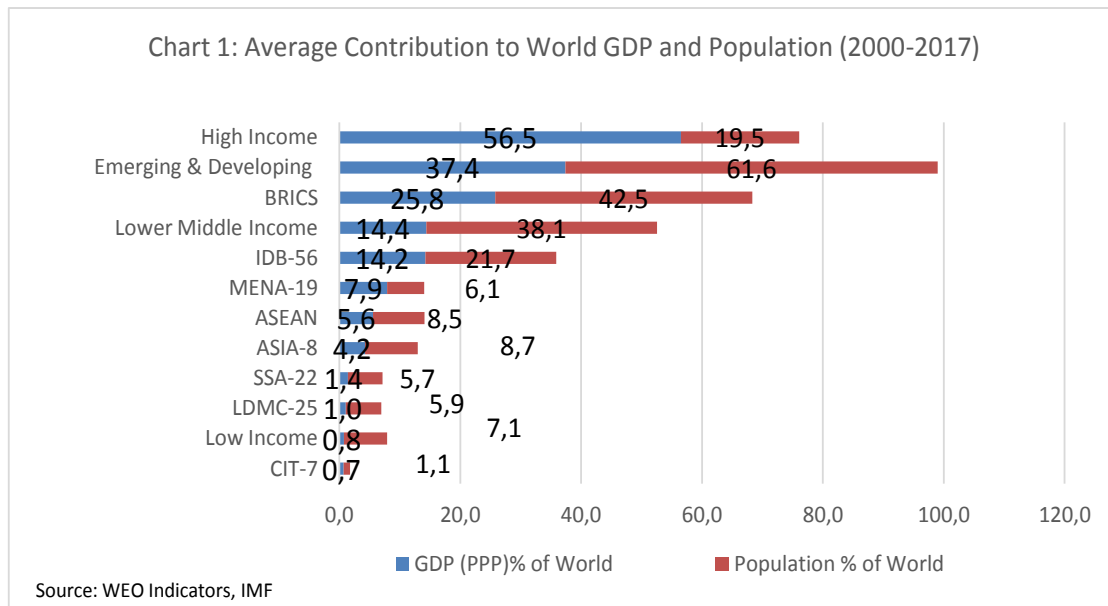
In recent years, there has been a marked slowing of growth across the world's wealthiest economies, with none returning to the growth trends experienced before the financial crisis. This stagnation could be a permanent issue if these economies are not able to create enough demand to keep growing. Increasing concentration of incomes could reduce aggregate demand and, therefore, undermine long-term growth, because the wealthy spend a lower fraction of their incomes than middle- and lower-income groups (Economics Foundation, 2014). Evidence predominantly suggests that inequality is more than a moral and political issue; it is a problem for the sustainable economic growth as more equal societies tend to grow for longer. Moreover, inequality can dampen economic opportunity and divert people toward unproductive activities. It can also make countries more prone to shocks where fewer people have savings for a rainy day (IMF, 2011). At the macro level, inequality leads to a less stable and less efficient economic system that stifles economic growth and the participation of all members of society in the labour market (Stiglitz, 2012). Inequality also poses a serious barrier to social development and leads to uneven access to social services such as health and education and, therefore, to the intergenerational transmission of unequal economic and social opportunities, creating poverty traps, wasting human potential, and resulting in less dynamic and less creative societies ( M. Corak, 2013).

### Inequality and SDGs

The Sustainable Development Goals (SDGs) are a new set of global development targets adopted through wide and extensive consultations with member countries of the UN in September 2015. The SDGs are composed of 17 goals and 169 targets, which are integrated and inseparable. The SDGs cover a wide spectrum of development challenges including poverty, inequality, climate change, sustaining ecosystem and cities, health, as well as education. While inequality can affect all the SDGs, Goal 10 specifically addresses inequality within and among countries and emphasizes that income inequality is on the rise, with the richest 10% earning up to 40% of total global income. The poorest 10% earn only between 2% and 7% of total global income (UNDP, 2015). SDG 10 encompasses 10 targets with the objective of promoting social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. Achieving SDG 10 reaffirms that the 2030 development Agenda will focus not only on eradicating poverty but also on tackling inequalities in all its forms through adopting sound policies to empower the bottom percentile of income earners, and promote economic inclusion of all regardless of sex, race or ethnicity.

### Income Inequality: Scope and Definition

Inequality may seem a simple term, but operationally it means many different things, depending on the point of view. Income inequality is the most commonly cited measure, primarily because the data on it is the most comprehensive. Generally, there are three main methods to measure income inequality: (i) intra-country

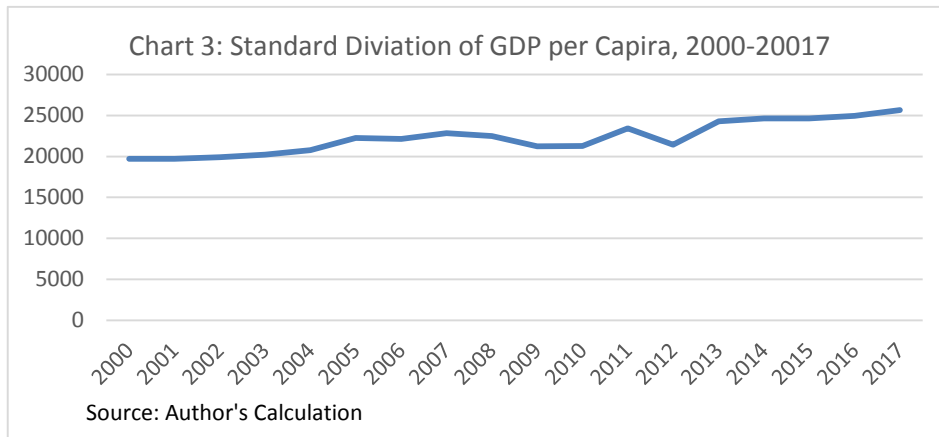
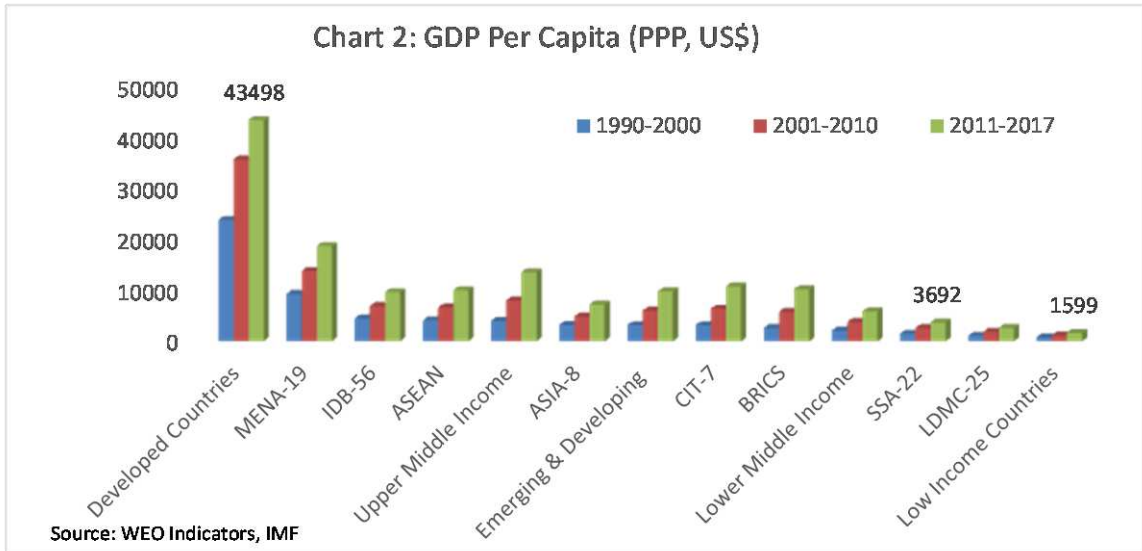


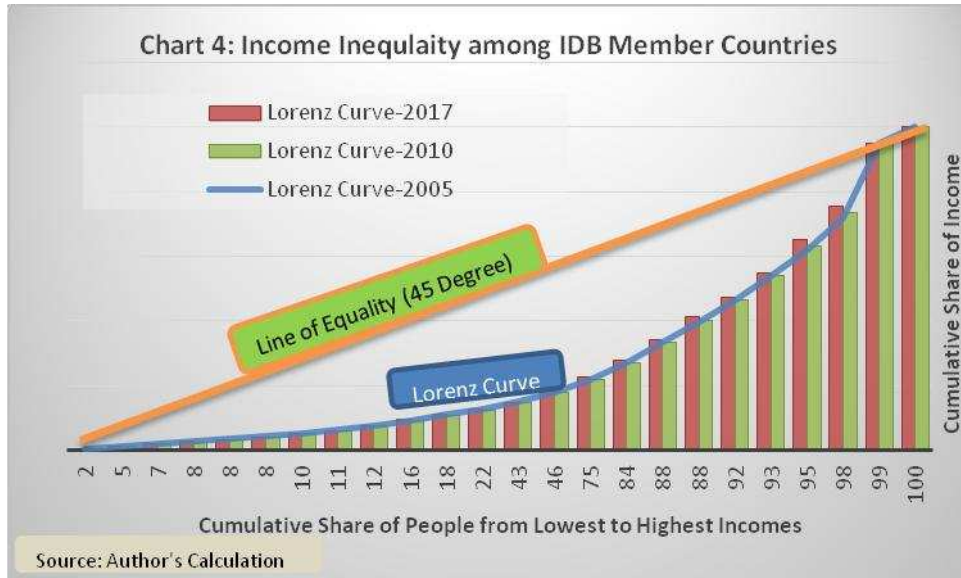
inequality, which addresses income inequalities within a country; (ii) international inequality, which is based on a country's average GDP per capita, ignoring internal inequalities between residents; (iii) global inequality, which encompasses both within and between country inequalities (UNDP, 2013). Chart 1 tracks contribution of GDP of various grouping countries to the world output. While high-income countries are home to 19.5% of the world's population, they account for almost 57% of global GDP.

Similarly, BRICS, home to more than 42.5% of world population, accounts for 25.8% of global GDP. Data shows that there has been a noticeable increase in the share of developing countries in world GDP at purchasing power parity, which indicates that extreme poverty is shrinking worldwide. For example, contribution of low-income countries to world output increased from 6 percent in 2000 to 10% in 2016. However, considering the population growth, this rise has not led to the reduction of international income inequality (distribution of GDP per capita) among the various grouping countries.

Average per capita income of all grouping countries have been increasing over the last two decades, albeit, with different pace indicating that the income gap (international inequality) is not falling. Over the last two decades, the citizens of developed countries have earned 31 times more than low-income countries and 20 times more than Sub-Saharan African IDB member countries (Chart 2).







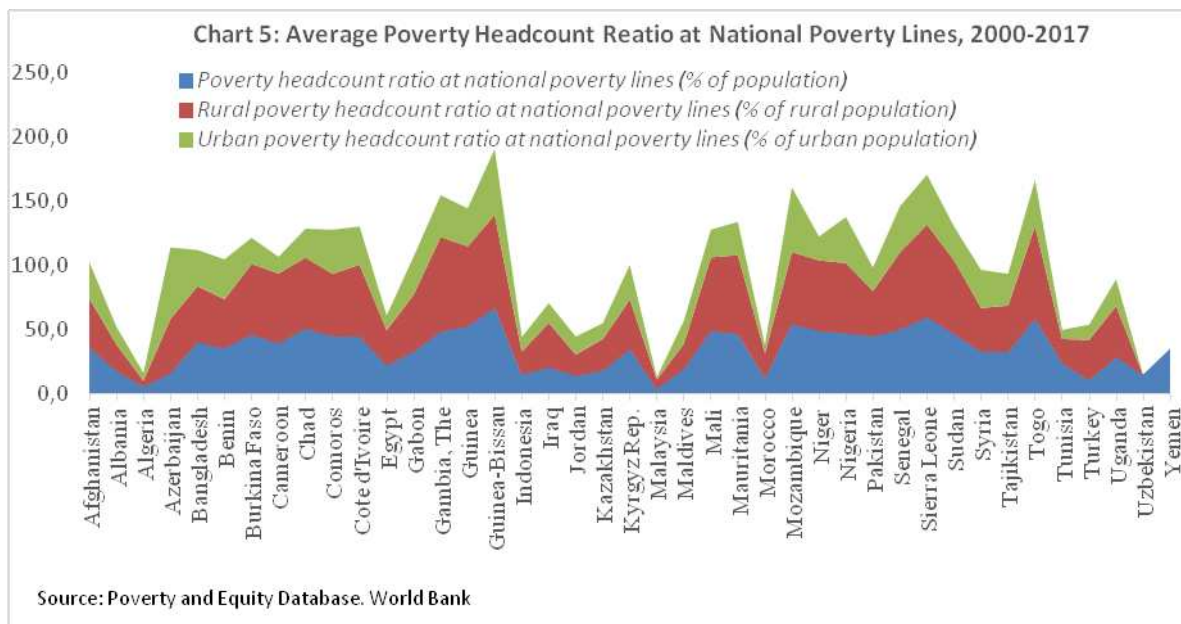
The standard deviation of GDP per capita of 230 countries has been increasing over the last two decades. This measure tells whether countries are converging or diverging in terms of their average income levels. In general, if it rises, it means that richer countries are doing better than poorer countries. Data analysis shows that all grouping countries experienced increase in average income; however, richer countries grow faster than poorer countries leading to more international income inequality (chart 4)<sup>1</sup>. The international inequality is at a level that does not favor anyone at all and its future trend remains unclear depending on the success of SDGs. This requires economic diversification, improving aggregate productivity, and enabling the shift of workers to less fragile and better-remunerated activities with safe and healthy working conditions.

#### Income Inequality in IDB Member Countries

Almost all IDB member countries have enjoyed respectable economic growth during the last two decades; however, poverty and income inequality remains an issue. Chart 4 shows the Lorenz curves for 2005, 2010 and 2015. Each point on the Lorenz curve plots the proportion of the population against the proportion of cumulative GDP per capita of IDB member countries.

<sup>1</sup> This measures inequality among countries in the world, not inequality among all people in the world.

The green diagonal line is the benchmark of a completely equal distribution of GDP per capita among member countries. The Chart clearly displays a considerable degree of income inequality between IDB member countries. The bottom half of MCs' population just enjoys around 18.2% total GDP per capita and 75% of population is just responsible for around 21% of total GDP per capita in 2015. In contrast, the top 10% of population enjoys 50% of total GDP per capita in the same year. The patterns of three Lorenz curves (2005, 2010, and 2015) are almost the same, which confirms that per capita income inequality between IDB MCs has not improved over the last two decades.



Poverty and income inequality at national level (within member countries) is also a big concern. Available data show that more than 660 million people in IDB member countries, or as many as three out of five individuals, are currently living on incomes that are less than US\$ 2 a day; representing about a quarter of the world's poor.

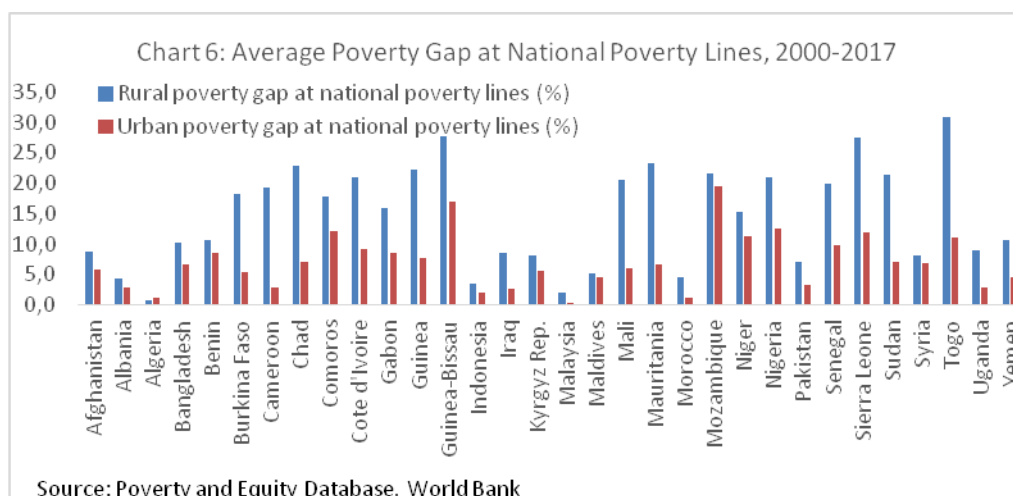


Table 1: Gini Coefficient in IDB MCs, latest			
Available Data, 2000-2014			
Albania	28.96	Maldives	38.37
Azerbaijan	31.79	Mali	33.04
Benin	43.44	Mozambique	45.58
Burkina Faso	35.3	Mauritania	32.42
Bangladesh	32.13	Malaysia	46.26
Cote d'Ivoire	43.18	Niger	33.99
Cameroon	46.54	Nigeria	42.97
Comoros	55.93	Pakistan	30.69
Djibouti	44.13	Sudan	35.39
Gabon	42.18	Senegal	40.29
Guinea	33.73	Sierra Leone	33.99
Gambia, The	47.33	Chad	43.32
Guinea-Bissau	50.66	Togo	46.02
Iran	37.35	Tajikistan	30.76
Kazakhstan	26.33	Tunisia	35.81
Kyrgyz Rep.	26.82	Turkey	40.18
Morocco	40.72	Uganda	41.01

Source: Poverty and Equity Database. World Bank

The average poverty headcount ratio at national poverty lines varies between 3.6% in Malaysia and 59.7% in Sierra Leone over the period of 2000-2015. Poverty headcount in the rural areas is very high comparing with urban areas as it varies from 4.8% in Algeria to 73.9% in Gambia over the same period (Chart 5). Chart 6 displays the depth of poverty in member countries by considering how far, on the average, the poor are from the national poverty line. Almost in all member countries, the depth of poverty in rural areas is deeper than the urban areas indicating that poverty is mainly a rural phenomenon in member countries. Rural poverty gap ranges from 0.8 in Algeria to 27.5 in Sierra Leone. Similarly, urban poverty gap ranges from 0.4 in Malaysia to 19.4 in Mozambique.

Regarding income inequality within a country, the most-cited measure is the Gini coefficient. It varies from zero (perfect equality) to one (perfect inequality). With a national Gini coefficient of around 26.3, Kazakhstan's level of inequality is the lowest among IDB MCs. In contrast, Guinea-Bissau's national Gini coefficient of around 50.7 positions it the least equal country among IDB MCs (Table1).

### Islamic Development Bank and Income Inequality

Since its inception in 1975, economic and social development have been the cornerstone of IDB development assistance agenda in its member countries and in Muslim communities in Non-Member countries. The importance of embedding reduction of income inequality is clearly recognized in IDB Vision 1440H (2020G), which identifies nine key strategic thrust areas including “*prosper the people*”, which is to be supported by pursuing “*prosperity that seeks to support and stimulate ...wealth creation that is, as much as possible, equitably shared*”.

IDB Group intervention and financing have covered a wide range of activities contributing either directly or indirectly to poverty alleviation and inequality reduction in member countries. The activities focus on creation of jobs and employment of poor and disadvantaged people as well as improving basic social and economic services, particularly in poor areas through multi-sector interventions. The aim of all these programs is to reduce poverty and inequalities, particularly, among women and youth. Some improve access to, and the quality of, two non-income dimensions of poverty (education and health services) in line with its Thematic Strategy for Poverty Reduction and Comprehensive Human Development. Others help marginalized populations with sustainable natural resource management. Still others help ethnic minorities gain access to employment. The share of financing allocation to the social sectors relative to the overall Bank’s financing activities have more than doubled over the past two and a half decade, surpassing 23% at present.

The IDBG acknowledges that deep-seated inequalities is the single biggest threat to sustainable economic growth in member countries and, therefore, is a fundamental challenge over the next decade. As inclusive development is critical for poverty reduction, narrowing inequalities, addressing social injustice, and achieving sustainable economic growth, the Bank remains committed to its thematic strategy of inclusive social and economic development highlighted in its 10-year strategy. The new strategy, with its five pillars (economic and social infrastructure, private sector development, inclusive social development, cooperation among member countries, Islamic financial sector development) has been tailored to reduce inequalities and promote inclusive growth. The main priorities of the strategy are to (i) increase investments in infrastructure, particularly rural infrastructure; (ii) support financial inclusion; (iii) strengthen physical and human capacities and; (iv) support member countries’ effort to enhance social safety net programs protecting the most vulnerable.

### Conclusion and Recommendations

One of the surest ways to reduce high income inequality, especially in those member countries where many poor people live, is to make growth work for the poorest. Understanding the link between inclusive development, poverty, and deep-seated inequalities at the country level will help policymakers design and implement programs leading to reduction of poverty incidence and income inequality effectively. In this context, a major task for developing countries including OIC member countries is to critically review their growth policies in order to build up a clear and comprehensive program to promote a level playing field to increase participation in economic activities, provide equal opportunities, fair access to basic services, and strengthen financial facilities with the view of providing credit to the most vulnerable. In this context, IDBG needs to undertake a more systematic approach to work with its member countries and relevant regional institutions to support the efforts of member countries in narrowing inequality and sharing prosperity in line with their national development strategies. Specifically, the Bank needs to (i) focus more on underdeveloped sectors including agriculture, health, education, and rural development in the most disadvantaged areas to increase opportunity for the poor and; (ii) strengthen Country Poverty Assessment (CPA) and Member Country Partnership Strategy (MCPS) by including the diagnostic of key constraints and impediments to inclusive development.

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## Predicting Brand Perception with Web Search Traffic Information<sup>1</sup>

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### Abstract

Brand positioning is very important for companies and the concept can be defined as differentiation itself from rival's product of business. Companies have to built strongly brand position and manage it to be succesful within sector. The aim of this study is to examine hotel brand perception based on web search traffic. Data were collected by Google Trends and used social network analysis. The last three years of time series on web search traffic information used in the study. Findings show that hotel search behaviors on web of consumer reveal the positioning their mind regarding hotel brands. According to analysis, Hilton, Ramada, Radisson and Titanic are the hotels with the highest number of incoming and outgoing connections. Some hotels such as Larissa, Eftalia, Cactus, Orka and Euphoria are outside the network and not a strong position The study contributes to existing literature and practitioners. The study expands literature on brand and brand positioning and proposes a new approach can be used by hotels to track consumer perception.

**Keywords:** Brand Positioning, Social Network Analysis, Web Search Traffic

### Conceptual Background

The concept of positioning was first used before their article (The Positionig Era: A View Ten Years Later, in 1972) and then their book (Positioning: The Battle for Your Mind, in 1982) by Ries and Trout. The concept, according to them; "positioning is not what you do to a product. But what you do to the mind of the prospect. That is, you position the product in the mind of the prospect" (Saxena, 2008). In general, it is the marketing efforts of the companies in order to be remembered at a reputable point in the minds of consumers (Dwyer and Tanner, 1999). According to many studies (Porter, 1996), positioning is an essential part of modern marketing approach and companies is intended to create a perception about the brand or product in the mind of the customer (Wen and Yeh, 2010).

The concept of positioning is worked by both practitioners and researchers. Many researches examined brand concept in different research topics (e.g. Hudson and Others, 2016/Sultan and Others, 2019 for brand perception; e.g Schultz, 2018 in terms of search engine; e.g. Akaka and Alden, 2010 in advertising; e.g. Coffie, 2018 for positioning strategies; e.g. Lee, Kim and Won, 2019 for sectoral reviews). The studies generally used traditional data collection method and conducted on less organizations. Recently, some researchers have used web search traffic information into different research fields. These are i) proposing a model and ii) explaining consumer behavior (Jun and Park, 2017).

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<sup>1</sup> This work has been supported by Research Fund of Aksaray University. Project Number: 2018-050.



Companies should take into account some factor in positioning process. These are; (Manhas, 2010); i) target market, ii) the difference of the product or its superiority over its competitors, iii) the value of this difference for the target market iv) ability to show or communicate this difference for the target market. There are a lot of positioning strategy developing by researches. One of these is developed by Aaker and Shansby (1982). The conceptual typology is i) product characteristics, ii) price-quality principle, iii) competitor, iv) usage, v) user and v) product category.

Brand positioning strategy is very important for brand management. In terms of companies, it is ensured that consumers become one of the first names that come to their minds in brand selection with brand perception (Tatlı, 2013). The strategy implemented in management ensures that the company is maximized economically by the decisions taken. It regulates the relations of the company with its environment and provides a competitive advantage (Demir and Yılmaz, 2010). However, it is not easy process. There are some barriers in brand management. These are obstacles such as the inability of the mind to cope with excessive communication and information, limitation and confusion, and loss of focus. With the intense flow of information that occurs with developing technology, consumers find it difficult to choose among the information in their minds. In order to cope with this, it focuses only based on interest (Trout and Rivkin, 2006).

For products based on experience such as tourism, consumers seek more information (Sears, 2003). However, excessive information density, complexity and language mismatches on the web sites cause problems (Morgan et al., 2001). Customers constantly want to save time and energy (Berry et al., 2002). The Internet allows them to save this. The internet allows customers to make decisions, make transactions and access easily without going to their hotel. As a result of their research on hotels in Portugal by Correia et al., (2007), there are six motivations for customers to choose hotels. These six motivations are classified as push and pull motivations. While knowledge, pleasure and socialization are the driving factors, convenience, core activities and landscape are attractive motivations.

The study aims to analyze a hotel brand and the relationship between the brand and others in consumer mind. The study contributes brand perception in web search traffic of hotels. Research questions are below.

- 1) Does the degree centrality differ on the social network?
- 2) Does the closeness centrality differ on the social network?
- 3) Does the betweenness centrality differ on the social network?
- 4) Does the hubs/authorities differ on the social network?
- 5) Does the structural holes differ on the social network?

## Research Method

### *Research Methodology*

The research population consists of hotels in Turkey The research sample is based on the research carried out by the Hotel Associations of Turkey (TUROB) on the capacities of local and foreign chains of hotels as per the data from 2018. The data was obtained via e-mail. Based on the data obtained therefrom, the sub-brands of each group of hotels were analyzed. In addition, this information was checked from the official websites of these hotels, whenever it was deemed necessary. The sorting order of the brands analyzed under this study is of high importance. This is because there are many factors that affect this sorting such as the number of rooms, bookings and facilities etc. These factors have a considerable impact on the brand recognition, which also increases the importance of the sorting.

During the performance of this research, the brand sorting criteria is based on the number of facilities. Accordingly, 30 brands with the highest number of facilities according to the study carried out by TUROB on the capacities of local and foreign chains of hotels were analyzed. In general, search is based on the hotel brand, and the assessment was not carried out considering each hotel of the same brand located within the different cities. Binary searches on the 30 hotel brands on Google for 2016, 2017 and 2018 were proportionally identified as of June, July and August, 2019 with the help of *Google Trends* and, the search levels were based on the option 'travel'. The searches were made bi-directionally and, an asymmetrical matrix of 30x30 was obtained since the binary search for the brands 'A' and 'B' may differ from the binary search for the brands 'B' and 'A'. It is one of

the constraints of the research is that some values may vary numerically due to the fact that the Google Trend provides proportional values and, that the research is limited to 30 hotels. The data obtained is analyzed with the help of the Pajek Package Software and, the brand positions are identified according to the degrees of centrality and, the binary searches for the hotel brands.

## Findings

### *Findings about the General Characteristics*

Based on the data obtained from an online hotel booking company in 2018, the general characteristics of the hotels in Turkey according to the sales through this company were analyzed in terms of the following variables: the number of customers, the number of nights stayed, the lead time (average number of nights stayed) and the amount paid for the accommodation (TL) and, compared with the help of the Kruskal-Wallis H Test.

**Table 1.** General Features of the Hotels in Turkey

	Max.	Mean	Standart Deviation	Skewness	Kurtosis
<b>The Number of Customers</b>	20917	138,51	552,51	18,703	537,278
<b>The Number of Night Stayed</b>	14999	115,44	403,75	17,354	480,850
<b>Average number of night stayed</b>	305,00	14,67	25,89	4,135	23,432
<b>Amount (TL)</b>	4094846,82	31155,6 9	107608,35	16,645	474,915

As seen in Table 1, the highest number of customers is 20917 and, the average of customers is approximately 139. According to the number of nights accommodated; the maximum number of nights is 14999 and, the average number of nights is approximately 115. According to the average number of nights; the highest value is 305 and, the average value is 14.6. The highest income of the hotels is TL 4 094 847 while the average income is 31 155.

**Table 2.** Hotels Distribution by Region

Regions	N	%
<b>Marmara Region</b>	1580	31,1
<b>Aegean Region</b>	1816	35,7
<b>Mediterranean Region</b>	1169	23,0
<b>Central Anotolia Region</b>	502	9,9
<b>Eastern Antolia Region (Erzurum)</b>	20	0,4
<b>Total</b>	5087	100

Table 2 shows the distribution of hotels by region. The Aegean Region (35.7%) is the region with the highest number of hotels in terms of hotels distribution by regions, followed by the Marmara, Mediterranean and Central Anatolia Regions respectively. Hotels in other regions are excluded from the research scope.

The number of customers, the number of nights stayed, the lead time (average number of nights stayed) and the amount paid for accommodation (TL) variables were examined according to the regions and, the results are shown in Table 3.

**Table 3.** Comparison of Variables Means by Region

Variables	Regions					$\chi^2$	p	
	Marmara	Aegean	Mediterranean	Central Anatolia	Eastern Anatolia			
	Mean/Mean Rank	Mean/Mean Rank	Mean/Mean Rank	Mean/Mean Rank	Mean/Mean Rank			
<b>The Number of Customers</b>	238,55/ 2748,09	89,88/ 2376,49	73,56/ 2399,15	152,00/ 2824,67	108,45/ 3052,43	86,312	<b>0,000*</b>	
	176,72/ 2663,09	85,26/ 2407,60	79,36/ 2517,13	116,75/ 2707,06	91,00/ 2999,10			34,581
<b>Average number of night stayed</b>	6,99/ 1967,06	18,29/ 2840,97	20,19/ 2828,10	13,01/ 2619,87	10,26/ 2647,95	363,968	<b>0,000*</b>	
	42554,43/ 2630,83	26110,87/ 2458,78	27428,46/ 2515,27	22004,40/ 2631,15	36278,40/ 2914,28			15,133
<i>Kruskal Wallis Test</i>		<i>*p&lt;0,05</i>						

Table 3 shows that there is a significant difference between the number of customers number of nights accommodated, the average number of nights accommodated and, the amount paid for accommodation according to the regions.

In order to see the meaningful difference between the variables and the regions from the pairs of groups, the groups were compared in paired with Mann Whitney U Test, and it was determined which groups were caused by the difference. According to the number of customers, the number of nights accommodated and, the amount of accommodation, the Marmara Region is significantly higher than all other regions. According to the average number of nights, the Mediterranean and Aegean regions are significantly higher than in all other regions.

According to Table 4, customers' preferred rates of booking tools were compared and, the following results were obtained.

Table 4. Comparing the Preferred Rates of Booking Tools

	Tools						$\chi^2$	p
	Trivago	Google AdWords	Trip Advisor	Call Center	Other Tools	Social Networks (Facebook-Instagram)		
	Mean	Mean	Mean	Mean	Mean	Mean		
<b>Preferred Rates</b>	0,323	0,080	0,011	0,134	0,443	0,0003	14847,128	<b>0,000*</b>

One way Anova \* $p < 0,00$

According to Table 4, when customers' preference of booking tools is compared, other tools are different from other websites, and Trivago is significantly higher than all other channels. Trivago is followed by a call center.

Other channels include booking websites and advertising media not included hereunder. They have been excluded from the analysis scope since the rates thereof are lower than other channels.

### Findings of Social Network Analysis

#### View of the Networks by Years

The binary searches for the 30 hotels analyzed hereunder as of 2016 through Google were proportionally identified with the help of *Google Trends* and, the social network view thereof is shown in Figure 1.

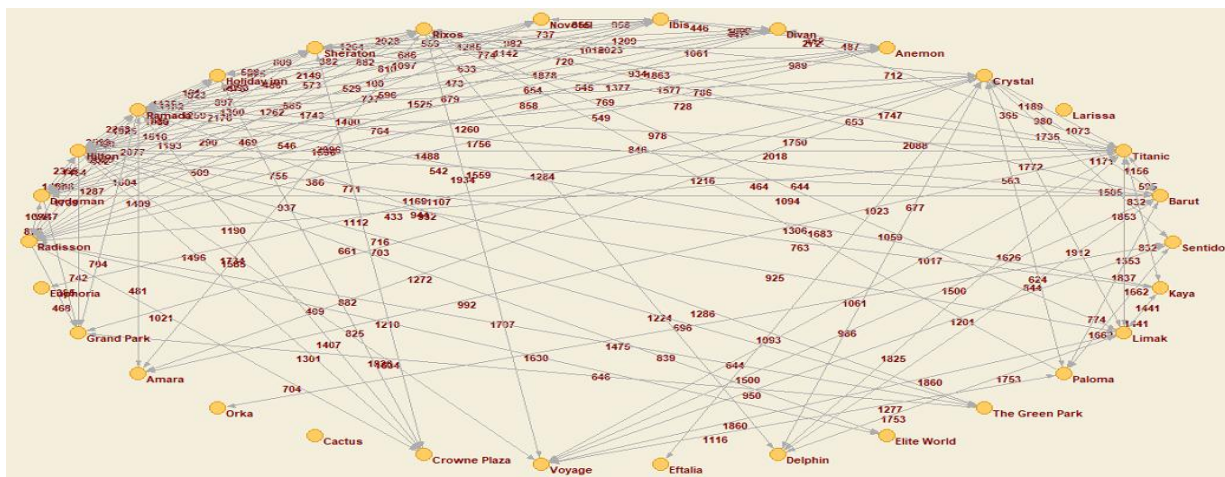


Figure 1. Social Network View of Binary Searches of Hotels in 2016

As can be seen from Figure 1, some hotels are centrally located, while some hotels are located outside the network depending on the degree of weakness of the connections. In the figure, the connections are directional; for instance Radisson and Ramada 2029, Ramada and Radisson has 1739 searches.



It is seen that the brands Ramada, Hilton, Dedeman and Radisson have more intense connections in the network compared to the other brands. The social network view of the binary searches for the hotel as of 2017 is shown in Figure 2 and, the social network view as of 2018 is shown in the Figure 3.

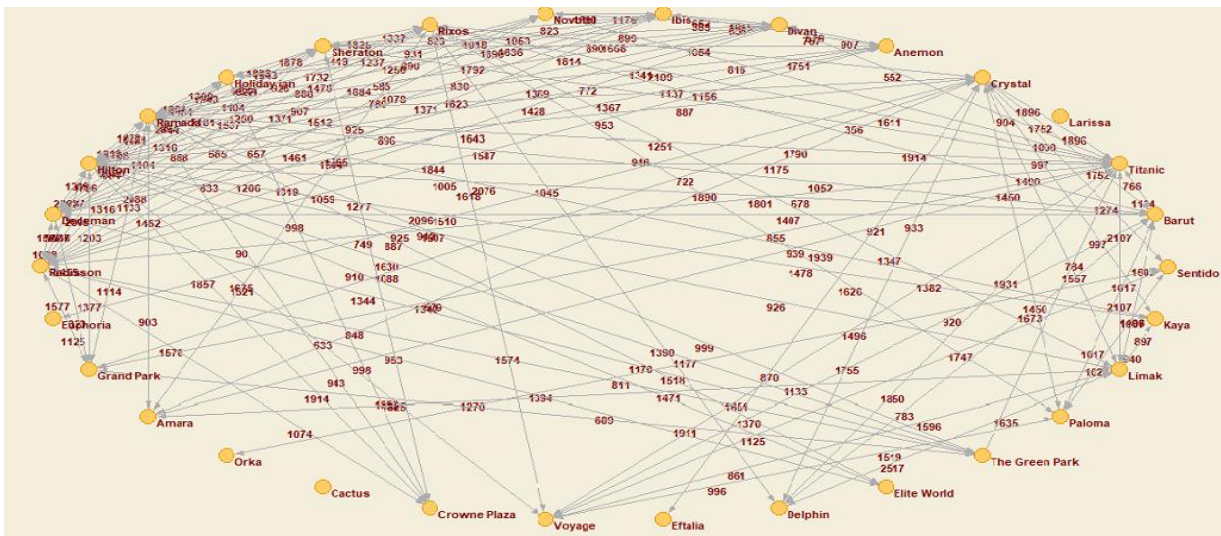


Figure 2. Social Network View of Binary Searches of Hotels in 2017

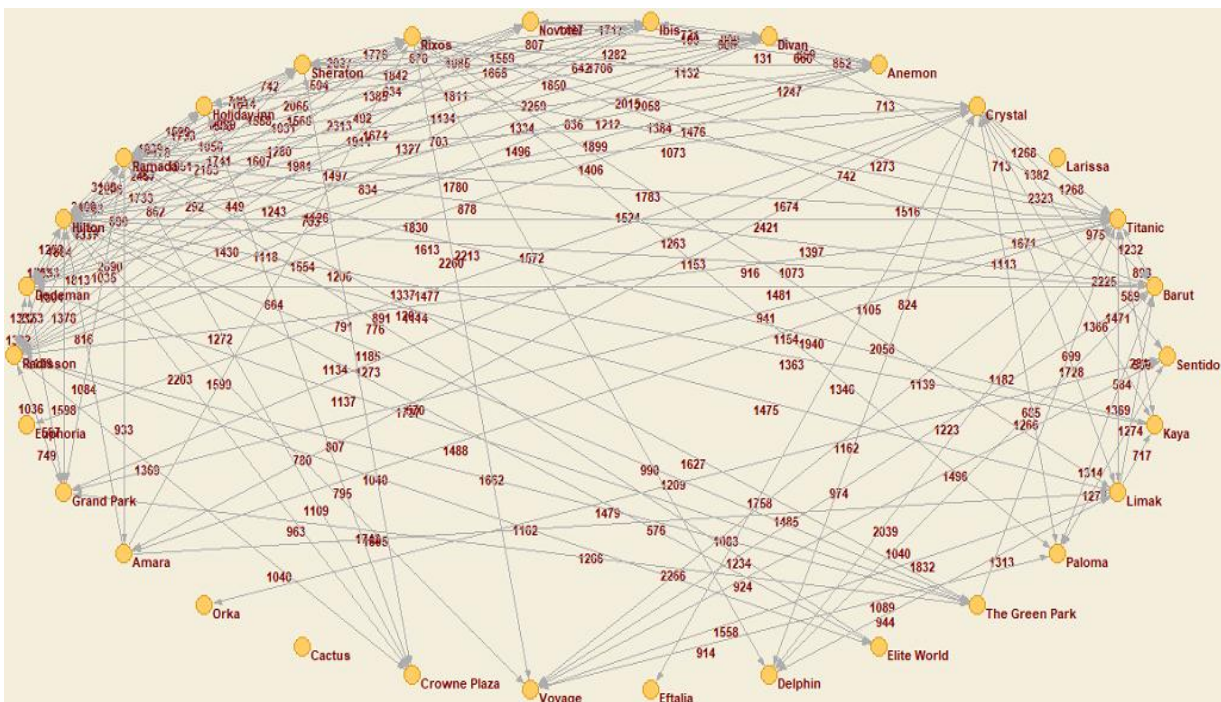


Figure 3. Social Network View of Binary Searches of Hotels in 2018

It is seen that the network views in the Figure 2 and the Figure 3 show similarities while the brands Ramada, Hilton, Dedeman and Radisson have more intense connections in the network compared to the other brands.

***Degrees of Centrality of the Networks by Years***

During the research, the *degree centrality*, *betweenness centrality*, *closeness centrality*, *hubs/authorities* and *structural holes* have been calculated according to the number of incoming and outgoing connections in the network, with the help of the degrees of centrality of Social Network (SN). The hotel names were randomly sorted.

***Degree Centrality***

**Table 4.** All Degree Centrality in 2016, 2017 and 2018

<b>Hotels</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Radisson	27	31	28
Dedeman	22	26	25
Hilton	39	40	41
Ramada	34	38	35
Holiday Inn	16	16	15
Sheraton	22	22	22
Rixos	23	25	24
Novotel	10	12	11
Ibis	18	18	16
Divan	19	18	19
Anemon	14	13	15
Crystal	24	27	26
Larissa	0	0	0
Titanic	26	27	29
Barut	16	20	19
Sentido	8	8	8
Kaya	8	8	8
Limak	14	18	15
Paloma	9	10	10
The Green Park	7	11	10
Elite World	4	6	5
Delphin	9	10	10
Eftalia	2	2	2
Voyage	14	14	14
Crowne Plaza	10	10	10
Cactus	0	0	0
Orka	2	2	2
Amara	8	9	8
Grand Park	6	14	14
Euphoria	1	1	1

The degree centrality equals to the number of connections of a player with the other players.(Otte ve Rousseau, 2002). In case of a directional network, the number of connections with a node is the input degree centrality, the number of connections from one node to the other nodes is the output degree centrality and, the sum of the input and output degree centralities is the entire degree centrality.

The entire degree centrality by years is shown in the Table 4. According to the table, the hotels with the highest number of incoming and outgoing connections as of 2016 are Hilton, Ramada, Radisson and Titanic respectively. The order for 2017 is Hilton, Ramada, Radisson, Titanic and Crystal while the order for 2018 is

Hilton, Ramada, Titanic and Radisson. Although there are some differences in respect of the degree centralities by years, there is no significant differences in respect of the order.

*Betweenness and Closeness Centrality*

**Table 5.** All Closeness Centrality and Betweenness Centrality in 2016, 2017 and 2018

Hotels	Betweenness Centrality			Closeness Centrality		
	2016	2017	2018	2016	2017	2018
Radisson	0,037	0,032	0,032	0,572	0,572	0,572
Dedeman	0,16	0,024	0,022	0,536	0,547	0,547
Hilton	0,206	0,155	0,199	0,720	0,720	0,741
Ramada	0,115	0,137	0,108	0,681	0,700	0,700
Holiday Inn	0,001	0,001	0,001	0,475	0,475	0,475
Sheraton	0,011	0,047	0,011	0,525	0,525	0,525
Rixos	0,039	0,000	0,043	0,600	0,600	0,600
Novotel	0,000	0,000	0,000	0,450	0,475	0,466
Ibis	0,002	0,002	0,001	0,484	0,484	0,484
Divan	,003	0,003	0,004	0,494	0,504	0,504
Anemon	0,000	0,000	0,000	0,466	0,466	0,475
Crystal	0,185	0,192	0,188	0,614	0,630	0,630
Larissa	0,000	0,000	0,000	0,000	0,000	0,000
Titanic	0,057	0,055	0,065	0,600	0,630	0,630
Barut	0,022	0,023	0,022	0,547	0,560	0,560
Sentido	0,062	0,063	0,063	0,406	0,413	0,413
Kaya	0,000	0,000	0,000	0,450	0,494	0,504
Limak	0,010	0,011	0,005	0,525	0,547	0,547
Paloma	0,004	0,006	0,006	0,434	0,442	0,442
The Green Park	0,000	0,000	0,000	0,442	0,466	0,466
Elite World	0,000	0,000	0,000	0,420	0,434	0,434
Delphin	0,000	0,000	0,000	0,442	0,458	0,450
Eftalia	0,000	0,000	0,000	0,376	0,381	0,381
Voyage	0,041	0,032	0,035	0,514	0,514	0,514
Crowne Plaza	0,000	0,000	0,000	0,450	0,450	0,450
Cactus	0,000	0,000	0,000	0,000	0,000	0,000
Orka	0,000	0,000	0,000	0,286	0,289	0,289
Amara	0,000	0,000	0,000	0,484	0,504	0,514
Grand Park	0,000	0,007	0,007	0,514	0,525	0,525
Euphoria	0,000	0,000	0,000	0,376	0,381	0,381

A higher betweenness centrality for the nodes represents the power of binding the different groups in the network and, an action as an “intermediary” in the network.(Otte ve Rousseau, 2002). An individual may act as an important bridge between the parts of a network but may be directly connected only with a few individuals. Betweenness is an important concept for the ‘dispersion in the network’(Kadushin, 2012).

Closeness centrality is a more general concept since it considers the structural position of all the nodes in the network. A higher closeness for a node means that the node is related to the other nodes with a less number of ways.(Otte ve Rousseau, 2002). Closeness and distance indicate how fast a play is able to interact with the other players.(Knoke ve Yang, 2008).



The betweenness centrality and the closeness centrality are in the Pajek Package Program as normalized values and vary between 0 and 1. The level of centrality increases as it approaches 1.

The betweenness centrality and the entire closeness centrality by years are shown in the Table 5. According to the table, the hotels with the highest betweenness centrality as of 2016 are Hilton, Crystal, Dedeman and Ramada respectively. The order as of 2017 is Crystal, Hilton and Ramada, and the order as of 2018 is Hilton, Crystal and Ramada.

According to the closeness centrality by years as shown in the Table 5, the hotels with the highest closeness centrality as of 2016 are Hilton, Ramada and Crystal respectively. The order for 2017 and 2018 is Hilton, Ramada, Crystal and Titanic.

Significant nodes (authorities) indicate the nodes that contain useful information about a subject of interest. (Newman, 2010). As the number of connections from strong nodes increases, the authority value of a node gets higher. The hotels with the highest authority value for 2016 are Hilton, Ramada and Rixos respectively; the order for 2017 is Radisson, Hilton and Ramada and, the order for 2018 is Rixos, Hilton and Ramada.

The structural holes indicate the nodes that do not create a bridge or connection between the parts of the network, i.e. the nodes with no significant connections. Therefore, it is the opposite of the centrality degrees. The highest structural holes belong to Larissa, Eftalia, Cactus, Orka and Euphoria for all of the three years, the hotels with the lowest structural holes are Hilton, Crystal and Ramada for 2016; Hilton, Ramada and Crystal for 2017 and, Crystal, Hilton and Ramada for 2018.

*Hubs/Authorities and Structural Holes*

**Table 5.** Hubs/ Authorities and Structural Holes in 2016, 2017 and 2018

Hotels	Hubs/ Authorities			Structural Holes		
	2016	2017	2018	2016	2017	2018
Radisson	0,206	0,397	0,280	0,293	0,270	0,270
Dedeman	0,254	0,274	0,212	0,292	0,248	0,263
Hilton	0,427	0,371	0,441	0,186	0,195	0,187
Ramada	0,374	0,363	0,401	0,210	0,195	0,210
Holiday Inn	0,137	0,172	0,177	0,355	0,347	0,357
Sheraton	0,248	0,274	0,251	0,291	0,291	0,293
Rixos	0,342	0,248	0,826	0,241	0,231	0,228
Novotel	0,072	0,110	0,141	0,399	0,359	0,395
Ibis	0,112	0,179	0,141	0,348	0,332	0,352
Divan	0,189	0,138	0,211	0,342	0,322	0,332
Anemon	0,130	0,103	0,173	0,388	0,359	0,353
Crystal	0,169	0,187	0,166	0,199	0,207	0,183
Larissa	0,000	0,000	0,000	1,000	1,000	1,000
Titanic	0,312	0,248	0,247	0,261	0,230	0,233
Barut	0,165	0,170	0,178	0,273	0,259	0,261
Sentido	0,060	0,034	0,043	0,331	0,335	0,338
Kaya	0,108	0,109	0,116	0,392	0,356	0,399
Limak	0,197	0,156	0,142	0,308	0,299	0,312
Paloma	0,051	0,069	0,053	0,434	0,369	0,387
The Green Park	0,075	0,123	0,104	0,417	0,373	0,383
Elite World	0,067	0,063	0,065	0,645	0,489	0,511
Delphin	0,113	0,123	0,076	0,435	0,411	0,390
Eftalia	0,021	0,010	0,019	1,000	1,000	1,000
Voyage	0,175	0,135	0,127	0,283	0,273	0,298
Crowne Plaza	0,137	0,125	0,101	0,396	0,444	0,409
Cactus	0,000	0,000	0,000	1,000	1,000	1,000
Orka	0,005	0,002	0,002	1,000	1,000	1,000
Amara	0,094	0,074	0,064	0,410	0,368	0,370
Grand Park	0,086	0,128	0,129	0,418	0,323	0,303
Euphoria	0,021	0,008	0,008	1,000	1,000	1,000

**Conclusion and Discussion**

The purpose of study is to reveal brand positioning using social network analysis to data provided by Google Trends in Turkey. The study is used time series as regard web search information. In this way, we examined the changes in the status of each hotel brand. An assessment on the results from the social network analysis in respect of brand positioning, it is seen that Hilton, Ramada, Radisson and Titanic are the hotels with the highest number of incoming and outgoing connections. Some differences between the betweenness centrality and degree centrality attract attention. For example, it is seen that Crystal ranking in the 5<sup>th</sup> position in respect of the degree centrality ranks in the 1<sup>st</sup> position in respect of the betweenness centrality for 2017. This indicates that even with a less number of incoming and outgoing connections, some nodes may take in a central location since they act as an intermediary in the network. It is seen that there is no significant difference between the closeness centralities by years, but some differences attract attention in respect of the degree centralities. For example, it is seen that Radisson ranking in the 3<sup>rd</sup> or 4<sup>th</sup> position in respect of the degree centrality ranks in the 7<sup>th</sup> position in respect of the closeness centrality. This indicates that there may be some nodes with the power of fast access in the network although the number of incoming and outgoing connections is higher. The nodes in the position of authority in the network are Hilton, Ramada, Rixos and Radisson and the hotels that are outside the network and that do not

hold a strong position in respect of brand positioning are Larissa, Eftalia, Cactus, Orka and Euphoria. It is highlighted that the data obtained from the hotels are the search frequencies on the search engine Google obtained through Google Trends and, the variables such as the capacities of the hotels, the number of bookings and revenues are not considered. Besides, future research could examine brand positioning regarding different product categories.

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## **Application of Forensic Accounting on Fraud Detection in Nigerian Deposit Money Banks (DMBs)**

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### **Abstract**

The study analysed the problems of Forensic Accounting (FA) practice in Nigeria, appraised the perception of DMBs' staff on what fraud portends for the Nigerian Banking Industry and their future, and examined the effect of FA on Fraud Detection (FD) in DMBs in Nigeria. Primary data with the aid of structured questionnaire was used to elicit information from the respondents. Sample size consists of 4 staff each from 10 banks out of the 22 banks in Nigeria and 40 forensic accountants purposively selected. Descriptive and inferential statistics were used. SPSS version 23 was used to examine the relationship between FA and FD in DMBs. The study reveals that fear of possible bad publicity for organizations during litigations on fraud matters among other factors associated with problems of FA practice in Nigeria. It also finds out that fraud could erode investors' confidence in the industry and could lead to loss of employment, among others. The multiple regression analysis results show a positive nexus between FA through its proxies and FD in DMBs. The study recommends among others of the need for the establishment of FA unit in DMBs for timely combat of frauds in the industry.

**Keywords:** Deposit Money Banks, Financial Institutions, Forensic Accounting, Fraud

### **Introduction**

The role played by financial institutions in the developmental programmes of any nation cannot be overemphasised. Undoubtedly, financial institutions overtime have played a pivotal role in stimulating of the economic growth and development. Mostly, they serve as financial intermediaries to other sectors and impacted greatly in the growth and sustainability of businesses at different levels of economy (Swanton, Gainsbury and Blaszczyński, 2019; Sanusi, 2010; Abdullah, 1990). For efficient performance, the activities or operations of financial institutions require stringent rules and regulations from the appropriate authorities. Given the importance of the expected role of financial institutions particularly Deposit Money Banks (DMBs) in the economy of any nation, concerted efforts are geared towards the establishment of several regulatory bodies like Central Bank of Nigeria (CBN), Nigeria Deposit Insurance Corporation (NDIC), among others. Notwithstanding the monitoring roles of these regulatory bodies, the Nigerian Deposit Money Banks (DMBs) have been in the eye of the storm in the recent times.

In the recent time, the incidence of fraud cases and the rate at which it occurs in the banking sector of the economy is alarming. The collapse of many banks has been ascribed to fraudulent practices and these were not without any effect on depositors' fund (Udeh and Ugwu, 2018; Owolobi, 2010). Though, the recent experience in the sector is not totally strange as the banks' failures have been in existence since the emergence of banking industry, but the number of fraud cases in Nigerian banks coupled with accounting scandals have increased considerably and led to the increased losses and collapse of many banks (Taiwo, Agwu, Babajide, Okafor and Isibor, 2016).

Globally, fraud has been found as a major threat to the growth and development of the banking industry (Akinyomi, 2012). Fraud is described as a dishonest act and behaviour by which one person gains or intends to gain an advantage over another person (Sharma2009). It is an act or a practice that cut across all levels of management but more noticeable among the middle career officers. The industry in Nigeria is well regulated but despite the supervisory roles of the regulatory bodies and investigative units of the banks, evidence from the NDIC reports of 2018 indicates that cases of fraud have been on the increase. The reports show that there were 37,817, 26,182 fraud cases for 2018, 2017 and the amounts involved were N38.93 billion in 2018 and N12.01 billion in 2017 and of which the respective losses were N15.15 billion and N2.37 billion for 2018 and 2017 respectively. This incessant fraud has not only been a major concern to the stakeholders but to the academia who have engaged in serious scholar research to stem this menace. Part of the efforts put in place is the application of forensic accounting to strengthen the investigative units of banks.

Evidences in literature show that forensic accounting is an effective tool for unearthing fraud, corruption, financial and economic crimes, among others (Akinadewo, Akinkoye, Oyedokun, & Asaolu, 2019; Alabdullah, Alfadhl, Yahya & Rabi, 2014; Dada, Enyi & Owolabi, 2013; Dada, Owolabi & Okwu, 2013; Madumere & Onumah, 2013; Oyebisi, Wisdom, Olusogo & Ifeoluwa, 2018). The emergence of forensic accounting in the United States of America and its efficacy and proficiency in fraud detection and other financial impropriety has widened the horizon of its applicability and become an important subject of discourse among scholars around the globe. Forensic accountants are trained to use analytical skill, arbitration skill, investigative skill among others which enhance the outcome of their engagement for litigation purposes. Today, forensic accounting techniques are employed to effectively investigate and detect corruption among others (Dada, Owolabi, Okwu, 2013). Whilst the use of forensic accounting is now pronounced in the developing economies much as it is being engaged in the developed economies, the extent of success rate as regards its potency in fraud detection has not been adequately established in the emerging economies like Nigeria with huge records of fraud cases (Adegbite, Oyebamiji & Oyedokun, 2018; Ezejiofor, Nwakoby & Okoye, 2016). Thus, this study attempts to identify the problems associated with forensic accounting practice in Nigeria, appraise the perception of the staff of DMBs on the use of forensic accounting to track or trail perpetrated fraud and examine the effect of forensic accounting on fraud detection in DMBs.

## Literature Review

### *Forensic Accounting and its Services*

Forensic accounting is an idea that came upon the view of using expert, called forensic accountant, to unravel with documentary evidence of fraudulent practices, in which the information provided could be used for litigation purposes. Forensic accounting, also known as forensic audit or investigative audit, has been described by various scholars as an exercise that involves comprehensive examination of fraud investigation case, prevention of fraud, analysis of anti-fraud controls. It also involves the audit of accounting records in search for evidence of fraud which deals with legal claims and complaints (Singleton and Singleton, 2010; Zadeh and Morteza, 2012).

The services of forensic accounting have been categorised into Litigation Supports, Investigative Accounting, Corporate Intelligence, Fraud Investigation Services, Expert Witness Engagements, Divorce Business Valuation, and Lost Earnings Engagements, among others (Zachariah, Masoyi, Earnest, Gabriel, 2014; Nunn, McGuire, Whitcomb, Jost, 2006). For the purpose of this study, the aspect of forensic accounting that address the financial fraud cases, and economic crimes will be duly examined and appraised. The use of forensic accounting is well grounded in the developed nations as forensic accounting expert were used in some cases of fraud (Mayungbe, 2012). In Nigeria, professional bodies like the Institute of Chartered Accountants of Nigeria (ICAN), Association of National Accountants of Nigeria (ANAN) have also expanded the scope of their profession to include forensic accounting training in order to meet the increasing demand for forensic accounting service. These professional bodies provide a platform through faculties to train and equip their members with required skills and certification to become Certified Forensic Accountants.

### ***Banking Evolution in Nigeria***

The banking industry in Nigeria has gone through various reforms and phases from 1952 which was the era of free banking to 2004, the bank consolidation era. The Banking business right from the inception practically engage in the business of receiving deposit on current, savings accounts or other similar accounts. Part of the services rendered also include paying or collecting cheques drawn by or paid in by customers, provision of finance, loan facilities of different kind or such other business as the Central Bank of Nigeria (CBN) may prescribe, publish in the gazette and designate as banking business. Table 1 below shows the phases of banking evolution in Nigeria.

**Table 1: Nine Phases of Banking Evolution in Nigeria**

<b>PHASES</b>	<b>PERIOD COVERED</b>	<b>EVENTS</b>
<b>Phase One</b>	Up to 1952	Free Banking Era
<b>Phase Two</b>	1952 – 1959	Pre-colonial Banking Era
<b>Phase Three</b>	1959 – 1970	Era of Banking Legislation
<b>Phase Four</b>	1970 – 1976	Era of Indigenization
<b>Phase Five</b>	1977 – 1985	Post Okigbo Era
<b>Phase Six</b>	1986 – 1992	De-registration Era
<b>Phase Seven</b>	1993 – 2001	Era of Banks Distress
<b>Phase Eight</b>	2002 – 2004	Universal Banking
<b>Phase Nine</b>	2004 – Date	Era of Bank Consolidation

**Source:** Chi-Chi and Ebimobowei, 2011, adapted from Nzotta (2004)

The banking industry witnessed several reforms over the years. The last was a great effort to strengthen the financial base of the industry. Prior to the directive given by the regulator (CBN) to all banks in Nigeria in 2004 to increase their capital base be increased from N2b to a minimum of ₦25 billion on or before 31<sup>st</sup> December 2005, there were 89 Commercial and Merchant Banks operating in Nigeria. This exercise termed recapitalization was done to strengthen the financial base of banks whose going concern was already threatened and there was every indication of distress. The unhealthy position of some of the banks was not to the knowledge of the larger public, until many banks could not complete the exercise, and some had to come together as group before they could achieve the ₦25 billion benchmark. Drastically, the number of the banks dropped from 89 to 25 at the end of the recapitalization exercise and of recent through merger and acquisition, in 2018, the number of the DMBs in Nigeria dropped to 22. The Central Bank of Nigeria (CBN), is the apex bank and the Deposit Money Banks (DMBs) is classified into those licenced with international authorization, national authorization, regional authorization licence and the non-interest banks licenced with national authorization. However, the banks are governed under the Banks and Other Financial Institutions Act (BOFIA) 1991 as amended in 1997, 1998, 1999 and 2002.

### ***Fraud in the Nigerian Banking Industry***

Fraud is anything calculated to deceive, which includes acts of omission and concealments involving a breach of legal or equitable duty, trust or evidence justly reposed which result in damage to another or by which undue and conscienceless advantage is taken of another Owolabi (2010). It is an intentional deception which include lying and cheat that runs contrary to what honesty and truth stand for (Singleton & Singleton, 2010). Fraud in the banking environment include misappropriations, embezzlements, manipulations of negotiable instruments like cheques, drafts, or statement of accounts, securities, and that frauds include misrepresentations, cheating, thefts, undue favours and irregularities (Sharma, 2009). Oyebisi, Okere, Olusogo & Ifeoluwa (2018) opined that despite the establishment of anti-fraud agencies like Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices Commission (ICPC), fraud cases in the banking industry has been on the increases and it has been difficult for these agencies to successfully prosecute the perpetrators.

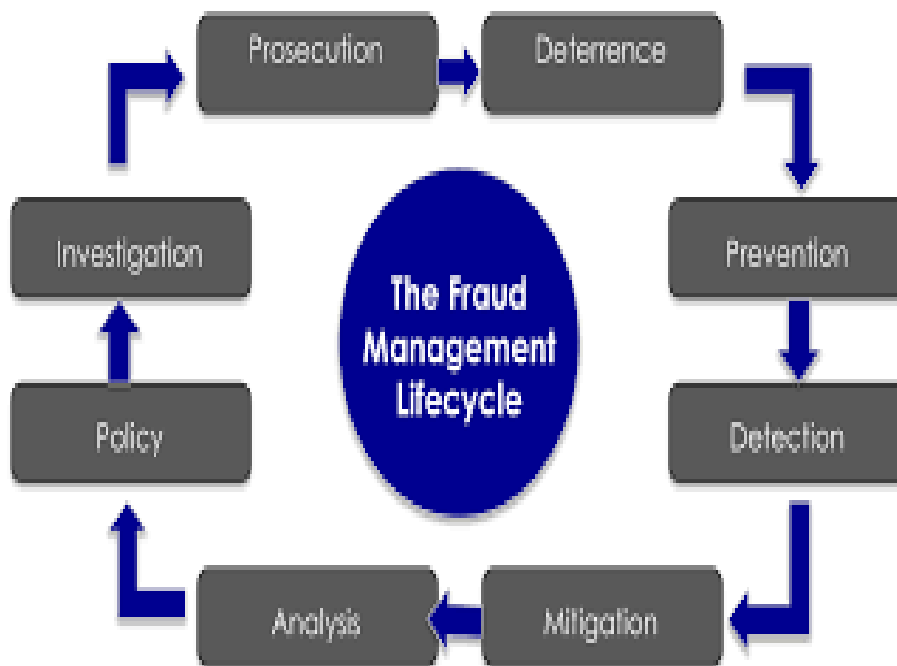


In the survey of factors causing banking crisis in 29 selected countries, it was established that 20.69% was as a result of frauds (Caprio 1998, cited by NDIC, 2016). Thus, frauds in the banking industry is a major impediment to its growth and it requires urgent and timely intervention. The Nigerian banks, especially the Deposit Money Banks (DMBs), has not been excluded from the global frauds perpetrated by both internal and external persons. Despite the reforms in the Nigerian banking industry, cases and value of frauds in the DMBs have been persisting and on the increase. The NDIC reports (2014-2018) state that there were 10,621, 12,279, 16751, 26182 and 37,817 cases of fraud for 2014, 2015, 2016, 2017 and 2018 respectively. The actual value involved in these years was ₦103.25 billion (2014 – ₦25.61billion; 2015 – ₦18.012 billion; 2016 – ₦8.68 billion; 2017 – ₦12.01 billion; 2018 – ₦38.93 billion) with the actual loss of ₦29.28 billion (2014 – ₦6.19 billion; 2015 – ₦3.17 billion; 2016 – ₦2.40 billion; 2017 – ₦2.37 billion; 2018 – ₦15.15 billion). In regard to the persistency in fraud cases, Chi-Chi and Ebimobowei (2012) postulated that the widespread frauds in modern organisations have made traditional auditing and investigation inefficient and ineffective in the detection and prevention of the various types of frauds confronting businesses worldwide, hence the need to apply forensic accounting

### *Theory of Fraud Management Lifecycle*

The fraud cycle begins with the plans of the fraudster leading to the committing of the fraud act, and once committed, the fraudster converts the asset to cash, if necessary, and conceals the fraud (Singleton and Singleton, 2010). Wilhelm (2004), in his study, developed The Theory of Fraud Management Lifecycle. In that study, the author came out with eight stages of most fraud cases: Deterrence, Prevention, Detection, Mitigation, Analysis, Policy, Investigation, and Prosecution. He then posited that the effective management of fraud, requires a balance in the competing and complementary actions within the Fraud Management Lifecycle. This study hence adopts the Fraud Management Lifecycle.

### *Fraud Management Lifecycle Theory*



**Figure 1:** The Fraud Management Lifecycle  
**Source:** Wilhelm (2004).

## Empirical Review

The issues of forensic accounting and fraud detection have well been researched and documented in the literature. For example, many studies have been conducted to examine the effect of forensic accounting on fraud prevention and bribery cases; on financial crimes; on fraud detection among others. Studies on the subsisting relationship between the forensic accounting and fraud detection in the public sector and other industries particularly in the developing economy are extensive in the literature but with mixed findings. However, there is still paucity of studies that thoroughly look at the relationship in the financial sector of Nigerian economy particularly the DMBs. Studies have measured the effect of bank fraud on the industry. For instance, Taiwo, Agwu, Babajide, Okafor & Isibor (2016) looked at the effect of bank fraud on the growth of the Nigerian banking industry. The main focus of the study was on the impact of frauds on deposit mobilization and the identification of the associated problems. The research used time series annual data for a period covering 2002 to 2014. The study finds out that fraud inflicts severe financial difficulty on banks and consequently, dent the confidence customers have in in the banking industry.

Udeh & Ugwu (2018) researched on fraud in the Nigerian banking sector using the ex-post facto research design. Data collected were for 2006 to 2015 period. The study finds out that the amount involved in fraud does not significantly affect bank profit. Oyebisi, Wisdom, Olusogo & Ifeoluwa (2018) examined the role of forensic accountant in the prevention and detection of fraud in the Nigerian banking sector. The study adopted survey research design in looking at the relationship between forensic accounting and fraud detection. The findings reveal that forensic accounting has a significant impact on fraud prevention and detection in the Nigerian banking industry.

In another study, Ezejiofor, Nwakoby and Okoye (2016) examined the impact of forensic accounting on combating fraud in Nigerian banking industry. The study adopted survey through the administration of questionnaire on respondents from commercial banks in Awka, Anambra State. The findings show that forensic accounting is an effective tool for addressing financial crimes in the banking system. Chi-Chi and Ebimobowei (2012), examined the effect of forensic accounting services on fraud detection in Nigerian Banks and found that forensic accounting services reduce the level of fraudulent practices in banks. Enofe and Okpako (2013), researched on the impact of forensic accounting on fraud detection in Nigerian firms. The study looked at only fifteen firms in Benin City, Edo State of Nigeria and came out with the postulation that the application of forensic accounting services on firms affects the level of fraudulent activities. Gbegi and Adebisi (2014), looked at the application of forensic accounting skills and techniques to fraud investigation in the public sector. The study used both the primary data and secondary data and data were analysed with the Analysis of Variance (ANOVA) and time series analysis. The study finds out that forensic accounting skills and techniques have significant effect on uncovering and reducing fraud in the Nigerian public sector. Aribaba (2013) examined the application of forensic accounting to companies in Nigeria. The study reveals that forensic accounting in Nigeria is still very new and that the impacts are not well felt. Ozkul and Pamukcu (2014) looked at forensic accounting applications to fraud around the world – United Kingdom, Canada, Australia, and United States of America. The study showed that corruption in US companies has attracted the attention of the concerned in many US organisations, and that detection and the need for prevention of corruption, have given rise to the profession of forensic accounting.

Dada, Enyi and Ajao (2013), looked at forensic accounting as an effective tool in investigating bribery cases in Nigeria. The study adopted the survey research design and analysed the data with multiple regression analysis. The finding suggested that applying forensic accounting technique in the investigation and detection of cases of bribery has positive relationship with bribery prevention. Zachariah, Masoyi, Ernest and Gabriel (2014) examined the application of forensic auditing in fraud control in Nigerian Banks. The study related this to the failure of external auditors in detecting frauds in the course of their statutory assignments. It analysed the trend of fraud cases from 2001-201 and the losses sustained by the banks. The study used descriptive analysis in revealing the movements in fraud cases and recommended the need for the services of forensic auditor for banks and forensic accounting to be taught in tertiary institutions, among others. Olaoye and Dada (2014) analysed

fraud in Banks covering 2002 to 2012. The study recommended the effective screening of bank staff before being employed and that such staff should not stay too long in one function but be periodically rotated.

### Methodology

This study adopts the survey research design through the administration of questionnaires on respondents. The population comprises of 40 bank staff from 10 banks and 40 forensic accounting practitioners. The 10 banks chosen was predicated that 10% of the population is adequate to form the sample and size of a study (Oyebisi, Wisdom, Olusogo & Ifeoluwa, 2018; citing Balsely & Clover, 1988). Four (4) staff each from 10 of the 22 Deposit Money Banks equalling 40 staff and 40 Forensic Accounting Expert Firms in Lagos State. Thus, the questionnaires were administered to 80 respondents. Lagos state was chosen firstly because majority of forensic accountants in Nigeria operate there and most DMBs have their headquarters situated in the state.

#### Model specification:

$$\begin{aligned} \text{FD} &= f(\text{IoF}, \text{AoF}, \text{PoF}, \text{DiF}) \dots\dots\dots (1) \\ \text{GR} &= \beta_0 + \beta_1\text{IoF} + \beta_2\text{AoF} + \beta_3\text{PoF} + \beta_4\text{DiF} + \mu \dots\dots\dots (2) \end{aligned}$$

A priori expectation:  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 > 0$ .

Where:

FD = Fraud Detection, IoF = Investigation of Fraud, AoF = Analysis of Fraud,  
PoF = Prevention of Fraud, and DiF = Deterrence in Fraud

### Data Presentation, Analysis and Discussion of Findings

The 80 questionnaires administered were fully received from the respondents. Among the respondents were 40 forensic accountants. The respondents were asked to express their opinion on the problems of forensic accounting in Nigeria in scale of 4, divided into Highly Critical (HC), Not Too Critical (NTC), Undecided (U) and It is Not a Problem (INP). Meanwhile, the descriptive analysis of the problems associated with the practice of forensic accounting in Nigeria shows that all the 40 forensic accounting respondents in table 2, opinionated strongly that the level of awareness of forensic accounting practice in Nigeria is low (HC), with a mean of 3.7750 and a standard deviation of 0.42290 showing the spread. The respondents were further of the opinion that many forensic accountants do not have enough practical experience (HC) (mean = 3.6250, SD = 0.54006), that several organizations where fraud occurred hardly invite forensic accountants for fear of negative publicity (HC) (mean = 3.6250, SD = 0.57957), and that many corporate organizations cannot properly differentiate between forensic accounting and traditional auditing and investigation (NTC) (mean = 3.5000, SD = 0.59914). The study also reveals that many respondents were of the opinion that the Nigerian government has not enacted the enabling law for effective practice of forensic accounting (HC) (mean = 3.5500, SD = 0.67748), that the cost of engaging forensic accountant is exorbitant (NTC) (mean = 3.4250, SD = 0.63599), that there is ambiguity in the functions of forensic accountants (NTC) (mean = 3.0750, SD = 0.72986), that many forensic accountants are fearful of their lives and would not want to be expert witnesses in the law court (NTC) (mean = 3.1500, SD = 0.83359), and that there is lack of effective implementation of policies common with the emerging economies like Nigeria (NTC) (mean = 2.9500, SD = 0.67748).

**Table 2:** Descriptive Results of Problems Associated with Forensic Accounting Practice in Nigeria

Statements	N	Min	Max	Mean	Std. Deviation
The level of awareness of forensic accounting practice in Nigeria is low	40	3.00	4.00	3.7750	.42290
Many forensic accountants in Nigeria do not have enough practical experience in forensic accounting practice	40	2.00	4.00	3.6250	.54006
Several organizations where fraud occurred hardly invite forensic accountants for fear of negative publicity	40	2.00	4.00	3.6500	.57957
Many corporate organizations cannot properly differentiate between forensic accounting and traditional auditing and investigation	40	2.00	4.00	3.5000	.59914
The Nigerian government has not enacted the enabling law for effective practice of forensic accounting	40	2.00	4.00	3.5500	.67748
Cost of engaging forensic accountant is exorbitant	40	2.00	4.00	3.4250	.63599
There is ambiguity in the functions of forensic accountants	40	2.00	4.00	3.0750	.72986
Many forensic accountants are fearful of their lives and would not want to be expert witnesses in the law court	40	1.00	4.00	3.1500	.83359
There is lack of effective implementation of policies common with the emerging economies like Nigeria	40	2.00	4.00	2.9500	.67748
Valid N (list wise)	40				

**Source:** Field Survey and SPSS 23 Analysis Result (2019)

Table 3 detailed the perception of the staff of the banks on the effect of fraud on the banking industry and their future. Four staff each were chosen from ten selected DMBs from the existing twenty-two banks. Majority of the respondents opinionated that fraud in the will result into loss of confidence from the depositors, with a mean of 4.6000 and 0.59052 standard deviation, showing the spread. Many of the respondents agreed that fraud in DMBs will reduce the emoluments of the staff (mean = 3.1000, SD = 1.333589); that it could result to loss of employment (mean = 4.4000, SD = 0.67178); and that it could lead to bank failure (mean = 4.0000, SD = 0.71611). Some of the respondents also believed that fraud in the banking sector will bring about a recession in the economy (mean = 2.9500, SD = 1.69388); that I may lead to labour turnover and loss of key staff to other sectors (mean = 3.3250, SD = 1.28876); that it could create negative perception from the public as to the integrity of bank staff (mean = 4.4750, SD = 0.59861); and that it could create a mistrust between the government and bank executives (mean = 3.3500, SD = 1.25167). Majority of the respondents opinionated that fraud in the banking sector will discourage potential investors (mean = 4.7250, SD = 0.50574); and that it is a time bomb that will distort the developmental programs of government and growth of the nation (mean = 4.4500, SD = 1.03651).

**Table 3:** Descriptive Results of the perception of the staff of Deposit Money Banks (DMBs) on what frauds portend for the banking industry and their future

Statements	N	Min	Max	Mean	Std. Deviation
Fraud in the bank will result into loss of confidence from the depositors	40	3.00	5.00	4.6000	.59052
It will reduce the salary package of the Staff	40	1.00	5.00	3.1000	1.33589
It could result into loss of employment	40	3.00	5.00	4.4000	.67178
It could lead to bank failure	40	2.00	5.00	4.0000	.71611
It could bring about a recession in the economy	40	1.00	5.00	2.9500	1.69388
It may lead to labour turnover and loss of key staff to other sectors	40	1.00	5.00	3.3250	1.28876
It could lead to negative perception in the mind of the public as to the integrity of bank staff	40	3.00	5.00	4.4750	.59861
It could create a distrust between the government and bank executives	40	1.00	5.00	3.3500	1.25167
It will discourage potential investors	40	3.00	5.00	4.7250	.50574
It is a time bomb that will distort the developmental programs of government and growth of the nation	40	1.00	5.00	4.4500	1.03651
Valid N (list wise)	40				

Source: Field Survey and SPSS 23 Analysis Result (2019)

### Regression Analysis

The data collected from questionnaire on Forensic Accounting and Fraud Detection in Deposit Money Banks (DMBs) was analyzed with the aid of SPSS 23 package.

Table 4 is the model summary, which shows the information about the level of variance in the dependent variable (Fraud Detection) being explained by the model. The  $R^2$  in the model is .136, which means that 13.6% of the total variance in fraud detection in DMBs has been explained, while the remaining 86.4% variation in the dependent variable is as a result of other factors not captured in this study.

**Table 4:** Model Summary

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.369 <sup>a</sup>	.136	.090	.53641

a. Predictors: (Constant), Investigation of Fraud (IoF), Analysis of Fraud (AoF), Prevention of Fraud (PoF), Deterrence in Fraud (DiF)

Source: Researchers' Calculation using SPSS 23 (2019)

Table 5 explains the analysis of the variance table and the level of the significance of the statistics. While 2.960 being the value of the F shows the fitness of the model for this hypothesis testing, the significant value is 0.025, which entails that there is a nexus between the dependent variable and the independent variable.

Table 5: ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.407	4	.852	2.960	.025 <sup>b</sup>
	Residual	21.580	75	.288		
	Total	24.987	79			

a. Dependent Variable: Fraud Detection (FD)

b. Predictors: (Constant), Investigation of Fraud (IoF), Analysis of Fraud (AoF), Prevention of Fraud (PoF), Deterrence in Fraud (DiF)

Source: Researchers' Calculation using SPSS 23 (2019)

### Hypothesis Testing

This study aims at examining the effect of forensic accounting on fraud detection in the Deposit Money Banks (DMBs) in Nigeria. Fraud Detection (FD) is the dependent variable and forensic accounting is the independent variable represented by Investigation of Fraud (IoF), Analysis of Fraud (AoF), Prevention of Fraud (PoF), and Deterrence in Fraud (DiF). This study expects that Investigation of Fraud will have a positive relationship with fraud detection. This entails that an increase in fraud investigation will result to an increase in fraud detection. The Analysis of Fraud is expected to have a positive relationship with fraud detection. This presupposes that any increase in fraud analysis will lead to increase in the detection of fraud. It is expected that Prevention of Fraud will have a positive relationship with fraud detection. This means that the higher the prevention measure of fraud, the increase the level of fraud detection. Deterrence in fraud is expected to have inverse relationship with fraud. It means that the more the deterrence in fraud, the lower the rate of fraud.

**H<sub>01</sub>:** Forensic accounting has no significant influence on fraud detection in Deposit Money Banks (DMBs) in Nigeria.

The coefficients in table 5 shows the extent of the relationship that exist among the components of the independent variables (IoF, AoF, PoF, DiF), and the dependent variable (FD). The result shows a significant positive relationship between the indicators of forensic accounting and fraud detection in DMBs in Nigeria. At the statistical significance level of 5%, the null hypothesis is rejected since the t-calculated of 2.255 is greater than t-tabulated of 0.027 and it can be concluded that Forensic Accounting has a significant effect on Fraud Detection in DMBs in Nigeria.

The result shows that there is positive relationship between Fraud Detection and fraud investigation since t-calculated is positive 1.47 which means that Investigation of Fraud (IoF) will lead to fraud detection in DMBs. The result also shows that there is positive relationship between Fraud Detection and Analysis of Fraud (AoF) since t-calculated is positive 1.958. This means that fraud in the banking industry will be detected when fraud itself is timely analysed. The result shows that there is a positive relationship between Fraud Detection and Prevention of Fraud (PoF) since the t-calculated is positive at 0.066. This means that fraud in the banking industry will be detected if appropriate preventive measure is instituted. The result shows a positive relationship between the Fraud Detection and Deterrence in Fraud (DiF) since t-calculated is positive 1.192. This means that deterrence in fraud will lead to fraud detection in the Nigerian banking industry. Meanwhile, the coefficients of IoF ( $\beta_1$ ), AoF ( $\beta_2$ ), PoF( $\beta_3$ ), and DiF ( $\beta_4$ ) are greater than zero, hence, the a priori expectation is satisfied,  $FD = 1.873 + 0.215*IoF + 0.188*AoF + 0.006*PoF + 0.135*DiF + 0.831$ .

**Table 6: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.873	.831		2.255	.027
	IoF	.215	.146	.172	1.470	.146
	AoF	.188	.096	.225	1.958	.054
	PoF	.006	.091	.007	.066	.948
	DiF	.135	.113	.131	1.192	.237

a. Dependent Variable: Fraud Detection

Source: Researchers' Calculation using SPSS 23 (2019)

### Policy Implications and Recommendations

Fraud in the Nigerian Deposit Money Banks (DMBs) has been unabatedly occurring and it has been a major concern for the stakeholders. Scholars too have been able to establish the effectiveness of forensic accounting on fraudulent practices (Oyebisi, Wisdom, Olusogo & Ifeoluwa, 2018; Ezejiofor, Nwakoby & Okoye, 2016; Chi-Chi & Ebimobowei, 2012; Enofe & Okpako, 2013; Gbegi & Adebis, 2014; Aribaba, 2013; Ozkul & Pamukcu, 2014). Thus, this study became necessary in order to determine the effect that forensic accounting, proxied by IoF, AoF, PoF and DiF, would have on fraud detection in DMBs. This study also looked at the problems associated with forensic accounting practice in Nigeria from the angle of forensic accounting practitioners and obtained the perception of DMBs staff in what fraud portends for the industry and the future of the staff. The finding shows that Several organizations where fraud occurred hardly invite forensic accountants for fear of negative publicity, among other factors. The finding also revealed that fraud is a time bomb that will distort the developmental programs of government and growth of the nation, and it could lead to negative perception in the mind of the public as to the integrity of bank staff, among others. The findings also revealed that the components of the independent variable, Investigation of Fraud (IoF), Analysis of Fraud (AoF), Prevention of Fraud (PoF), and Deterrence in Fraud (DiF) are positively linked with the dependent variable. This means that forensic accounting is an effective method of unearthing frauds in the Deposit Money Banks in Nigeria. This is in line with the studies of (Oyebisi, Wisdom, Olusogo & Ifeoluwa, 2018; Ezejiofor, Nwakoby & Okoye, 2016; Chi-Chi & Ebimobowei, 2012; Enofe & Okpako, 2013).

Having considered the findings of this study and the negative effect that frauds have on the growth and the going concern of banks, the following recommendations are made:

- i. A more effective policy be instituted by the government to strengthen the regulatory bodies in Nigeria in the war against frauds in the banking industry.
- ii. The practice of forensic accounting in Nigeria should be effectively regulated and made compulsory as a unit in the DMBs.
- iii. Any occurrence of fraud should be timely investigated, and the culprits prosecuted. This will not only prevent the occurrence of more fraud but will serve as deterrence to others.
- iv. Government should mandate banks to initiate the Hall of Shame records for fraudsters in the industry.
- v. Government should legalize forensic accounting institutes for professional training of forensic accountants to complement the efforts of the faculty departments of the existing accounting professional bodies in Nigeria.



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List of Deposit Money Banks and Financial Holding Companies Operating in Nigeria as at September 30, 2018  
<https://www.cbn.gov.ng/out/2018/fprd/list%20of%20deposit%20money%20banks%20as%20at%20september%2030%202018.pdf>.

## **The Investigation of the Effect of Negative Numbers on the Perceptions, Attitude and Behaviours of People: A Scale Development Study**

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### **Abstract**

In this study, it was aimed to develop a scale in the scope of examining the effect of negative numbers on the perception, attitude and behaviors of individuals. In this direction, 45 question sentences were prepared which were positively and negatively related to certain criteria. The content and scope validity of the questionnaire was evaluated before the application and a questionnaire was applied to 400 individuals in Kalecik district of Ankara province for structural validity. The validity of the scale was tested by entering the data in SPSS statistical program and by using reliability and factor analysis. With factor analysis, the scale was grouped under 4 factors as 4 Attitudes and Attitudes “,” Perception ”, “ Awareness Raising Faktör and ”Behavioral Intention Faktör. As a result of the reliability analysis, 6 sentences were deduced from the questionnaire and the overall reliability of the scale (Cronbach-Alpa) was found to be 0.831. The results showed that the scale was valid and reliable.

**Keywords:** Perception, Attitude, Negative number, Negative Number Perception and Attitude Scale

### **Introduction**

It can be seen that the habitat and the cultural development of people has importance for the historical development of numbers. In the beginning people only perceived 4 items when they observed the objects and this resulted in developing a permutation up to number 4 as number perception. In the following times when men encountered more objects with the need to learn in order to conceptualize this, they started to increase the learning requirements (Ifrah, 2004).

The symbols for numbers were different in every region. Terracotta pots of different size were used to eliminate this distinction and create unison. These objects contributed to the evolving of different number sequences(Conway, 2014).

Numbers and counting sequences are the basis of the mathematics and its education. Individuals encounter numbers and number sequences throughout their learning life starting with the family (Işık, Kar 2011). In our daily life numbers are used in many places and speaking of a world order without numbers is impossible. The individual who after meeting the numbers for the first time in the early ages while playing, enters in the phase of counting and learns the evolvement of numbers as he/she grows with advanced counting level and arithmetic.

In order to understand and interpret the negative numbers, it is required to compare these numbers with positive numbers on a numerical axis (Fischer, 2005). Especially modeling of the the formation level of positive numbers and advancement, and explaining it with the number theory will help a lot to form number groups. It is very important for the negative numbers to make a negative numerical axis and evaluating the closeness to zero and interpreting it.

It is observed that the more numerical perception an individual has, the better relation he/she has with the numbers. This affects the emotional process as well as the cognitive process and makes it easier to understand and interpret the numbers (Işık, Kar 2011). The perception of positive numbers takes shorter whereas it takes longer for the perception of negative numbers. The cause of this is the effect of the roles of number permutations and numerical axis on individuals. In this matter it is observed that the level of interest and education levels of individuals have a big effect.

The process which the individuals feel the events around them with their five senses and interpret them is called perception (Eren, 2014). Perception in numerical perceptions, works as; associating a number to daily life experience and giving a meaning to it. The place of negative numbers in daily expressions and the scope of these transforming into behaviors affects the behavior of people in response to situations they find themselves in (Özdevecioğlu, 2004). These numbers affects the emotions of the individuals and change them to negative emotions.

There is not a study in the literature that examines the perceptions, attitudes and behavioral situations happening when individuals are faced with negative numbers. In this study; it is intended develop a scale to form a basis for the subject matter works, in order to find out the perceptions and attitudes against negative numbers.

#### **Method**

A validity and reliability case study was conducted with the individuals from Ankara, Kalecik district in order to measure their perceptions and attitudes in response to negative numbers, and a pilot test was made to obtain a scale( Ekici, 2012). This study was conducted with face to face interviewing method with 400 random individuals in the district.

#### **Pilot Test**

The content of draft questionnaire of 45 questions was tested for validity of content and scope. After that the questionnaire was implemented to 400 individuals and the results were input to the SPSS statistical program(Özdamar, 2001). The factors related with negative number perception and attitude scale in this questionnaire study was defined as; A: Attitude and manners”, B: Perception, C: Awareness Raising” and D: Behavioral Intention”. Under each factor there are positive and negative perceptions and attitude sentences related with the respective factor. The replies to the questionnaire were evaluated with Likert 5 scale ( I strongly disagree, II I disagree, III neutral IV I agree, V I strong y agree). In the demographics section participants were asked questions regarding their sex, civil status, age and education level.



**Table 1:** Pilot Test for Negative numbers perceptions and attitude Questionnaire (\* the score of the questions were calculated by subtracting it from 6 )

---

A- ATTITUDES AND MANNERS
7- I get excited when I see a negative number.
8- I have difficulty understanding calculations involving negative numbers.
9-I get scared when I see negative numbers..
10-I become hesitant with calculations involving negative numbers and don't know what to do.
11- The calculations I face at the general store and the products I want to buy but can't buy make me nervous.
13-I notice that the negative numbers cause perception failures.
14-Negative numbers cause me to have perception problems in my daily life.
15-When I do long calculations and see negative numbers it changes my attitude towards these numbers.
16- The attitudes I grew against negative numbers reflects negatively on my behaviors.
17-Negative numbers affect adversely my View of life.
18-I get angry when I see negative numbers.
20- Seeing minus weather temperatures saddens me.*
23-Negative numbers demotivates me in my daily life.
26-The perceptions I get from negative numbers have negative characteristics emotionally too.
29-I need help and training with statements involving negative numbers.
B-PERCEPTION
6-I have information about the evolving of numbers and contributions of civilization to me.
19-I talk to my friends about the negative numbers.
21-Negative happenings shape my life.
22-I perceive that limiting numbers is like limiting life.
24-I give importance to the value of numbers.
25-Numbers are objects that exhibit my point of view about life.
27-Negative numbers have positive reflections in my emotions and thoughts.
30-I can Exchange information with people around me about negative numbers.
33-I wonder about the historical development and appearance of negative numbers. .
34-I don't understand why people have difficulty with statements involving negative numbers
38-I think that different results can be found with the negative numbers I face at my work. *
39-I think that negative perceptions may have positive reflections on individuals.
40-I perceive negativity as the negation of positivity. *
C- AWARENESS RAISING
1-I know negative numbers.
2-I can show the location of Negative numbers on the numerical axis.

---

3-I can compare negative numbers with positive numbers.
4- I am aware that I am using negative numbers in my daily life.
5-I know how the negative numbers set forms.
12- I feel happy when I see discount at the companies.
32- I have difficulty changing the negative attitude of my friends to positive.*
35- I fear that my friends will make fun of me because of the negative numbers we see at school. *
<b>D- BEHAVIORAL INTENTION</b>
28-I had problems because of the minuses in my bank account.
31-The view of people to negative numbers, reflects their attitude.
36-I am aware of the effects of negative numbers on the development of commerce.
37-The increase of usage of negative numbers caused the increase in the amount of scientific paradoxes.*
41-when I face a negative number I feel like I am about to encounter a bad situation.
42-The negative meaning that women associate with numbers is stronger than that of men do.
43-The opinion of young people about negative numbers can be explained with disappointment rather than loss.
44-The most frequent numbers that are seen in perceptions transforming to negative attitude, speed up the attitude formation.
45-IN transformation of attitudes to behaviors, I think that the psychological effects of negative numbers are more than financial effects.

### Findings

Reliability analysis was made to prove the structural validity of the questionnaire. After the reliability analysis has been completed to the perception and attitude defining questions, the questions that are found to decrease the reliability of the questionnaire were omitted. 39 questions consisting of perception and attitude sentences were left. Factor analysis in SPSS program was done with Varimax method (Özdamar, 2004). Questions were grouped in 4 factors (Attitudes and manners, Perception, Awareness Raising, Behavioral Intentions) Under the “attitudes and manners” factor question numbers 7-8-9-10-11-13-14-15-16-17-18-23-26 and 29, under the “perception” factor question numbers; 6-19-21-22-24-25-27-30-33-34 and 39, under the “awareness raising” factor 1-2-3-4-5 and 12 and finally under the “behavior intentions” factor question numbers 28-31-36-41-42-43-44 and 45 were grouped.

**Table 2.** Reliability Analysis of Negative Numbers Perception and Attitude Scale.

#### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.821	17.489	17.489	6.821	17.489	17.489	5.199	13.331	13.331

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2	4.380	11.230	28.720	4.380	11.230	28.720	3.552	9.108	22.439
3	1.870	4.796	33.516	1.870	4.796	33.516	3.047	7.814	30.253
4	1.542	3.955	37.471	1.542	3.955	37.471	2.815	7.217	37.471
5	1.370	3.513	40.984						
6	1.333	3.418	44.402						
7	1.200	3.077	47.478						
8	1.173	3.008	50.486						
9	1.120	2.871	53.357						
10	1.008	2.585	55.942						
11	.985	2.526	58.468						
12	.947	2.429	60.897						
13	.907	2.325	63.221						
14	.886	2.272	65.494						
15	.838	2.148	67.641						
16	.834	2.138	69.779						
17	.770	1.975	71.754						
18	.742	1.903	73.657						
19	.734	1.883	75.540						
20	.722	1.853	77.393						
21	.701	1.798	79.190						
22	.639	1.638	80.828						
23	.607	1.555	82.384						
24	.592	1.518	83.902						
25	.575	1.474	85.376						
26	.563	1.443	86.819						
27	.523	1.342	88.161						
28	.508	1.302	89.463						
29	.500	1.282	90.745						
30	.466	1.195	91.940						
31	.439	1.125	93.065						
32	.429	1.101	94.166						
33	.411	1.054	95.220						
34	.405	1.039	96.258						

35	.328	.841	97.099					
36	.314	.804	97.903					
37	.297	.762	98.665					
38	.286	.732	99.397					
39	.235	.603	100.000					

ExtractionMethod: Principal Component Analysis.

The 4 factors that occurred explained the %37.47 of the total variance of the 39 question scale. The Eigenvalues (own values) of the 4 factors are respectively; 6.821, 4.38, 1.87, and 1.542. The results which are obtained by Varimax method, regarding the included items are as follows.

**Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
Item1	-.264	.010	.737	-.041
Item2	-.262	-.018	.755	.034
Item3	-.035	-.070	.607	.039
Item4	-.147	.231	.475	-.012
Item5	-.252	.218	.614	.039
Item6	-.083	.485	.359	-.185
Item7	.441	.308	-.043	-.047
Item8	.656	-.079	-.114	-.017
Item9	.723	-.050	-.129	.074
Item10	.699	-.053	-.243	.019
Item11	.603	.049	-.031	.091
Item12	.006	.000	.467	.088

Item13	.422	.105	.184	.052
Item14	.672	.093	-.005	.112
Item15	.486	.128	-.012	.084
Item16	.607	.120	-.236	.211
Item17	.587	-.033	-.249	.224
Item18	.576	.054	-.260	.196
Item19	.233	.628	-.083	-.066
Item20	.143	.506	-.055	.227
Item21	.205	.420	.052	.235
Item22	.417	-.058	-.096	.383
Item23	-.125	.527	.108	.085
Item24	.027	.560	-.011	.121
Item25	.453	.144	-.109	.262
Item26	.144	.565	-.108	.092
Item27	.198	.076	.025	.467
Item28	.479	.048	-.256	.121
Item29	.013	.535	.239	.027
Item30	.159	.354	.237	.425
Item31	.057	.592	.095	.099
Item32	-.091	.456	.028	.237
Item33	-.063	.220	.227	.428
Item34	.036	.409	-.020	.283
Item35	.398	-.066	-.029	.479
Item36	.027	.087	.046	.578
Item37	.113	.124	-.016	.554
Item38	.105	.227	-.060	.572
Item39	.171	.113	.015	.544

### Reliability

1. Factor Cronbach Alpha

#### ReliabilityStatistics

Cronbach's Alpha	N of Items
------------------	------------

**ReliabilityStatistics**

Cronbach's Alpha	N of Items
.856	14

2. Factor Cronbach Alpha

**ReliabilityStatistics**

Cronbach's Alpha	N of Items
.759	11

3. Factor Cronbach Alpha

**ReliabilityStatistics**

Cronbach's Alpha	N of Items
.698	6

4. Factor Cronbach Alpha

**ReliabilityStatistics**

Cronbach's Alpha	N of Items
.697	8

Full Scale

**ReliabilityStatistics**

Cronbach's Alpha	N of Items
.831	39

According to the Cronbach Alpha results obtained, the data gathered from the scale is reliable both for the 4 dimensions and for the overall scale.

### Conclusion

The changing environment, socio-economic conditions, cultural level of individuals, education and age are factors that affect the perception, attitude and behavioral processes of individuals. In this study evaluations in 4 dimensions; in order to investigate the effects of negative numbers on the perception, attitude and behaviors of people, were made. The age and educational level of the individuals prevail as the most effective factors on the perceptions, attitudes and behaviors of individuals towards the negative numbers.

The perception towards negative numbers differs according to the education of individuals and it found that this difference occurs in the “secondary- high school” and “secondary school- Bachelor’s degree” period. According to this; the secondary school graduates have a higher perception level towards negative numbers compared to high school graduates. This is mainly because the individuals encounter negative numbers in the secondary school for the first time and they have high perception at this period.

It is observed that; the individuals with bachelor’s degree have less negative perception towards negative numbers compared to any other education levels and their perceptions have less intensive emotional factors. In this level of education it is seen that behaviors tend less to transform into attitudes. In the research, it was found out that the divergence was realized with the positive invariance principle but the reflections in daily life were limited.

Significant differences were observed between the “secondary school- Bachelor’s Degree” educational levels in regards to behaviors against negative numbers. Because the bachelor’s degree graduates have more experience with negative numbers, their behaviors are affected more. The level of perception and transforming these to attitudes is higher with the secondary school graduates and this level on the behavioral dimension is mostly shows negative tendency.

In this study how different attitude and perceptions, behavioral intentions and behavioral processes towards the negative number sequences that have deep impact on human psychology and needed at all phases of life, formed is seen. Therefore our study is important because it presents an example to similar studies in the psychology, mathematics and organized behaviors fields. “Negative Numbers Perception and Attitude Scale” which is tested for reliability and validity can be used in future scientific studies on different field.

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## The Political Economy of Turkey and Greece: Relations from 19<sup>th</sup> to 21<sup>st</sup> Century

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### Abstract

Historical relations of Turkey and Greece can be considered as fluctuant in terms of political economy. These two countries have a common heritage and promising cooperation in terms of economic and political diplomacy for the coming decades. These two countries are NATO members, neighbors, and share enhancing bilateral dialogue mechanisms. In this regard, a new era has begun in the Turkish-Greek relations as of 1999. It can be said that marked with the establishment of various dialogue mechanisms such as regular political consultations, exploratory contacts on Aegean issues as well as high-level cooperation council meetings are on the agenda.

On the one hand, Turkey and Greece have a considerable amount of unsolved conflicts such as continental shelf issues in the Aegean Sea, Cyprus issue, and the latest energy crisis in the Eastern Mediterranean. It is a fact that the dead-ended Cyprus issue in the international arena is the longest frozen EU based conflict among these two states. These issues mainly remain unsolved due to their zero-sum approach. The breaking and starting point of the relations among these two culturally integrated nations can be seen in the first half 19<sup>th</sup> century. Greek-Turkish ties have been gone through many phases, such as; times of conflict, tension, calm, and cooperation. Independence from the Ottoman Empire and subsequent periods of four different wars that occurred from 1830 through 1923 prevented these two nations from establishing bilateral economic relations. On the other hand, there have been rapprochement stages in the recent subsequent decades, which enabled two countries to improve their economic ties. The implementation of tangible projects to the benefit of the two countries is vital elements for reconciliation.

This study intends to review the recent economic and political history of these two nations by using the latest data. In doing so, it will scrutinize their consolidated mutual trust and stability by scaling up bilateral relations in investment, trade, and tourism in every possible field and attribute for the foreseeable future. Thus, it will be achieved a prospective outlook through the examination of economic indicators in these two countries.

**Keywords:** Economic Nationalism, Political Economy, Turkey, Greece

**JEL Classification:** F52, P48, E61

### Introduction

In the last two centuries, despite of four significant conflicts, historical and cultural ties between Greece and Turkey have significantly affected political economy of two countries. Greece gained its independence after the clashes with the Ottoman Empire between 1821 and 1829. After the construction of the doctrine of the nation-state, Greece experienced a significant war with Turkey between the years of 1920-1922, and the Republic of Turkey was founded in 1923. Historically, Greek-Turkish relations have gone through many phases. The fluctuant relationships generally can be classified as times of conflict, tension, calm, and cooperation. The most significant break after the four major conflicts between Greece and Turkey has occurred on the disputes of the Aegean Sea and the status of Cyprus. Specifically, the Cyprus issue was a significant pitfall of ongoing bilateral relations so far. It was divided after the “Greek Civil War” that was occurred between 1944-1949. Even though Cyprus became an independent bi-communal republic in 1960, it took only three years to demise. In addition to

this, between 1967-1974, the policy of the Greek dictatorship was determined to carry the relations to the tensest point.

Last but not least, these two countries experience a long-lasting dispute in the Aegean Sea. Turkish-Greek differences over the Aegean are related to the Aegean status quo established by the 1923 Lausanne Peace Treaty. The Lausanne Treaty created a political balance between Greece and Turkey by harmonizing the vital interests of both countries, including the Aegean issues (Republic of Turkey Ministry of Foreign Affairs, 2019). Nevertheless, there are still ongoing disputes, especially on the issues and delimitation of territorial waters, the air space, status of East Aegean Islands. The recent development of the Eastern Mediterranean can be the last riddle between these two states.

This study intends to review the recent economic and political history of these two nations by using the current data. In doing so, it will be scrutinized on their consolidated mutual trust and stability by scaling up bilateral relations in investment, trade, and tourism in every possible field and attribute for the foreseeable future.

#### **Timeline of the Greek-Turkish Relations in the Scope of Four Major Wars**

This session of the study classifies bilateral relations into two-part. The first part of it explains the highlight of the 19<sup>th</sup> century's economic and political agenda. The rest of it tries to express the 20<sup>th</sup> and first quarter of the 21<sup>st</sup> century economic and political view.

##### ***Pre-Republican Years: Conflicts of Ottomans and Greeks***

There were many revolts between 1858-1897. Indeed, the Greek minority uprisings under the Ottoman Empire in 1897 strongly appeared in Crete, Thessaly, coastal Macedonia, and Epirus. It triggered the first Greco-Turkish War- called "Thirty Days' War"- in history (Ekinci, 2006). The First Balkan War followed the first war among these two people (Hall, 2014). This second conflict was mainly based on the same region. The years of 1912–1913 was a straight and significant time of the rising tension. In these years, Greece invaded Crete, the islands, the rest of Thessaly and Epirus, and Macedonia from the Ottomans, in alliance with Serbia and Bulgaria (Hall, 2000; Helmreich, 1938). Greece attended the First World War in 1917 to seize Constantinople (Istanbul) and Smyrna (Izmir) from the Ottomans, with the help of Britain and France. It was promised by these powers to take Cyprus from Ottomans and give to the Greeks (Dutton, 1998).

The final Greco-Turkish war occurred on the 9<sup>th</sup> of September 1922. The Armistice of Mudanya ended the war. The Treaty of Lausanne (1923) replaced previous treaties to constitute modern Turkey (Alatunisik & Tur, 2005).

##### ***Post-Republican Years: Modern Turkey and New Fluctuant Diplomatic Ties***

With the entry into force of the Lausanne agreement, the previous agreements were terminated. A new stage of reconciliation opened between the two nations. This new agreement also led societies to exchange citizens among each other. The "population exchange" was on religious grounds. Half million Turks and half million Greeks have been forced to exchange. The 1930s and 1940s were the years of "normalization of relations."

After years of normalization between the two countries, a series of undesirable adverse incidents took place between 1955-1975. Istanbul Pogrom, Cyprus crisis, so-called Turkish invasion to Cyprus, and the collapse of the Greek military junta were tense relations in this period. After successive earthquakes hit both countries in the summer of 1999, two countries improved their relations. They both used "constructive diplomacy by initiating the Greek–Turkish earthquake diplomacy.

#### **Developments after the 2000s: High-Level Cooperation Council, Ongoing Disputes and Political Deadlocks**

This session of the study aims to reveal the weak and strong sides of two-sided relations. Suggestive policies have been advised to figure riddle out.

### ***High-Level Cooperation Council in order to Boost Mutual Trade***

There have been rapprochement steps taken by two sides in the recent subsequent decades, which enabled two countries to improve their economic ties. In 2010, Turkey and Greece set up the High-Level Cooperation Council (HLCC) in order to seek a settlement for long-standing problems. In doing so, it was aimed to enhance bilateral relations in every feasible field, such as tourism, investment, and foreign trade. By enhancing commercial and economic relations, it was planned to pave the way for the application of tangible projects to the benefit of two countries (Republic of Turkey Ministry of Foreign Affairs, 2019).

The trade volume between Turkey and Greece doubled between 2010 and 2014. It reached 5.6 billion USD by the end of 2014. Although the volume of bilateral trade was reduced in 2015 and 2016, the momentum among these two states expanded again in 2017 (3.5 billion USD) and rose to 4.18 billion USD in 2018 (Republic of Turkey Ministry of Foreign Affairs, 2019).



**Figure 1:** Trade Balance for Greece to Turkey (Billion \$, 2000-2017) **Source:** (OEC, 2019)

In figure 1, the red line shows imports in Greece, whereas the blue line shows exports in Greece. The top second export destination of Greece is Turkey, with a volume of \$2.08 billion. Turkey's share of Greece's total export is 6.9%, while Greece's share of Turkey's total export is only 1.0%. Refined petroleum products on total Greece's exports to Turkey dominate the export composition with a share of 49%. It followed by raw cotton with a share of 8.5% (OEC, 2019). According to the United Nations COMTRADE database on international trade, Turkey's exports to Greece was 2.09 billion USD in 2018 while Greece's exports to Turkey was 2.4 billion USD (Trading Economics, 2019).

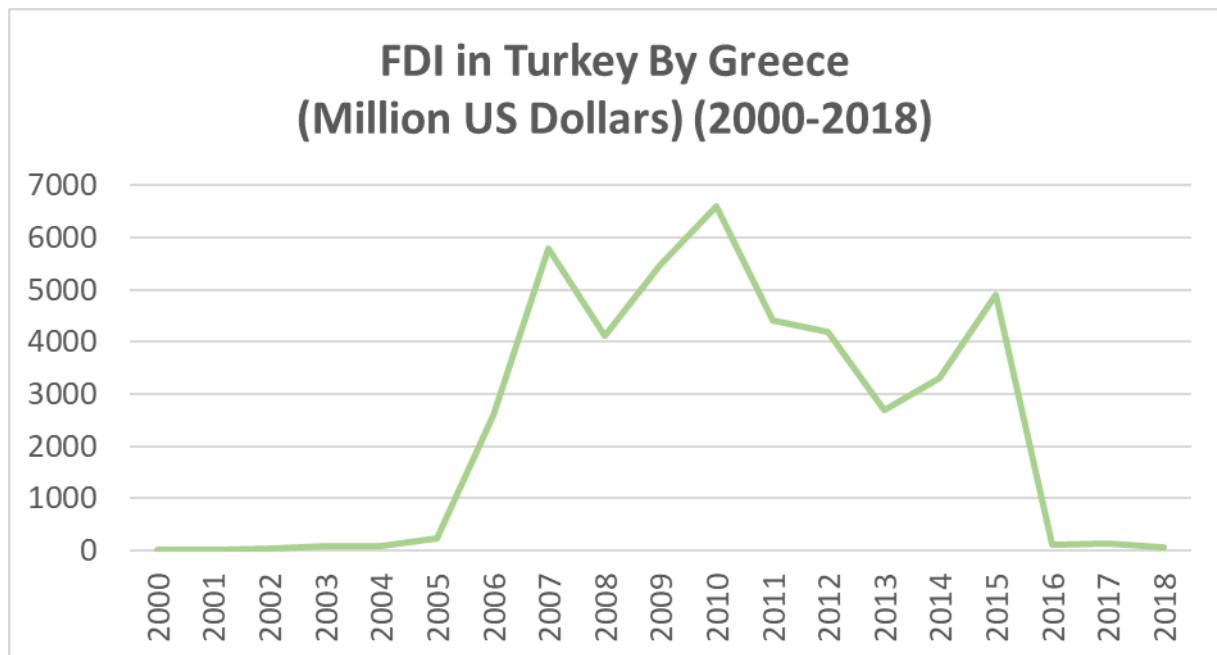
If we check the volume per month, we can say that recent exports of Turkey to Greece increased in September compared to the previous month. It increased to 167.85 million USD in September, which was 134.94 million USD in August of 2019. The average amount of exports of Turkey to Greece was 141.30 million USD from 2014 until 2019. While the highest value was 216.17 million USD in February of 2019, the lowest value was 83.40 million USD in August of 2015 (Trading Economics, 2019).



	Value	Year		Value	Year
Mineral fuels, oils, distillation products	\$338.54M	2018	Mineral fuels, oils, distillation products	\$1.52B	2018
Iron and steel	\$208.78M	2018	Plastics	\$154.00M	2018
Vehicles other than railway, tramway	\$164.92M	2018	Cotton	\$114.62M	2018
Electrical, electronic equipment	\$153.11M	2018	Machinery, nuclear reactors, boilers	\$91.35M	2018
Plastics	\$110.77M	2018	Aluminum	\$84.52M	2018
Machinery, nuclear reactors, boilers	\$107.66M	2018	Pearls, precious stones, metals, coins	\$36.34M	2018
Paper and paperboard, articles of pulp, paper and board	\$103.86M	2018	Copper	\$29.82M	2018
Articles of iron or steel	\$90.15M	2018	Cereals	\$27.66M	2018
Knitted or crocheted fabric	\$64.73M	2018	Articles of apparel, not knit or crocheted	\$26.92M	2018
Fish, crustaceans, molluscs, aquatics invertebrates	\$62.34M	2018	Electrical, electronic equipment	\$25.47M	2018

**Figure 2.** Export & Import Composition of Both Countries as Pie Chart, 2018 **Source:** (Trading Economics, 2019).

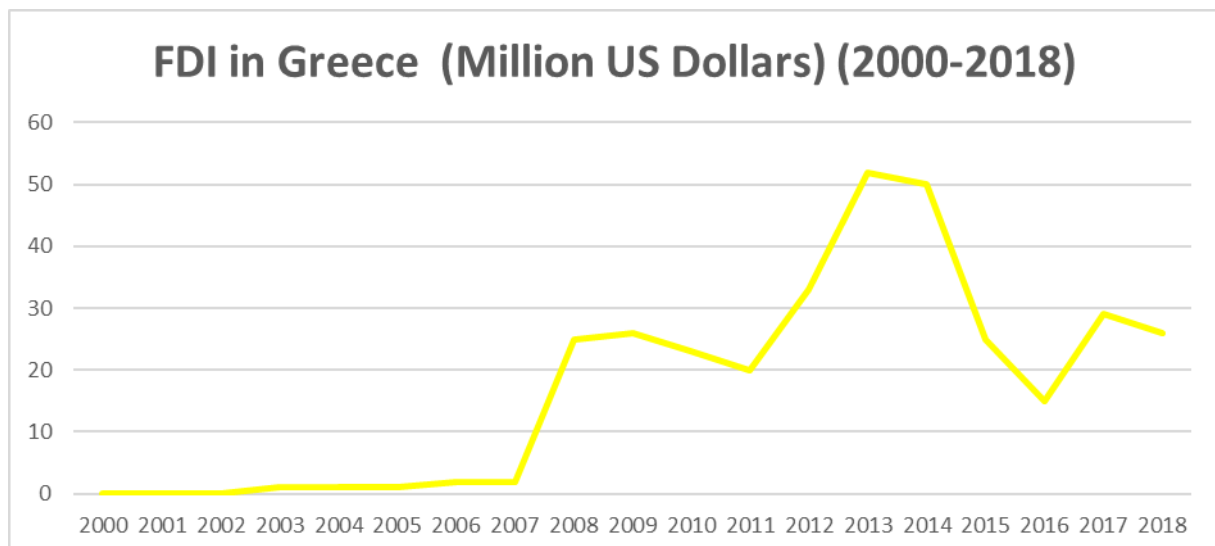
Therefore, the recent data on foreign trade statistics among these two states implies that potential has been not achieved yet, although it gained momentum. That is why, mutual interdependence on trade should be boosted by both sides of economic policymakers and their institutions.



**Figure 3.** Foreign Direct Investment to Turkey **Source:** (Central Bank of Turkey, 2019)

Furthermore, we can clearly state that Foreign Direct Investment from Greece to Turkey peaked in 2010 following HLCC. The National Bank of Greece, buying to Finansbank was a vital role in this positive flow. Before 2005, there was not a critical flow from Greece, and after 2016, it was almost zero again. Greek initiatives so far in Turkey invest in information technology (IT), agricultural applications, packaging, plastics, pharmacy, cosmetics, fisheries, tourism, and construction sectors. Unfortunately, the times of cooperation ceased after 2016, and it seems to re-run political incentives to upsurge mutual trade relations.

Besides, Turkish flow to Greece in terms of FDI was deficient even in the highest terms in 2013. The peak of the volume was 50 million USD in 2013. It shows that there was considerable potential to enhancement foreign direct investment in Greece for Turkish investors. Turkish entrepreneurs generally concentrated on financing in marinas, ports and the overall tourism sector in Greece. Moreover, the Turkish Banking sector has some branches in Athens, Xanthi, and Komotini. However, there are still significant opportunities for investment for both parties.



**Figure 4.** Foreign Direct Investment to Turkey **Source:** (Central Bank of Turkey, 2019)

Transportation and tourism are comparative advantageous and promising sectors for both sides to enhance cooperation. For example, in tourism, promising steps are taken to improve the relations such as the simplified visa process for visiting seven Greek isles close to Turkish shores since 2012. It should be seen as a beginning, and mutual diplomacy should be enhanced in these sectors with joint dialogue mechanisms.

In addition to this, commercial ties via transportation diplomacy by policymaking in the field of aviation, seaway, the railway can be a vital way to improve relations.

#### ***Recent Riddle on the East Mediterranean: Equation must be reorganized for cooperation***

The movement in the Eastern Mediterranean region at the beginning of the 21st century has become much intense today. In the light of both the artificial democratization process in the countries of the region after the Arab Spring and the internal turmoil in the Middle East and the deterioration in the ideological and political structure of the region after the terrorism, the change process of the strategic structure of the Eastern Mediterranean continues.

**Table 1.** The Balance of Power in The Eastern Mediterranean

Power Ranking	Countries	National Power Index	Composite Index of National Capability (CINC)	Gross National Income Index (GNI)	Global Firepower Index	US News Power Rankings
1.	USA (Extra Regional)	1	2	1	1	8
2.	Russia (Extra Regional)	11	5	6	2	26
3.	<b>Turkey</b>	<b>21</b>	<b>12</b>	<b>12</b>	<b>9</b>	<b>36</b>
4.	Egypt	42	21	26	12	42
5.	Israel	30	44	50	16	30
6.	<b>Greece</b>	<b>32</b>	<b>43</b>	<b>48</b>	<b>28</b>	<b>28</b>
7.	Lebanon	81	90	84	106	75
8.	Cyprus	94	N/A	N/A	N/A	N/A

**Source:** (Tziarras, 2019)

There are policies of various international powers in the region to balance the power. The region's upcoming destiny will be shaped with the EEZ restrictions. Eastern Mediterranean's changing shape will be shown the share of interest groups intensively. It is also admitted that each country considers its interests as the priority. Without a doubt, The Republic of Turkey's diplomatic moves in the region takes the most criticism at least by the political parties and alliances, such as Israel, Egypt, Greece, Greek Cypriot Administration of Southern Cyprus (Tziarras, 2019).

On the one hand, Turkey has lived with the fresh political causes of the problems stemming from the pre-existence political figure in the Eastern Mediterranean region. Greece, Egypt, Cyprus, and Israel have attempted to force Turkey to de-facto isolation in the region. As a so-called occupier, Turkey tries to achieve military and diplomatic gains over this region. That is to say, a combination of these two tools, Turkey recently signed a new maritime agreement with Libya in order to change the equation (Cupolo, 2019).

On the other hand, Turkey was too late to predict the given the Eastern Mediterranean region strategy. Although being in a re-constructive policy-making role for all actors in the regions can be fruitful, it has limitations too. Turkey's proactive mission is to become a diversified energy supply hub to EU countries for the future in line with the idea to minimize the energy dependence on Russia. In any case, Turkey will be the path to a safe transportation with this strategy and will continue to exist in the region and with various tangible projects, like TAP and TANAP.

In this regard, Turkey's exclusion from the EMGF is a significant obstacle that should not be left unaddressed. A multilateral forum between all countries in the region could be a good start to establish a balanced but pragmatic approach, enacted through a constructive and frank dialogue between the different countries and actors. This could, potentially, redraw the whole political and economic map of the region in a way that benefits all parties. However, unless the actors in the region talk to each other, these opportunities will be lost, and substantive compromises are unlikely to be reached.

## **Result**

This study reviewed the recent economic and political history of these two nations by using the recent data at a glance. The limitation to research underlines the fact that there has been much political instability in last two centuries among these two states. That's why, it won't be disclaimed by the authors that many issues to be mentioned in the article can be uncovered. But still, we can sketch the big picture for both countries' economic policymaking in the upcoming future. It is admitted that Greek-Turkish relations have been gone through many phases such as; times of conflict, tension, calm and cooperation.

There is still an open door for both sides in terms of promising diplomacy. In this regard, the new quarter of the century can be seen as a metaphor that paves the way for bilateral relations. There is a bright future if the pitfalls can be resolved with an mindful policies by politicians and academics. On the other hand, there have been rapprochement stages in the recent subsequent decades, which enabled two countries to improve their economic ties. The implementation of tangible projects to the benefit of the two countries is vital elements for reconciliation.



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## **The Relationship between Islamic Work Ethic, Modern and Post-Modern Values: Participation and Deposit Bank Comparison**

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### **Abstract**

Modern values, the understanding of making the traditional depend on the new; what is established and customary is the tendency and the way of thinking to fit into the new. Post-modern values, however, arise without rejecting the notion that modernism is a universal value that must be accepted by all. On the other hand, the role and influence of religion as a social phenomenon, more specifically, Islam reveals the deterministic role and influence of Islam in the social, economic, cultural and political life. The effects of Islam on the work-life balance lead to different reflections both on demographics and different sectors. In this respect, Islamic work ethic is based on the “Qur'an and Sunnah and in this sense, it functions extremely important both in terms of market functioning which aims and directs the production of goods and services, and to ensure the internal control of the individual. In this study, we examined the relationship between the levels of Islamic work ethics, modern values and post-modern values of employees working in participation and deposit banks. In the study, face-to-face survey method, one of the primary data collection methods, was performed. “Modern and Post-Modern Values Scale”, 12 items developed by Diez, Hofer and Fries (2007), and “Islamic Work Ethics Scale”, 17 items developed by Abbas (1988), were utilized. The results reveal that Islamic work ethics is significantly higher in participation bank employees than deposit bank employees, post-modern values were significantly higher in females than males, modern and post-modern values were significantly higher in private banks than in public banks.

**Keywords:** Islamic work ethic, modern and post-modern values, finance, traditional and participation banks

### **Introduction**

In a particular business environment, it is possible to develop moral principles that guide activities based on certain beliefs, such as Islam. For example, in terms of Islamic faith; principles such as productive work, fair distribution of income, trade space, freedom and fair practices, tolerance, service requirement and creative awareness can be determined (Tanri, 1997: 47). On the other hand, commercial behavior and relationships are not independent of the values and principles of the society. In addition, the sustainability of economic interests (profit, sales, etc.) depends on compliance with moral principles (Korkmaz, 2012: 37-69).

Work ethics is an issue that determines the success of the work done at the individual or social level and the level of prosperity. It is stated that the work ethic is based on the German sociologist Max Weber's 1904 Protestant Ethics and the Spirit of Capitalism. This approach is used to explain the rise of capitalism in the West. However, hard work cannot be attributed to Western culture alone, but in fact it has a working ethic regarding the necessity or characteristics of the work, although at different levels of influence in every society. On the other hand, in the Middle Ages mentality, non-economic, immaterial values are seen more intense and the Ottoman Empire cannot adapt to the new world value understanding has prepared the end according to some researchers.

The organizational results of the Islamic work ethics have been examined in a variety of works. According to these studies, Islamic work ethics is associated with behaviors and capacities such as innovation skills of employees (Naresh-Raduan, 2010: 79-93), job satisfaction and organizational loyalty (Yousef, 2001: 152-169), managers' motivation (Abbas vd.2007: 93-104), usage of working tools for other reasons rather than the job (playing video games with work computer, etc.). In addition, some studies demonstrate that Islamic work ethics is associated with individuality of managers or employees (Mahmood-Ismael, 2009: 333-346), (Abbas J.2008: 507-519), (Abbas, 1987: 575-583). Furthermore, Kaya ve Çinemre (2013:7-24) claim that work ethics and beliefs sometimes depend on individuals' positions in such should a person is not a manager who may slow down the business, try to sell the products or services highest price possible, produce unqualified products, etc. and these kinds of behaviours are closely related with.

The literature examines the reflections and implications of modern and postmodern values in a wide range of fields. In these studies, the implications and results of modernism and post-modernism (Yıldırım, 2010, 703-719), implications for new discourses on modernity and identity (Lash, Friedman, 1992), post-modern, post-modernism and post-modernity. (Martin, 1997) have been studies.

This study examines the relationship between Islamic work ethics and modernism along with post-modernism, if any, on the scale frame. In the literature there is no study of the relationship between the two variables to the best of our knowledge.

## Conceptual Framework

### *Modern and Post-modern Values*

<b>Modernism / Modernity</b>	<b>Postmodernism / Postmodernism</b>
Hierarchy, order, central control	Anarchy, collapse of order, abolition of central control
Macro policy (nation-state, party)	Micro-politics, institutional power conflicts, identity policies
Discourse of national identity and culture; myth of cultural and ethnic origin	Local discourses, the ironic destruction of great discourses; contrary to myths of origin
Discourse of great progress through science and technology	Looking forward with skepticism, anti-technology reactions, new age religions
The belief in the “truth deki in front of the representatives and the media, the sincerity of the“ original ”	Extreme reality, image saturation, imitation being stronger than real, presenting things that don't really exist, and being stronger than those that exist
Specialization in knowledge, covering everything	Guidance, information management, information as needed, Web, Internet
Mass culture, mass consumption	Lack of mass culture, small markets, low production
Media broadcasting	Hyper media, many small media
Centralized information	Distributed information
Distinction between lower and upper culture; agreement on normative and authoritarianism of the upper (official) culture	Sharing the dominance of the upper culture by the sub-popular culture; a mix of popular and top culture; appreciation of pop culture
Art: an original object created by the artist	Art: reproducing culture created by listeners and subcultures
General boundaries and sense of integrity	Hybridity, reconnection of cultures
Intention and seriousness	Play, irony, reaction to formality and seriousness
Sense of unity, being the center of the self; “Individualism”, integrated identity	Sense of division and decentralization, multiple and conflicting identities
The clear difference between organic and inorganic, human and machine.	Mixture of organic and inorganic Siborg; human-machine-electronic
Power order shaped according to sexual difference, single sexes	Androgyny,
Determinism	Indeterminizm
Book as the narrator of the world, library as a written information system	High-media as transcending the physical boundaries of written media,

Machine	Information
Object	Subject
Reality; Reality	Virtual existence, though not physically; Dream
The material	Spiritual
Attractiveness	repellency
Rule	Anarchy
Place	spacelessness; Time
Home	Metropolitan (metropolis)

Source: Halis, M. (2011) "Pre-Modernden Postmodern'e Örgütsel Evrim" REFORMA, vol. 3, no. 51

### *Islamic Work Ethics*

Work ethics is based on other values and beliefs (Islamic, Protestant, etc.) that people have to work on. Ali-Al Owaihan (2008: 5-19) demonstrates that people with good working habits need to be selected for better positions, more prosperity and remuneration. In fact, most of the work done by working people expressing their attitude towards the work of the West has been made by the German sociologist Weber (1958) on the ideas of the Protestant working population (Naresh-Raduan, 2010: 79-93).

Despite the fact that after leaving the church on the west the religion became a private landmark, according to Rice (1999: 345), who asserted that the value of the independent community and economy cannot be mentioned, as the global business practices expand, managers need to be aware of the cultures they already know and their work ethic as a part of it. Identification of the characteristics of the working ethics in different societies; understanding of the relationships between ethical and business activities will be facilitated. For instance, Saudi Arabia is more individualistic and independent in workplace compared to Kuwait and Oman in the Middle East. On the other hand, these three countries do not differentiate in perspectives of free-time usage according to Robertson et al (2001:223-244), on a singular level, males are reported to have higher averages than their female counterparts.

Weber's work ethics, which forms the basis of capitalism; all things left to fate, sophism, conquest and jihad understanding and the despotic state administration that restricts people's right to property and accumulation, expressing that it can not come out of Islam (Arslan, 2000: 13-19), according to the study of ethics and non-Christian beliefs changes in the related work is needed, especially in societies such as Turkey, which is a mixture of East and West. As a matter of fact, in the study comparing the Protestant working values of British and Turkish executives, it was concluded that Turkish executives generally have higher working ethics. As a result, this result, seen as the opposite of Weber, shows that there are barriers to the development of the capitalist spirit in the Islamic world, not the fact that Islam cannot produce the capitalist spirit. Essentially the Islamic lifestyle supports work-oriented behaviors such as the view of hard work as worship, the recognition of waste of time and resources as a sin, the prohibition of empty and unnecessary activities.

Islam's objectives are not primarily materialists, but promotes the need for humanity and the need for maneuvering, socialism and economic justice (Chapra, 1992). In the development of socially and economically undeveloped societies, ethical importance in addressing the administrative and economic issues that need to be eradicated. In this sense, Ali (1988) has developed the scale of Islamic work ethics. Working with an Islamic viewpoint is a must-have and a must-have for the needs of the individual and the needs of the human being. At the same time, Abbas (1987: 575-583) states that the term of work promotes self-reliance, self-esteem, prosperity, success, absoluteness, pride and personal improvement. This is why it is likely to increase the society's welfare. Ali (2005) summarizes Islamic work ethics as effort, competition, transparency and ethical responsibility. Accordingly, hard work, timeliness and continuity are important factors in Islamic work ethics. In addition, Naresh-Raduan (2010: 79-93) stated that the work should be seen as a result instead it could be seen as

a tool for personal development and social relations, the dedication to work and creativity as a virtue, and the importance of justice and generosity.

### **Research Methodology**

#### *Objective*

The aim of this study is to determine the relationship between the levels of Islamic Work Ethics, Modern Values and Post-Modern Values of employees working in participation and deposit banks. In addition, this study examines employees' perceptions of "modern and post-modern values along with islamic work ethics" behavior in the institution they work in.

#### *Hypotheses*

Participants in the study will be compared to the Islamic work ethics, modern and post-modern values of participant banks and deposit banks. The following hypothesis has been established that the Islamic work ethics would be more in participation banks than deposit or traditional banks.

**H1:** The level of Islamic work ethics is significantly higher in participation bank employees than deposit bank employees.

Stam, Verbakel and De Graaf (2013) state that religious heritage influences working norms and values. However, in this study, it is assumed that Islamic work ethics, which may be related to religious heritage, may be related to modern and post-modern values. The following hypotheses regarding the relationship have been established.

**H2:** There is a positive significant relationship between Islamic work ethics and modern values.

**H3:** There is a positive significant relationship between Islamic work ethics and post-modern values.

**H4:** There is a positive significant relationship between modern and post-modern values.

### **Methodology**

Within the scope of this study, the scales related to the variables determined in the literature review were determined and the questionnaires were formed by combining the obtained scales with the section on demographic characteristics. The scales used in the study are, first and foremost, tested and validated in terms of reliability and sustainability. In the study, face-to-face survey method, one of the primary data collection methods, was performed. "Modern and post-Modern Values Scale", 12 items developed by Diez, Hofer and Fries (2007) and "Islamic Work Ethics Scale", 17 items developed by Abbas (1988) were utilized.

Universe of this study is consisted of participation and deposit banks' employees working in the provinces of Kırıkkale and Ankara. Questionnaires were sent out to 150 bank employees selected by simple random sampling, 126 questionnaires were returned, and 12 of improper and incomplete were eliminated. At last, a total of 114 questionnaires were evaluated for analysis.

## Data Analysis and Results

The demographic distribution associated with the surveying bank employees is shown below.

**Table 1: Demographic Findings**

VARIABLE	CATEGORY	FREQUENCY	(%)
Gender	Female	37	32,5
	Male	77	67,5
Age	30 and below	39	34,2
	31-40	66	57,9
	41-50	9	7,9
Bank Capital Structure	State Bank	24	28,6
	Private Bank	90	71,4
Bank Type	Participation Bank	37	32,5
	Deposit Bank	77	67,5
Education Level	High School	1	0,9
	Undergraduate	105	92,1
	Graduate	8	7
Position	Teller	21	18,4
	Service Responsible	20	17,5
	Supervisor	29	25,4
	Asistant Manager	25	21,9
	Manager	9	7,9
Unit	Director	10	8,8
	Operations	67	58,8
	Marketing	47	41,2
Income Level	2001-3000 TL	5	4,4
	3001-4000 TL	6	5,3
	4001-5000 TL	46	40,4
	5001-6000 TL	41	36
	6001-7000 TL	2	1,8
	7001 TL and above	14	12,3

**TL:** Turkish Lira

As can be seen from the demographic variables (Table 1), approximately two thirds of the respondents are male, 92% are employees under the age of 40, 71.4% are private bank employees, 92% have undergraduate degree and 7% have graduate degree. Except for the directors and managers, titles are distributed at similar percentages. In



terms of the bank quality of the participants, 32.5% of the respondents are participation and 67.5% are deposit bank employees. 58.8% of the respondents are working in operations department as 41.2% of the employees are working in marketing units. As far as the income levels, it is seen that the income range between 4000-6000 TL is above 75%. Should there is a relationship between the concepts, first of all, the normality test was performed in order to choose the method to be used in correlation analysis and intergroup comparisons to determine the direction and level of this relationship. Kolmogorov Smirnov test was used to determine whether the data were normally distributed or not.

**Table 2: Normality Test**

Kolmogorov-Smirnov Normality Test			
Variable	Statistics	df	p
Islamic Work Ethics	0,181	114	0,000
Modernism	0,283	114	0,000
Post-Modernism	0,183	114	0,000

Non-parametric tests will be utilized in the analysis as the data do not exhibit a normal distribution because the variables deviate significantly from the normal distribution ( $p < 0.05$ ).

#### *Comparisons among Demographic Groups*

Non-parametric Mann Whitney and Kruskal Wallis methods were used to make comparisons between demographic groups because the data obtained in the study did not show normal distribution. Mann-Whitney U test was used for paired group comparisons and Kruskal-Wallis test was used for comparisons of more than two groups.

**Table 3: Mann Whitney U Test Results for Bank Types**

Variable	Bank Type	N	Average	Total	U	p
<b>Islamic Work Ethics</b>	Participation	37	45,78	1694	991	,007*
	Deposit	77	63,13	4861		
<b>Modern Values</b>	Participation	37	59,68	2208	1344	,607
	Deposit	77	56,45	4347		
<b>Post-Modern Values</b>	Participation	37	58,04	2147,5	1404	,901
	Deposit	77	57,24	4407,5		

\*:  $p < 0,05$

Table 3 shows the comparison of Islamic work ethics, modern and post-modern values of participation banks and deposit banks employees according to bank quality. According to the results of the analysis, it is seen that the level of Islamic work ethics is higher in participation bank employees than deposit bank employees and this difference is statistically significant in 95% ( $p < 0.05$ ) confidence interval. According to the findings, the first hypothesis that Islamic work ethics level is significantly higher in participation bank employees than in deposit bank employees, therefore the first hypothesis is accepted.

**Table 4: Mann Whitney U Test Results for Bank Types for Genders**

Variable	Gender	N	Average	Total	U	p
<b>Islamic Work Ethics</b>	Female	37	60,08	2223	1329	,554
	Male	77	56,26	4332		
<b>Modern Values</b>	Female	37	65,69	2430,5	1121,5	,053
	Male	77	53,56	4124,5		
<b>Post-Modern Values</b>	Female	37	67,31	2490,5	1061,5	,025*
	Male	77	52,79	4064,5		

\*:  $p < 0,05$

When Table 4 is examined, it is seen that Islamic work ethics, modern and post-modern values are higher in females than males. However, only the difference in post-modern values was statistically significant at 95% confidence interval. It can be interpreted that since the post-modern values are statistically higher in females than males, the participation of female employees in the management levels in post-modern organizations will contribute to the organization.

**Table 5: Kruskal Wallis Test Results for Age Groups**

Variable	Age Groups	N	Average	$\chi^2$	sd	p
<b>Islamic Work Ethics</b>	30 and below	39	58,56	,106	2	,948
	31-40	66	57,23			
	41-50	9	54,89			
<b>Modern Values</b>	30 and below	39	59,41	2,836	2	,242
	31-40	66	58,67			
	41-50	9	40,67			
<b>Post-Modern Values</b>	30 and below	39	60,21	1,914	2	,384
	31-40	66	57,78			
	41-50	9	43,72			

As the average of Kruskal-Wallis test results of Table 5 age groups are examined, it is seen that the difference between all three variables is not statistically significant.

Table 6: Mann Whitney U Test Results for Banks' Capital Structure

Variable	Bank's Capital Structure	N	Average	Total	U	p
<b>Islamic Ethics</b>	State	24	54,25	1302,00	1002	,529
	Private	90	58,37	5253,00		
<b>Modern Values</b>	State	24	42,08	1010,00	710	,007*
	Private	90	61,61	5545,00		
<b>Post-Modern Values</b>	State	24	40,85	980,50	680,5	,005*
	Private	90	61,94	5574,50		

\*:  $p < 0,05$

Analyzing Table 6, it is seen that the difference of the mean of the islamic work ethics level according to the bank capital structure groups is not statistically significant while modern and post-modern values were found to be higher in private bank employees compared to state bank employees, and this difference was found to be statistically significant in 95% confidence interval ( $p < 0.05$ ).

Table 7: Kruskal Wallis Test Results Among Titles

Variable	Title	N	Average	$\chi^2$	sd	p
<b>Islamic Ethics</b>	Teller	21	61,36	7,296	5	,200
	Service Responsible	20	64,33			
	Supervisor	29	46,33			
	Asistant Manager	25	66,14			
	Manager	9	47,94			
	Director	10	55,15			
<b>Modern Values</b>	Teller	21	52,62	8,002	5	,156
	Service Responsible	20	66,53			
	Supervisor	29	49,66			
	Asistant Manager	25	67,56			
	Manager	9	59,22			
	Director	10	45,75			
<b>Post-Modern Values</b>	Teller	21	51,48	10,398	5	,065
	Service Responsible	20	69,50			
	Supervisor	29	47,41			
	Asistant Manager	25	68,84			
	Manager	9	57,28			
	Director	10	47,25			

When the Kruskal-Wallis test results rankings of the Table 7 title groups are examined, it is seen that there is no statistical difference between three variables according to the title groups ( $p > 0.05$ ).

**Table 8: Mann Whitney U Test Results for Units**

Variable	Unit	N	Average	Total	U	p
<b>Islamic Ethics</b>	Work Operations	67	57,07	3824,00	1546	,867
	Marketing	47	58,11	2731,00		
<b>Modern Values</b>	Operations	67	56,37	3777,00	1499	,647
	Marketing	47	59,11	2778,00		
<b>Post-Modern Values</b>	Operations	67	55,19	3697,50	1419,5	,361
	Marketing	47	60,80	2857,50		

As can be seen from the results (Table 8), there is no statistically significant difference among Islamic work ethics, modern and post-modern values ( $p > 0.05$ ).

#### Correlation Analysis

Non-parametric Spearman correlation test was conducted in the correlation analysis showing the relationship between the variables, since the data obtained from the participants did not show a normal distribution. A positive correlation is expected between correlation analysis and Islamic work ethics, modern and post-modern values.

**Table 9: Spearman Korelasyon Test Results**

Variable		Islamic Work Ethics	Modern Values	Post-Modern Values
<b>Islamic Ethics</b>	Work			
	Correlation Coefficient	1.000		
	p			
<b>Modern Values</b>	N	114		
	Correlation Coefficient	,657**	1.000	
	p	,000		
<b>Post-Modern Values</b>	N	114	114	
	Correlation Coefficient	,624**	,942**	1.000
	p	,000	,000	
	N	114	114	114

\*\* :  $p < 0,01$

Spearman correlation test results (Table 9) demonstrate the relationship between variables. According to the results, there is a positive correlation ( $r = 0.657$ ,  $r = 0.624$ ) between Islamic work ethics and modern values, post-modern values, which is statistically significant in 99% confidence interval. This finding supports the second hypothesis (H2: There is a positive significant relationship between Islamic work ethics and modern

values) and the third hypothesis (H3: There is a positive significant relationship between Islamic work ethics and post-modern values). Therefore, we can conclude that Islamic work ethics are associated with modern and post-modern values.

Another finding obtained from Table 9 is that there is a very strong ( $r = 0.942$ ) positive relationship between modern and post-modern values with statistically significant at 99% confidence interval. This finding supports the fourth hypothesis (H4: There is a positive significant relationship between modern and post-modern values).

## Conclusion

In this study, the relationship between Islamic work ethics, modern values and post-modern values for participation and deposit bank employees in Ankara and Kirikkale provinces was investigated. According to the findings obtained from the analyzes conducted on demographic differences, the first hypothesis that Islamic work ethics is higher in participation bank employees than deposit bank employees with statistically significant level is supported.

In other analyzes conducted to determine the differences according to demographic groups, it was found that post-modern values were higher in females than males, this difference was also statistically significant. Furthermore, modern and post-modern values were significantly higher in private banks than in public banks.

According to the results of the correlation analysis on relationships among variables; Islamic work ethics was positively and moderately correlated with modern and post-modern values ( $r = 0.657$ ,  $r = 0.624$ ). Therefore, the second and third hypotheses established in this direction were accepted. The results show that Islamic work ethics levels of participation banks managed by Islamic banking system are significantly higher than those of deposit banks. The fact that interest is used in deposit banking and individuals who adhere to Islamic doctrine prefer to work in participation banking rather than working in deposit banking system may be influential in this difference.

Dietz et al. (2007) found a negative relationship between modern and post-modern values in a study conducted in 704 sixth and eighth grade students (mean age 13 years and 5 months) in Ludwigshafen, Germany. Therefore, the findings obtained in this study do not comply with Dietz et al. (2007)'s findings. It is thought that this may be due to the application of the researches to different age and occupational groups in countries with different cultures and to apply them in different samples.

In the following studies, the sample can be expanded and the effects of modern and post-modern values on Islamic ethics can be investigated. The application of the research in banks only in Ankara and Kirikkale provinces can be considered as the limitation of the research. This study can be repeated on a larger scale in different regions of Turkey or other countries.

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## **Organizational Ostracism and Counter Productive Work Behaviour in Educational Institutions**

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### **Abstract**

The need for belongingness, which forms a step in Maslow's hierarchy of needs, should be satisfied for individuals not only in non-business life but also in business life. Humans do not only act in accordance with the principle of economics rationally but also they do attach importance to interpersonal interaction as being social presence. Therefore, it is necessary to investigate the negative attitudes and behaviors that may arise should the employees are ignored, rejected and excluded from the group. The main purpose of this study is to determine the effect of teachers' perception of organizational exclusion on work behaviors that are active in public and private high schools in Kirikkale. For this purpose, the questionnaire including the scale of organizational ostracism and counterproductive work behavior was applied in face-to-face interviews with teachers. 111 of the distributed questionnaires were analyzed and the effect of organizational exclusion on productivity was investigated.

**Keywords:** Ostracism, Workplace Ostracism, Counterproductive Work Behavior, Productivity.

### **Introduction**

Today, individuals spend more time in their workplaces than their non-work life, such as family and friendship relationships. Employee's relations with colleagues and managers largely shape their attitudes and behaviors. Based on this reality, the situation of exclusion (ostracism) that individuals perceive towards themselves by their friends in the organization they work for may be an effective factor in referring them to some negative behaviors. Research to date has shown that ostracism is common in different age groups, in different professions and in different cultures. (Ferris vd. 2008; Balliet & Ferris, 2013). Ostracism arises from the fact that the employee is neglected and ignored within the organization, and on the other hand, is isolated by other employees. This situation emerges as a negative situation within the organization such as cynical attitude and meaninglessness of expressing thoughts (Fatima, vd. 2017). Ferris et al. (2008), on the other hand, defined ostracism in the workplace as the perception of an employee being ignored or excluded by other employees in the workplace. Wu et al. (2012) stated that ostracism in the workplace diminishes the opportunities for social interaction necessary to enable individuals to meet their psychological needs.

Khair and Fatima (2007) have shown that the deliberate ostracism and indirect ignorance of one worker by another is an example of ill-treatment. While organizational ostracism is very important as it directly affects the interaction between the employees within the organization and prevents the employees from meeting their psychological needs by reducing socialization within the organization (Haq, 2014), Wu, et al., (2015) negative

attitudes are implicated in workplace ostracism, efficiency and productivity, isolated employees can reduce the organizational citizenship behavior of the organization or other employees. Although the insulated employee does not care about the lack of belonging to the group, this situation causes the employee to be negatively affected and becomes an extremely important situation for the organization. (Waldeck, vd. 2015).

Individual and group ostracism on individual and group level is seen more intense in organizational structures. Ostracism behavior is an indirect and passive behavior as it is not fully rejected while rejection is direct and active (Rajchert vd. 2017). Therefore, ostracism and rejection manifest differently. In the case of rejection, which is perceived clearly and directly, the individual can perceive it in a short time, while ostracism (exclusion) takes time for the individual to perceive this situation.

This situation affects the self-esteem and sense of belonging negatively. (Yüksel, 2017). Based on the idea that ostracism will have negative effects on the organization, Fatima (2016) found that ostracism positively affects anti-productivity business behaviors.

The perception of ostracism in the workplace causes employees to form a negative attitude towards the work such as low job satisfaction and high intention to quit (Ferris et al. (2008); exclusion in the workplace causes psychological discomfort Wu et al. (2012). Zhao and his friends (2013) found that ostracism in the workplace is positively correlated with non-productive behavioral differences of hotel workers. Similarly, Jahanzeb and Fatima (2018) have found that ostracism is positively correlated with interpersonal deviation behavior. Although ostracism is perceived as a non-interpersonal interaction, it is important to endure the fact that it leads to unacceptable outcomes in terms of educational affiliation, performance, efficiency, mission, and vision.

In the academic disciplines that are focused on understanding human behaviors in organizations, the focus has shifted from the 1990s onwards to counterproductive work behavior. This concept is defined in the literary language by the names such as violence, aggression, violence, revenge, sabotage and theft. Counterproductive work behavior, which is a form of behavior that is met with intensity within the organization, is seriously threatening to be economically relevant. (Bennett and Robinson, 2000:349). Counterproductive work behavior evaluated as a negative concept in general is called in different names such as “assaultiveness” Neuman ve Baron (1998), “business behavior as opposed to productivity” Fox and Spector (1999), Gruys and Sackett (2003), “deviation” Robinson and Bennett (1995), “organizational revenge” Skarlicki and Folger (1997), “organizational bad behaviors” Vardi and Wiener (1996), “anti-social behaviors” Giacalone and Greenberg (1997). The common theme addressed in these studies is the behavior that is detrimental to behavior, with detrimental effects on individualism and learning. According to Spector and Fox (2002: 271), counterproductive work behaviors are intended to harm the organization or other employees. These behaviors are actions that have the potential to harm, such as avoiding work, performing tasks in the wrong way, physical aggression, verbal hostility (insults), sabotage and theft. Spector and Fox (2006) stated that behaviors towards individuals are usually indirect, but counterproductive work behaviors towards the organization are direct targets. Counterproductive work behaviors include destroying the assets of the organization, making the work intentionally wrong, business problems and withdrawal behaviors.

Neuman and Baron (2005) stated that negative emotions are the basis of aggression and aggressive behaviors are triggered by environmental factors such as frustration, injustice, contempt and stress factors. Similarly, O’Leary-Kelly et al. (1996) suggested that aggression is triggered by negative emotions.

While Bennett and Stamper, (2001); Dalal (2005); Kelloway et al. (2002); correlates counterproductive work behaviors with organizational citizenship behavior; Spector and Fox (2002) found that counterproductive work behaviors were associated with personality traits such as trait anger, anxiety, locus of control, and guilt.

Dalal (2005), in his meta-analysis study, found a relationship between perverse behaviors and general job satisfaction. Similarly, Mount et al. (2006) found that job satisfaction and counterproductive work behaviors are directly related to both interpersonal and organizational behaviors. This result proves that individuals who are not satisfied with their job are more likely to engage in deviant behavior.

## Research Methodology

The expectation that both ostracism and counterproductive work behaviors will lead the individual to negative attitudes and behaviors which is supported by the research results of various authors mentioned above. In this respect, the hypotheses created in this study are as follows:

H1: *Ostracism in the workplace is positively associated with counterproductive work behaviors towards the individual*

H2: *Ostracism in the workplace is positively associated with counterproductive work behaviors towards the organization*

The aim of this study is to determine the effect of the levels of ostracism in the workplace on the counterproductive work behaviors. The sample of the study consists of 111 teachers working in public and private high schools in Kırıkkale city center. Easy sampling method was utilized in the application of the questionnaires. Table 1 presents demographic information about the participants.

**Data Collection Tools:** Data were analyzed using personal information form, the scales of ostracism and counterproductive work behavior.

**Ostracism Scale:** In order to measure ostracism, the Organizational Exclusion Scale, which was developed by Scott (2007) and used by Gürsel (2008), consists of 11 items and one dimension. The scale is structured in 5-point Likert format. Cronbach Alpha coefficient (reliability test) was found to be: 0,96.

**Counterproductive Work Behavior Scale:** A scale developed by Bennett and Robinson (2000) and adapted by Yalap (2016) was utilized to measure counterproductive work behaviors. The scale consists of 19 expressions. The scale consists of two sub-dimensions: individual and organizational. The first 12 questions of the counterproductive work behaviors scale consisted of counterproductive work behaviors towards the organization and the last 7 questions were counterproductive work behaviors towards the individual. While Cronbach's Alpha coefficient for counterproductive work behaviors towards the organization found to be 0,74; Cronbach's alpha coefficient for counterproductive work behaviors towards the individual found to be 0,85.

The expression that "I do not get unauthorized goods from the workplace" in Article 1 and the expression that "I do not make religious and political discourses in the workplace" in Article 15 are reverse coded. The scale is formed as a 7-point Likert type and staggered as 1: Strongly Disagree and 7: Strongly Agree.

## Results

SPSS 22 was utilized to analyze the data. In this respect, the analyzes are carried out in order to determine the effect of ostracism on counterproductive work behaviors towards individuals and organizations are presented below.

**Table 1:** Demographics of Participants

		N	%		N	%	
Gender	Female	53	47,7	Experience Level	Less than a year	1	0,9
	Male	58	52,3		1-5 years	24	21,6
Marital Status	Single	17	15,3	6-10 years	53	47,7	
	Married	94	84,7	11-15 years	28	25,2	
	Widow(er)	0	,0	16-20 years	2	1,8	
Age	25 and below			21 years and above	3	2,7	
	26-34	22	19,8	Public (State)	81	73	
	35-44	66	59,5	Private	30	27	
	45-54	22	19,8	Undergraduate	109	98,2	
	55 and above	1	0,9	Graduate	2	1,8	
<b>Education Level</b>							

47.7% of the teachers participated in the study were female and 52.3% were male. It is seen that more than half of the teachers have an age between 35 and 44. When we look at the distribution in terms of experience level, 21.6% of the participants have 1-5 years; 47.7% were 6-10 years; 25.2% were 11-15 years; 1.8% had a working life of more than 16-20 years and lastly 2.8% have more than 21 years of experience. 73% of the teachers participating in the research work in public (state) schools and 27% work in private schools.

**Table 2:** Descriptive Statistics of Organizational Ostracism Scale

Articles	Mean	Std. D.
When I need to be introduced in an environment, my friends at the institution I work for won't bother to introduce me	1,57	,50
My friends in the institution I work for do not invite me to social environments such as lunch, tea break	1,77	,95
My colleagues at the institution I work for do not encourage me to participate in business-related activities	1,80	,77
When I enter a room in the institution I work for, my colleagues leave that room	1,40	,54
My friends in the institution I work for do not want to work with me	1,46	,66
My colleagues in the institution I work for do not say appreciative things to me when they say things that appreciate other employees.	1,66	,73
During work related activities such as meetings, my colleagues at the institution I work for do not sit next to me.	1,38	,49
My colleagues in the institution I work for organize their programs to avoid working with me	1,53	,80
They whisper something to me and exclude me	1,35	,64
They organize the work environments in the institution so that they sit far away from me	1,33	,53
Other employees celebrate important days, such as birthdays, and mine is unnoticed.	1,67	1,047

Table 2 shows the average and standard deviation values of the questions on the scale of ostracism in the workplace. According to the findings, all items were below average of the scales. In other words, the ostracism level of the participants was low. The highest rated expression was “My colleagues at the institution I work for do not encourage me to participate in business-related activities”.

**Table 3:** Descriptive Statistics of Counterproductive Work Behaviors

Articles	Mean	Std. D.
I do not get unauthorized goods from the workplace	4,99	,095
I use longer breaks than usual at work	1,75	1,0
I'm reporting my business expenses higher than they are	1,24	,43
I would be daydreaming during working hours	1,99	1,19
I come late to my workplace without permission	1,49	,52
I work messy at work	1,92	,95
There are times when I don't follow the instructions of the senior management.	1,51	,60
I work intentionally slowly at work	1,30	,46
I share company confidential information with someone who is not authorized	1,30	,46
I smoke in the workplace	1,70	1,13
I make little effort in doing my job	1,32	,46
I take it easy to get overtime.	1,30	,46
I humiliate my colleagues	1,49	,89
In some cases, I swear to my colleagues	1,23	,42
I do not make religious and political discourses in the workplace	4,50	1,22
I would hurt my colleagues	1,63	,78
I make fun of some of my colleagues.	1,75	1,10
I'm rude to my colleagues	1,66	1,07
I embarrass my colleagues in public	1,59	1,20

In the table above, averages of expressions (articles) on the scale of counterproductive work behaviors are presented. Reverse coded items (1 and 15) have the highest scores. As the mean scores of participants' counterproductive work behaviors increase, the likelihood of these behaviors increases. Therefore, it was found that the level of participants' counterproductive work behaviors was very low.

Participants' behaviors such as “I would be daydreaming during working hours”, “I work messy at work”, “I make fun of some of my colleagues”, “I use longer breaks than usual at work” exhibit more than other behaviors. The results of the research showed that the level of exhibiting these negative behaviors in the educational institution is low.

**Table 4:** Relationships Between Variables

	Average	Counterproductive Work Behaviors Towards Organization	Counterproductive Work Behaviors Towards Individual	Ostracism
<b>Counterproductive Work Behaviors Towards Organization</b>	1,82	1	,349**	,183
<b>Counterproductive Work Behaviors Towards Individual</b>	1,98	,349**	1	,058
<b>Ostracism</b>	1,54	,183	,058	1

As a result of the correlation analysis, it was determined that the perception of ostracism in the workplace had no statistically significant relationship with the counterproductive work behaviors towards both the individual and the organization. Therefore, it can be stated that ostracism does not cause harmful behaviors for the teachers in question.

### Conclusion and Discussion

In this study, the research problem related to whether the perception of ostracism in the workplace leads to counterproductive work behaviors is focused. When the data obtained are analyzed, it is seen that the teachers working in high schools have a very low levels of ostracism and counterproductive work behaviors on average.

In the studies conducted by Halis and Demirel (2016), Soybalı and Pelit (2018), employees' perceptions of ostracism were similarly low. Dönmez and Mete (2019) found also that teachers had low levels of organizational ostracism. Arıkök and Çekmecelioğlu (2017), Güllü (2018), Erdost Çolak et al. (2018), Taştan and Küçük (2019), Ünsal Akbıyık (2018) observed low level of counterproductive work behaviors. Fettahlioğlu (2015) found that counterproductive work behaviors were above average.

Although another finding of the study was suggested in hypotheses, no significant relationship was found between both the individual and organizational dimensions of counterproductive work behaviors of ostracism in the workplace. Therefore, H1 and H2 hypotheses put forward within this framework are not supported in this study. Contrary to these findings, Zhao et al. (2013) found that workplace ostracism was positively associated with counterproductive work behaviors. Similarly, Jahanzeb and Fatima (2018) found that ostracism positively correlated with interpersonal deviation behavior. Another researcher, Yan et al. (2014), found that workplace ostracism positively correlated with both individual and organizational counterproductive work behaviors. Yang and Treadway (2018) found that ostracism leads to counterproductive work behaviors towards employees. Similarly, Hitlan and Noel (2009) found that the ostracism of employees by their colleagues was associated with interpersonal productivity behaviors; they found that the ostracism of managers was related to counterproductive work behaviors towards the organization. Yanling, Erhua, and Ting (2014) found that workplace ostracism was positively associated with both organizational and interpersonal productivity behaviors.

Ostracism, which expresses a negative situation not only for employees but also for the whole organization, can harm both the organization and the individual along with other colleagues. It would be beneficial for enterprises to develop various policies to reduce the negative effects of workplace ostracism and counterproductive work behaviors.

As in every study, this study has some limitations. This study included teachers working in high schools located only in the center of Kırıkkale province. Conducting the studies to be carried out with different sample groups may have different results. Studies aimed at identifying variables that cause ostracism in the workplace would be useful. Further investigators may be advised to examine different attitudes and behaviors caused by ostracism in the workplace. Lastly, the use of regulatory and mediating variables that are effective in both workplace ostracism and counterproductive work behaviors and outcomes could provide a more comprehensive perspective.

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## Solving Surabaya's Traffic Problem with "Suroboyo Bus"

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### Abstract

Traffic conditions in developing countries pose serious problems such as in the Surabaya region, Indonesia. As we know, Surabaya is one of the largest and most populous cities in Indonesia. The high number of vehicles on the road and increasing urbanization are the main factors causing congestion. The economic impact arising from this congestion was so great that the government created the "Suroboyo Bus" program, one of bus rapid transit-based bus transportation that is expected to reduce traffic congestion in the region and improve accessibility and mobility in the city of Surabaya. This study aims to measure the success rate of this project in reducing traffic congestion levels in Surabaya. This research uses a qualitative method. Primary data is obtained by conducting a survey of the people in the Surabaya, and around Surabaya. The survey method used was a closed questionnaire. While secondary data is obtained by looking for data through relevant agencies and through existing documents. The results showed that the suroboyo bus was still not optimal in reducing traffic congestion rates in Surabaya. The high number of private vehicle users, the unavailability of bus lanes, and the high traffic flow that enters Surabaya is a contributing factor.

**Keywords :** Suroboyo Bus, Traffic Congestion, Surabaya

### Introduction

In Indonesia, traffic congestion is often found in several major cities. One of them is Surabaya, the second largest city in Indonesia after Jakarta. Almost every day, people who use land transportation (except trains) in Surabaya are troubled by an endless traffic jam. Various efforts by the regional government of Surabaya to overcome congestion have also been carried out, but still not produced results. Even now congestion in Surabaya is even worse. If previously the congestion only happened in the morning (office hours) and in the afternoon (office hours), congestion now almost happened throughout the day at many points on the streets in Surabaya. The high number of vehicles on the road, high population, and inadequate public transportation are the main factors causing congestion. Of course, this has a significant economic impact. Therefore, the government of Surabaya is building a Bus Suroboyo, one of bus rapid transit-based bus transportation which is expected to reduce congestion rates and improve accessibility and mobility in Surabaya.

Suroboyo Bus was launched by Tri Rismaharini on April 7, 2018 in the Siola building. This bus can carry as many as 67 people. Suroboyo Bus operating hours start at 06.00-22.00 WIB. This bus is 2.4 meters wide and 12 meters long. The features of Suroboyo Bus are; chairs with different colors. The pink chair is for female passengers, while the orange chair is for male passengers on the back. Seat differentiation is intended to minimize acts of sexual abuse on the bus.

Payment for boarding the bus is very unique, namely with plastic waste. This step is intended to reduce plastic waste which is a serious problem in terms of the environment. The paid plastic waste will be collected, then deposited to the Garbage bank. Waste collected is sold for recycling into more useful material.

### Scope of the Study :

In collecting the data for this study, I would limit this study focused on :

- Congestion in Surabaya
- Factors that affect congestion in Surabaya
- The influence of the "Suroboyo Bus" in reducing congestion rates

***Aim of the Research***

The aim of this research is to see whether the Bus Suroboyo project has succeeded in reducing traffic congestion in Surabaya and its effect in increasing accessibility and mobility in this city. The existence of this research is expected to be an evaluation for the government in developing this project going forward and can be a benchmark for the government to make the next program.

**Research Methodology**

***Respondent of the research:***

Respondent of this research are people in Surabaya and around Surabaya such as Sidoarjo, Gresik, Malang. Sample were taken randomly. Sample sizes taken was 100 responden.

***Data Collection Source :***

The data collected for the research is conducted through primary and secondary Sources. This can be illustrated in the following way:

***For Primary Data Collection :***

- Surveys
- Questionnaire
- Observation

***For Secondary Data Collection :***

- Internet
- Professional Journals
- Articles

***Data Analysis Method :***

The resulting data were analyzed by qualitative descriptive analysis in order to be able to compare the situation from the viewpoint of the community before the existence of the “Suroboyo Bus” with the aftermath of the “Suroboyo Bus”, and also to know what factors

### Data Analysis and Result Discussion

Primary data is obtained through closed questionnaires distributed in the community both those residing in Surabaya and those residing around Surabaya. The number of respondents obtained is 100 people who live in Surabaya or around Surabaya (Sidoarjo, Gresik, etc.). There are 12 multiple choice questions. The following results i got:

Question	Answer
1. Are you a citizen of Surabaya city?	<ul style="list-style-type: none"> <li>• Yes (37%)</li> <li>• No (63%)</li> </ul>
2. Do you live in Surabaya ?	<ul style="list-style-type: none"> <li>• Yes (73%)</li> <li>• No (27%)</li> </ul>
3. If it not, where are you from?	<ul style="list-style-type: none"> <li>• Sidoarjo (30,5%)</li> <li>• Gresik (15,3%)</li> <li>• Malang (22%)</li> <li>• Others (32,2%)</li> </ul>
4. Do you often go to Surabaya ?	<ul style="list-style-type: none"> <li>• Yes (95%)</li> <li>• No (5%)</li> </ul>
5. Untuk apakah anda pergi ke Surabaya?	<ul style="list-style-type: none"> <li>• Work (65%)</li> <li>• Study (22%)</li> <li>• Hangout (10%)</li> <li>• Others (3%)</li> </ul>
6. What transportastion do you use to go to Surabaya?	<ul style="list-style-type: none"> <li>• Private Vehicle (70%)</li> <li>• Public Transportation (13%)</li> <li>• Online Transportastion (17%)</li> </ul>
7. Do you know about Suroboyo Bus?	<ul style="list-style-type: none"> <li>• Yes (93%)</li> <li>• No (7%)</li> </ul>
8. Where do you know the information about the Suroboyo Bus?	<ul style="list-style-type: none"> <li>• Internet (43%)</li> <li>• Newspaper / Magazine (13%)</li> <li>• Family / Friends (32%)</li> <li>• Direct socialization from government (12%)</li> </ul>
9. Are you interested in using the Suroboyo Bus?	<ul style="list-style-type: none"> <li>• Yes (92%)</li> <li>• No (8%)</li> </ul>
10. Have you ever taken a Suroboyo Bus ?	<ul style="list-style-type: none"> <li>• Yes (29%)</li> <li>• No (71%)</li> </ul>
11. If you have used it, how do you think about the facilities and service provided by the Suroboyo Bus?	<ul style="list-style-type: none"> <li>• Very Good (38,6%)</li> <li>• Good (61,4%)</li> <li>• Bad (0%)</li> <li>• Very Bad (0%)</li> </ul>
12. What dou you think about traffic congestion in Surabaya after the government provides Suroboyo Bus ?	<ul style="list-style-type: none"> <li>• Congestion increases (0%)</li> <li>• Congestion still remains the same (52%)</li> <li>• Congestion is slightly reduced (47%)</li> <li>• Congestion is greatly reduced (1%)</li> </ul>

Based on the table, we can analyze :

1. The percentage of citizen who are not from Surabaya but live or have interests (work, school, etc.) in Surabaya is very high. This confirms that the level of urbanization to Surabaya is very high
2. Traffic flow from outside Surabaya to Surabaya is very high every day. This indicates that the road in Surabaya is not only fulfilled by the population of Surabaya, but citizens outside Surabaya also affect the level of

traffic congestion. This is quite common, given that Surabaya is a metropolitan city that certainly attracts citizens outside Surabaya to visit or have an interest in Surabaya.

3. The level of use of private vehicles is very high so that congestion cannot be denied. The number of public transportation is less than the number of private vehicles in Surabaya.

4. The percentage of people who already know the information about the "Suroboyo Bus" is quite high. However, the payment procedures and bus schedules have not yet been conveyed perfectly to the community so there are still many people who are confused

5. Many people are attracted to the "Suroboyo Bus" even though the number of people who have never used it is still high. This needs to be the government's concern to continue to increase massive socialization

6. The facilities and services offered by the "Suroboyo Bus" are quite good so there is no doubt about their level of comfort. I am sure people who have used it will think so.

7. From the community's perspective, 52% of respondents thought that the presence of the "Suroboyo Bus" did not have an effect on congestion (congestion is still constant) and the rest thought that the "Suroboyo Bus" reduced congestion even though it was not significant.

To ascertain the results of this closed questionnaire, I link these results with some of the secondary data that I have collected :

**Population and population growth rate in East Java province**

City	Number of Citizen			Annual Growth Rate (%)	
	2010	2016	2017	2010 - 2017	2016 - 2017
Surabaya	2 771 615	2 862 406	2 874 699	0.52	0.43

Source : BPS Surabaya

The population in Surabaya from year to year is continuous. Although the population growth rate had decrease in the 2016-2017 period, the addition was still quite large. This is quite reasonable considering that Surabaya is one of the big cities which in fact is the capital of East Java. The existence of Surabaya is a magnet for people living in rural areas to move to Surabaya to get a better live, experience modern facilities and services, and so on. This has caused the population in Surabaya to continue to swell over time.

*So what is the connection with traffic jams?*

In Indonesia, it is common for every family to have 1-3 private vehicles, even more. With an increasing population, the number of motorized vehicles in Surabaya also increases. As a result, traffic congestion will continue to grow. There are many people around Surabaya who have business in Surabaya such as working, studying, etc. According to Surabaya Police records, every morning vehicles outside the city that enter Surabaya reach 200 thousand. At night, the amount is going smaller. However, that number still can't be said a little. Although many of them decided not to settle in Surabaya, this was very influential on congestion in Surabaya because the flow of traffic entering Surabaya also increased.

*Then what about the presence of the "Suroboyo Bus"?*

The presence of Suroboyo Bus is still fairly new. The Suroboyo bus itself was inaugurated on April 7, 2018. The payment system, which is quite easy and cheap (enough to pay with garbage), and the facilities and services it offers are also very good, making me think that this transportation is feasible for long-term use by the community. But why did 52% of respondents think that after the presence of the "Suroboyo Bus" congestion still remained as before? In my opinion, not providing a bus lane for the "Suroboyo Bus" track is one of the reasons. Until now, the "Suroboyo Bus" is still crossing the public lane, so with the current conditions, the Surabaya bus is still not too pressing the congestion rate. The number of bus and cozy bus stop is also still not available

enough and lack of socialization, especially on bus schedules and payment systems, makes people reluctant to use the "Suroboyo Bus" in their daily activities.

### Conclusion & Suggestion

We can conclude after doing the analysis, that the suroboyo bus is still not optimal in suppressing congestion rates in Surabaya. This is caused by several factors, namely the high number of private vehicle users, the unavailability of bus lanes, and the high traffic flow that enters Surabaya. The number of people interested in using the suroboyo bus is very high. In the community's view, the facilities and services offered by the suroboyo bus are also very good. There are several solutions that I offer to the government as follows:

#### 1. Making a Bus lane

It is very necessary for the government to provide a bus lane for the "Suroboyo Bus" so that people are interested in continuing to use this facility. With the provision of a bus lane, the "Suroboyo Bus" doesn't need to join in traffic jams such as motorized vehicles on public roads. This can also be a trigger for people to switch to using Suroboyo Bus which will automatically reduce the number of motorized vehicles in Surabaya.

#### 2. Increase the number of buses and make a bus stop that is comfortable and safe

It is very important to increase the number of buses considering that the population in Surabaya is quite high. The bus stop also need to be made safe and comfortable. If the bus stops are comfortable and safe, then the public will be happy or not afraid to use bus services because as we know big cities like Surabaya also have high crime rates.

#### 3. Policy for the use of motorized vehicles

The government must make a policy for regulating the use of motorized vehicles. Like those in Jakarta, which we usually hear with the name "Ganjil - Genap" or restrictions on the ownership of motor vehicles for each individual / family. It is very futile if public transportation is available properly but the number of private vehicles is still high.

#### 4. Increase direct socialization of the "Suroboyo Bus"

In my opinion, direct socialization (face to face) of all levels of society in Surabaya is very necessary. Sometimes, information that is on the Internet or print media still does not make people understand or even misinformation so direct socialization is highly recommended to avoid such incidents.

#### 5. Widening road sections, making new roads

As we know, Surabaya is a big city so it cannot be denied that people who visit or have activities here are very much every day. It is very necessary to expand the road so that the volume of vehicles entering remains smooth. Making new roads such as Underpasses is also recommended so that congestion can be easily controlled.

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