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ABSTRACTING AND INDEXING

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CONTENT

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THE ROLE OF INDIVIDUAL FACTORS ON ONLINE SHOPPING BEHAVIOR

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ABSTRACT

Purpose: Based on the rapid growth of e-commerce and online shopping, this study explores behavioral intention of consumers of online shopping websites.
Methodology: Consumer's individual factors' effect on consumer perceived usefulness of online shopping and user satisfaction are modelled and examined in terms of effects on behavioral and purchase intention toward online shopping websites. Data were collected via Internet survey and 318 usable surveys of consumers were gathered.
Findings: The results suggest that consumer's relationship proneness of online shopping websites among individual factors has the strongest effect on consumer purchase/behavioral intention of online shopping websites. Besides, consumer perceived usefulness has the strongest effect on consumer's purchase intention.
Conclusion: The effect of relationship proneness of consumers with online shopping firms on consumers' purchase intentions can be used to draw consumer attention. Likewise, firms can plan their marketing communications such as advertising strategies and promotional strategies in a way that appeal to their target customers' personality.

Keywords: Online shopping, online purchase intention, relationship proneness, perceived usefulness, self-efficacy
JEL Codes: M30, M31

1. INTRODUCTION

Nowadays, electronic commerce also known as e-commerce is a central research area in the literature of marketing in general (Häubl and Trifts, 2000) and consumer behavior in particular (Akar and Nasir, 2015). In the business-to-consumer (B2C) environment, it is an important strategic tool and dominates the buying and selling activities of consumers and firms. The main advantage of e-commerce is enabling consumers to interact with the service providers via social media easily (Liang et al., 2011). Furthermore, consumers take advantage of convenience, easy information access and various selection of products/services (Zhou et al., 2007). Firms can also benefit from this interconnectedness by taking advantage of consumer responses to make improvements in their shopping websites (Childers, 2001). As Chen and Cheng (2009) have stated, in order to be successful in hypercompetitive e-commerce environment, consumer intention should be understood well and motives behind intentions should be revealed. After the World Wide Web makes possible to pursue new potential markets for firms, e-commerce has emerged as a new way of doing business (Limayem et.al, 2000). Bloch and Richins (1983) were one of the first initiators of studying online shopping academically, who looked into "browsing as a specific type of shopping behavior" (Jones, 1999, p.130).

Online shopping is described by Chiu et al. (2009) as an exchange of time, effort, and money for receiving products or services. As they have conveyed, the success of online shopping depends mostly on consumer satisfaction combined with the other factors which form loyalty intentions. In the past, online shopping had received interest of marketing academicians and practitioners. Prior research indicates that trust (Chang and Chen, 2008; Chiue et al., 2009; Gefen et al.,

2003; Ganguly et al., 2010; Kim and Kim, 2005), loyalty (Chiu et al., 2009), perceived risks (Chang and Chen, 2008), online store layout and online environment (Chang and Chen, 2008; Ganguly et al, 2010; Park and Kim, 2003; Wu et al., 2013), service quality (Lee and Lin, 2005), enjoyment (Ramayah and Ignatius, 2005), ease of use of online websites (Amin, 2007; Amin, 2008; Chiu et al., 2009; Ramayah and Ignatius, 2005; Rouibah et al., 2009), usefulness of online websites (Amin, 2007; Amin, 2008; Chiu et al,, 2009; Park and Chen, 2007; Ramayah and Ignatius, 2005; Rouibah et al., 2009) etc. are important drivers of consumers' online shopping intention.

Fishbein and Ajzen (1977) proposed a conceptual framework relating beliefs, attitudes, intentions and behaviours with respect to a given object and stated that various consumer behaviour facets are explained by attitudes towards products, product related concepts, brand and brand related concepts. Fishbein and Ajzen (1977) defined behavioral intention as person's subjective likelihood with regard to perform some specified behaviours and they assumed intention as person's level of eagerness to perform particular behavior. They stated that there is a positive relationship between person's attitude toward an object and behavioural intention toward an object. In order to understand person's behaviour, these two major elements of intentions which are attitudes toward the behaviour and subjective norms should be understood. The attitudinal component of intention is described as person's attitude against implementing behaviour at issue and the normative component of intention is said to be linked with the person's beliefs of what pertinent referents assess his/her decision of performing the behaviour or not and their motivation to show agreement with referents as they mentioned. Fishbein and Ajzen (1977) also stated that, in order to predict the behaviour, the simplest and most efficient method is to measure person's intention in a proper way. The notion of if person's attitude is measured, behaviour of a person may be explained and predicted is referred as Theory of Reasoned Action (Fishbein and Ajzen, 1977).

Perea et al. (2004) have provided a framework of consumers' attitudes toward online shopping and their purchase intention of online shopping based on the Technology Acceptance Model (TAM) including external factors. As they have stated, not only ease of use, usefulness, and enjoyment, but also consumer traits, situational factors, product characteristics, previous online shopping experiences, and trust in online shopping are affective in forming attitude toward online shopping. Prior research have investigated the effects of personality factors or Big 5 personality traits (Barrick and Mount, 1991; Mount et al., 1998; Salgado, 1997; Trapnell and Campbell, 1999) on job performance (Barrick, and Mount, 1991; Barrick et al., 2002; Humphreys and Revelle, 1984; Mann, 1959; Salgado, 1997) and entrepreneurship (Brandstätter, 1997; Brandstätter, 2011; Littunen, 2000; Nga and Shamuganathan, 2010; Rauch and Frese, 2007; Zhao et al., 2006) etc. According to our knowledge; many studies have focused on different aspect of online shopping but the relationship of online transaction self-efficacy, general online social interaction propensity (GOSIP), relationship proneness and susceptibility to interpersonal influence as personality factors' with user satisfaction, perceived usefulness or purchase intention have not been studied. In fact these constructs are partially very important drivers of online shopping but the literature is deficient to understand intimately the notion of online shopping. That's why, in our research, to fill this research gap, we consider the phenomenon of online shopping in a holistic view. According to our knowledge; many studies have focused on different aspect of online shopping; but online transaction self-efficacy, GOSIP, relationship proneness and susceptibility to interpersonal influence as individual factors' with user satisfaction, perceived usefulness or purchase intention have not been studied. In fact, these constructs are partially very important drivers of online shopping but the literature is deficient to understand the notion of online shopping in depth. That's why in our research, to fill this research gap, we consider the phenomenon of online shopping in a holistic view.

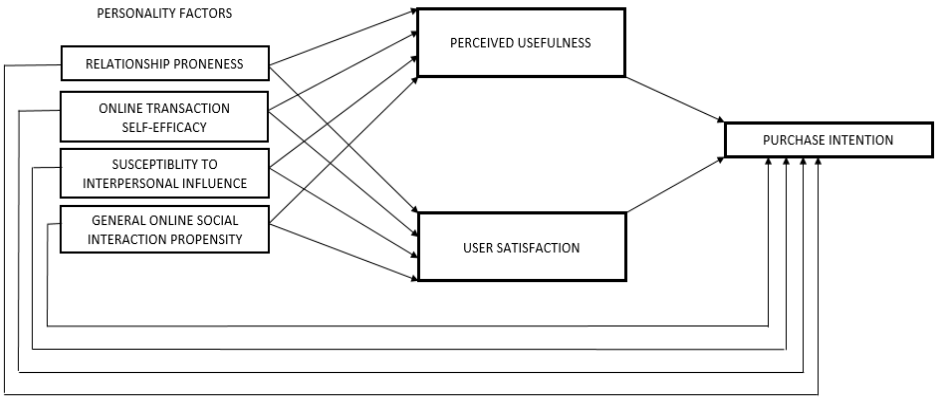
The conceptual model proposed in this research is developed from Bailey's (2015) research, in order to investigate the role of individual factors on consumer's purchase intention of online shopping. Moreover, based upon Fishbein and Ajzen's (1977) Theory of Reasoned Action, this research tries to predict consumer's purchase behaviors via their intentions and attitudes toward online shopping. The testing of the model is performed by Structural Equation Modelling (SEM). The findings of the study will provide proper understanding of individual factors' (relationship proneness, susceptibility to interpersonal influence, GOSIP and online transaction self-efficacy) effects on consumer purchase intention of online shopping websites. Satisfying current customers is more important than finding new ones due to the fact that customer retainment and customer satisfaction efforts are five times cheaper than seeking for new ones (Frederick and Thomas, 1996). So, having knowledge of which factors are effective in satisfying consumers, service providers may use this knowledge to make them more likely to buy from their firms. Furthermore, service providers may benefit from this information for targeting of consumers effectively and drawing right consumers to do online shopping from their websites. On the basis of conceptual model, research hypothesis are proposed. Then, we express clearly the methodology in and present the findings. Then we draw theoretical as well as managerial implications. Finally, we specify the limitations of this study and suggest future research directions.

2. LITERATURE REVIEW

The conceptual model of this study consists of individual factors impacting on behavioral and purchase intention of online shopping websites via perceived usefulness websites and satisfaction of online shopping websites which is displayed in

Figure 1. As of interpersonal factors; susceptibility to interpersonal influence, GOSIP, self-efficacy and relationship proneness are included in the model. Interpersonal factors' direct effects on both purchase intention individually and their impact on user satisfaction of online shopping websites and perceived usefulness of online shopping websites in consumer context are investigated. First of our research question explores whether aforementioned individual factors have an effect on consumer behavioral and purchase intentions of online shopping websites or not. There is no research that has discussed mentioned interpersonal factors' effects together on behavioral intention. Furthermore, whether aforementioned interpersonal factors have an impact on user satisfaction and consumer perceived usefulness of online shopping websites or not is another important research question in this study. Present study aims to investigate these novel research questions. To the best of our knowledge, this study is the first to test aforementioned research questions together. In the next section, we will provide a review for our constructs in our conceptual model and demonstrate the hypothesized effects of the mentioned constructs.

Figure 1: Conceptual Framework



2.1. Consumers' Perception of Websites' Usefulness and Consumer Satisfaction of Online Shopping Websites

In our model in Figure 1, consumer intention to purchase from online shopping websites is influenced by consumers' perceived usefulness of online shopping websites/platforms and consumers' satisfaction of online shopping websites. These variables are also impacted by personality factors of consumers. Next, we will review perceptual variable, user satisfaction and their effects.

2.1.1. Effects of Perceived Usefulness

Underlined as one of the most important determinants which influence system use, Perceived usefulness as a concept was previously linked to information technology and innovation adaptation. Davis (1986) first incorporated the construct into the technology acceptance model (TAM) and defined this concept as "the degree to which a person believes that using a particular system would enhance his or her job performance" (p.320). In other words, if employee expect a technology to increase a job performance, then the intention to use this specific technology will be higher than their attitude toward the technology alone (Amoako-Gyampah, 2007). Since then, perceived usefulness has been in use for the acceptance of innovation and technology use in many cases across many fields. For example, Saade and Bahli (2004) have conducted a research among students and defined perceived usefulness as the degree to which students believe the use of the internet-based learning system would strengthen their achievement in the learning process. Findings have shown positive relationship between the variables, providing support for Davis' (1989) statement that "any system high in perceived usefulness is one for which a user believes in the existence of a positive use-performance relationship" (p.320). Furthermore, Amoako-Gyampah's (2007) research in Enterprise Resource Planning (ERP) has shown a direct positive effect of perceived usefulness of the technology on the employee's behavioural intention to use the technology. The results also suggested that in organizations where the emphasis is on successful and effective usage of technology, if managerial support is toward employee's increase in perception of the usefulness of the technology, the employee's implementation success of the tasks will increase correspondingly. Apart from its role in organization settings and its relationship with job performance, Yeh and Teng (2012) in their research proposed a few different dimensions of perceived usefulness in their extended usefulness scale (perceived efficiency, perceived effectiveness, perceived extended usefulness, relatedness fulfilment, self-development fulfilment and perceived needs fulfilment) which, as they suggested, can be considered when measuring usefulness in a different light besides that suggested by Davis (1989).

Having in mind the increase in social media usage and engagement in last decade, researchers have focused more on studies involving concept of perceived usefulness in social media platforms. For instance, Matute et al. (2016) have looked into mediating relationship of perceived usefulness on the relationship between characteristics of the vendor's e-word-of-mouth platform (quantity, credibility and quality) and online repurchase intention. Results have shown a mediating effect of perceived usefulness on e-WOM credibility and quantity. Meaning, users' low interest on accuracy of items communicated and low trust toward sellers, can be reversed if websites' design and characteristics (usability, colour, symbols) are good enough to improve their perceived usefulness. Similarly, Mou et al. (2017) have found a link in which trust together with perceived usefulness positively influence users' intentions and behaviors toward acceptance of online health services. Prior research has provided sufficient evidence that consumer perception variable of perceived usefulness variable affects consumer purchase intention. Therefore, we propose the following hypothesis:

H1: Perceived usefulness of online shopping websites is positively related to consumer purchase intention of online shopping websites.

2.1.2. Effects of User Satisfaction

Derived from his well-known expectation-disconfirmation theory, Oliver (1997) has defined satisfaction as "a desirable end-state, a pleasurable experience of consumption of products and the patronization of services" (p.4). A high satisfaction in consumer experience signals a good understanding of marketplace complexity, which additionally leads to tranquility in their lives (Bailey, 2015). Researchers have described online platform user satisfaction, as the extent to which a user feels that the provider's page design, features and performance exceeded expectations (Bailey, 2015).

Drawing on these definitions, recent studies have shown that failures of any service may not essentially lead to user dissatisfaction, since most consumers tolerate small mistakes (Del Rio-Lanza et al., 2009). Rather, provider's failure to respond as expected will most likely cause dissatisfaction. For example, McCollough and Bharadwaj (1992) have found that satisfaction of users who have come across service failures and then have received solutions after service failure is as high as or even higher than satisfaction of those who haven't experience any failure. Similarly, Gu and Ye's (2012) study shows that provider's effective responses improve users' satisfaction for those with low satisfaction level. Furthermore; Krishen et al. (2015) have conducted a study among Facebook, Twitter, LinkedIn and other social media firm users. Their findings have suggested that if members are satisfied with information quality provided by the firm, they will most probably feel a sense of loyalty toward it. In addition, they underline that social interactions increase satisfaction and intention to participate in online interactions, which leads to creation of sense of belonging and fulfilment of their social and emotional needs. Finally, their study pointed out the importance of system quality and ease of use. User satisfaction with system quality involves managing technical issues, which if difficult to handle will alienate users instantly.

Additionally, previous studies have suggested that consumer satisfaction of service quality has significant influence on purchase intention. For instance, Collier and Bienstock (2006), have tested relationship between customer satisfaction and behavioral intention of e-services in e-retailing, and found a positive one. Lee and Lin (2005) considered user satisfaction as a mediator between e-service quality dimensions and purchase intention. More recently Kuo et al. (2013) looked into moderating role of WOM on relationship between satisfaction and repeat-purchase intention and found the relationship to be significant in moderating relationship as well as in the direct relationship between satisfaction and repeat-purchase intention. As Theory of Reasoned Action conceives that positive attitude leads to positive intentions (Fishbein and Ajzen, 1977), user satisfaction is expected to form positive behavioral intentions.

H2: User satisfaction of online shopping websites is positively related to consumer purchase intention of online shopping websites.

2.2. Individual Factors

Consumer personal characteristics hold significant role in the creation of consumer's behavioural intentions (Bearden and Rose, 1990). Our model in Figure 1 claims that personality factors have an effect on consumers' perceptions of online shopping websites/platforms and have an effect on consumers' purchase intentions of online shopping websites. Consumer perception of online shopping websites/platforms is comprised of perceived usefulness and satisfaction of online shopping websites. This study examines relationship proneness, online transaction self-efficacy, susceptibility to interpersonal influence and GOSIP as individual difference factors adapted from Bailey (2015).

2.2.1. Effects of Relationship Proneness

The consumer relationship proneness term is introduced by Wulf et al. (2001) as "a consumer's relatively stable and conscious tendency to engage in relationships with retailers of a particular product category" (p. 38). Proneness concept

involves engagement in a relationship; it is a conscious decision that is more than sustaining and strengthening relationships (Bloemer and Odekerken-Schröder, 2006). Consumers differ in their preferences of establishing a relationship with manufacturers or service providers (Bailey, 2015). According to Odekerken-Schröder et al. (2003), consumer relationship proneness is the symptom of product category involvement personality trait, not a personality trait itself. The relationship prone consumers try to be a steady customer of the mentioned manufacturer or service provider (Parish and Holloway, 2010, Bloemer et al., 2003). These consumers are more likely to prefer mentioned manufacturer or service provider when they are shopping compared to the consumers that have lower levels of proneness. In this study, we define relationship proneness as consumers' engagement of specific online shopping websites while shopping online.

Prior research has consistently displayed that relationship proneness of consumers may trigger behavioral intentions. Bloemer and Odekerken-Schröder's (2006) research conducted in a bank setting have asserted that, employee relationship proneness is an antecedent of affective and normative commitment that leads to behavioral loyalty, and then it also results in positive word-of-mouth. Fernandes and Proença (2008) have claimed that consumer proneness is a driver of buyer-seller relationships in B2C markets by their research conducted in a service setting. The case studies in Fernandes and Proença's (2008) research have revealed that consumers differ in having desires to engage in service providers' activities due to their different relationship proneness levels. Some consumers do not purchase from the same provider since service providers does not seem to offer more value to them to make them loyal. Kim et al. (2011) have found that relationship proneness has an impact on the resistance to change of customers' preferences directly in a retail setting. Parish and Holloway (2010) have stated that consumer relationship proneness is linked with both trust and commitment to the service provider. They have also found that in a relational context service such as health care services, high relationship prone consumers will also have higher trust and commitment levels compared to transactional service context such as call centers. Findings of trust and commitment in their research are related to positive consumer attitude toward service provider. So, positive attitude may lead to positive behavioural intentions (Fishbein and Ajzen, 1977). Therefore, high trust and commitment forms a relationship of good quality, and this will lead to more favourable behavioural intention. Ahn and Rho (2016) have also found a moderating effect of relationship proneness of relational factors (interaction, emotional commitment, relationship value) on the motive of customer participation. Accordingly, the following hypothesis is proposed:

H3a: Relationship proneness is positively related to consumer's purchase intention of online shopping websites.

There has been limited research about relationship proneness' effect on perceived usefulness. Park and Gretzel's (2010) study have discussed comparison shopping proneness' effect on perceived usefulness of comparison shopping tools. They found that comparison shopping prone consumers perceive these tools useful in a way that they support their shopping objectives. Similarly, we expect that being prone to use online shopping websites affects perceived usefulness of online shopping websites positively. Thus, we hypothesize:

H3b: Relationship proneness is positively related to perceived usefulness of online shopping websites.

Store satisfaction has been found to be influenced by consumer relationship proneness, store image and positive affect (Bloemer and Odekerken-Schroder, 2002; Noyan and Simsek, 2011). Lin (2013) has claimed a moderating effect of consumer relationship proneness on the relationship between relational selling behavior and relationship quality dimensions of satisfaction and trust in a bank setting. Satisfaction and trust of service personnel are influenced by mutual disclosure and contact intensity and the relationship between them is stronger when customers are more relationship prone. So, it has been found that sales personnel should adjust their behaviors according to each customer's relationship proneness level. More relationship prone customers should be communicated more intimately compared to less relationship prone ones (Lin, 2013). Mishra and Vaithianathan (2015) have alleged that Big 5 personality traits have an impact on consumer relationship proneness, and proneness influences customer satisfaction with the firm. Therefore, we expect to prove this hypothesis:

H3c: Relationship proneness is positively related to user satisfaction of online shopping websites.

2.2.2. Effects of Online Transaction Self-Efficacy

Self-efficacy is one of the crucial terms in social psychology which means an individual believes himself/herself that he/she is capable of performing a specific behavior (Hayashi et al., 2004). Bandura (1986) has also provided a definition: "People's judgements of their capabilities to organize and execute courses of action required to attain designated types of performance" (p.391). What matters in this construct is the beliefs that individual holds about the courses of action that is possible to perform with these skills. As Kim and Kim (2005) have conveyed, individuals who perceive themselves having high self-efficacy are inclined to show plentiful effort to achieve specific task and therefore be successful at this task compared to low self-efficacy holding ones. Moreover, individuals with high level self-efficacy tend to perceive any task's characteristics predictable. Kim and Kim (2005) also redefined this term as individual's judgements on his/her ability to organize and perform specific required behaviors, so that online purchasing task is attained effectively and successfully in

an unpredictable environment. Therefore, online transaction self-efficacy in this research is defined as consumers' beliefs about their capabilities to perform successful and effective online shopping.

As Bailey (2015) has stated, this term is seen in various fields to analyse individuals' behaviors in different activities. In computer use determination, having high self-efficacy has been found to increase computer usage (Compeau and Higgins, 1995), which is signalling behavioral intention to use computers more. Weinstein and Mullins (2012) have also asserted that in order to facilitate the technology adoption of sales teams, people with high levels of computer self-efficacy should be included in these teams. Kim and Kim (2005) have studied online transaction self-efficacy of consumers in e-commerce transactions. Their study has disclosed that online transaction self-efficacy has a positive impact on consumer trust on web sellers and negative impact on perceived risk, and therefore positive impact on purchase intention. Fishbein and Ajzen's (1977) Theory of Reasoned Action is in line with this individual factor-perception-attitude-intention link. Therefore, we present the following hypothesis:

H4a: Online transaction self-efficacy is positively related to consumer's purchase intention of online shopping websites.

Consumer's self-efficacy has also been effective in their perception of item's usefulness or technology. Again in computer usage setting, Park and Chen's (2007) study have demonstrated that self-efficacy affects medical personnel's perceived ease of use and intention to use of smartphones positively in healthcare industry. The more personnel feel confident about their smartphone skills, the higher their perception of ease of use. Research about the technology adoption concept of marketing discusses self-efficacy from technology side. Weinstein and Mullins (2012) have asserted that in order to facilitate the technology adoption of sales teams, people with high levels of computer self-efficacy should be included in these teams. Yang (2010) has suggested that technology self-efficacy affects perceived ease of use of mobile data services of American consumers more compared to Korean consumers. So, we propose the following hypothesis:

H4b: Online transaction self-efficacy is positively related to consumer's perceived usefulness of online shopping websites.

Satisfaction represents the disconfirmation of expectations based on post-usage beliefs and usage experience of consumers, as Oliver (1997) have stated in expectation-disconfirmation theory. Having high self-efficacy is found to provide favourable perceptions such as enjoyable computer usage and low computer anxiety among users (Compeau and Higgins, 1995). This finding indicates that users are likely to be satisfied with the computer usage more when their self-efficacy is higher.

H4c: Online transaction self-efficacy is positively related to user satisfaction of online shopping websites.

2.2.3. Effects of Susceptibility to Interpersonal Influence

Consumer's decision making process can be difficult to foreseen since it can be powered by many factors such are social norms, family, economic etc. Although, these factors can have different impact on consumer's behaviour, the most important one is the 'influence of others' (Lalwani, 2002). In the light of social media use, some consumers exercise influence over others in social networking, while others are being susceptible to this influence (Bailey, 2015). Bearden et al. (1989) define susceptibility to influence of others as an individual-difference variable. In the scale developed to measure susceptibility to interpersonal influence, they have suggested two separate dimensions: informational and normative. First one refers to the behavior of individual who completes purchasing decision based on the information received from others. The latter refers to behavior of individual who purchase and use the product/service to boost their image in front of significant others and to meet expectations of people in their network. Normative influence can further be subdivided into value-expressive and utilitarian influence. First, refers to strengthening someone's own self-concept, where individual dreams of belongingness to the desired group as a fulfilment of his/her goal or attempt to enhance his/her ego. Strong desire to become member of a desire group, result in group norms influencing the member. Utilitarian influence refers to adaptation based on perceived punishment, avoidance of negative self-image or disassociation with the desired group (Bearden and Rose, 1990; Martin et al., 2013). In order to fill in the gap in this research concept in the light of website selection and shopping behaviors, our research focuses on the normative influence of the concept, including both value-expressive and utilitarian influence.

Many research have been conducted to explain this individual factor. With the rapid growth of online shopping sites and social media networking, people are likely to communicate more with online friends than offline ones. Therefore, online purchasing decisions might be influenced more by online friends, since they don't have time or opportunity to physically interact with offline friends and exchange experience about online shopping (Lee, 2015). Moreover, online friends might exercise normative influence over individual's shopping websites selection. For example, individuals who are high in susceptibility to normative interpersonal influence might choose to shop from websites which will positively influence their image in front of significant others and they might develop sense of belonging to the desired group of online friends. In addition, Lalwani (2002) linked susceptibility to interpersonal influence of spouses to the decision of visiting fine dining restaurants. Alkailani and Kumar (2016) found that susceptibility to personal influences has a significant impact on

consumer innovativeness. Chang (2015) have examined the impact of informative and normative interpersonal influence on green purchase intention. Findings indicated a significant relationship only between green purchase intention and informative interpersonal influence. Martin et al. (2008) have found that individuals who are more receptive to interpersonal normative influence show more favourable evaluations for advertisements which strongly endorse the style of the product and the ones that affect attitudes of them. For individuals with low susceptibility to normative influence, attribute quality was the key influence on their brand attitudes and purchase intentions. Therefore, we propose that susceptibility to normative interpersonal influence will have similar results in the case of websites' use. Meaning, consumers who are high or low in susceptibility will respond different to websites suggesting the following hypothesis:

H5a: Susceptibility to normative interpersonal influence is positively related to purchase intention of online shopping websites.

Next, Park and Lee (2009), conducted research among Korean and US consumers, finding that positive relationship between consumer susceptibility and perceived usefulness of online reviews is higher for Korean than for US consumers. More recently, Ogonowski et al. (2014) found that online social presence has positive impact on trust as well as on the perceived usefulness of the websites. Furthermore, Krishen et al. (2015) linked importance of information quality provided by the firm to user satisfaction in social networking. They pointed out how increase social interaction will lead to increase in satisfaction and intention to participate in online interactions via social media; indicating accurate Fishbein and Ajzen's (1977) attitude-intention link. Therefore, we suggest the following hypothesis:

H5b: Susceptibility to normative interpersonal influence is positively related to perceived usefulness of online shopping websites.

H5c: Susceptibility to normative interpersonal influence is positively related to user satisfaction of online shopping websites.

2.2.4. Effects of General Online Social Interaction Propensity (GOSIP)

Blazevic et al. (2014) have defined GOSIP as "a trait-based individual difference that captures the differences between consumers in their predisposition to interact with others in an online environment" (p.87). They have argued that the interactivity, as a consumer characteristic, can significantly reshape ones' online behavior. Liu and Shrum (2002) have described interactivity as "the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized" (p.54). Interactivity is known to have an impact on the available information on websites, how this information is given and handled, and how reliable the website is in the eyes of consumers (Jensen et al., 2014). Both Rodgers and Thorson (2000) and Palmer (2002) have suggested that users with high interactivity will most probably show behaviors like returning to, shopping on, and even promoting the websites. Libai et al. (2010) have argued that consumers who are active in online conversation play an important role in information collecting process, and online conversation has a positive effect on sharing experience, reviews, evaluation, which in return affects positively the perceived value. From its development forward, GOSIP scale has not been tested involving the aspects we suggest in our research. Considering these previous findings and Bailey (2015) we suggest the following:

H6a: GOSIP is positively related to purchase intention of online shopping websites.

H6b: GOSIP is positively related to perceived usefulness of online shopping websites.

Furthermore, interactivity is known to have an important role in social media communications, where websites' interactivity attracts potential consumers and consumers' interactivity reflects on reviews and eventually satisfaction. We suggest that individuals high in interactivity, that is; active in online discussions about shopping websites will establish higher user satisfaction of the same website provider. Therefore, we propose the following:

H6c: GOSIP is positively related to user satisfaction of online shopping websites.

3. DATA AND METHODOLOGY

3.1. Sample and Data Collection

To test our hypotheses, we collected data with the online survey which was shared via social media, mainly via Facebook. As the study seeks to investigate consumers' individual factors' and their perceptions' of online shopping websites/platforms effects on their purchase intention, there is no need to collect sample with probability sampling techniques. Therefore, sample was collected with convenient sampling. The only constraint of the participation to our questionnaire was having done online shopping at least once. Before the data collection stage, a pilot test was conducted with 53 university students from Kocaeli to ensure that questions are clear. Based on feedbacks of pilot, some modifications were made. The questionnaire was reliable and valid. The final questionnaire consisted of 44 questions. Then, the data collection stage initiated and took a month. In total, 322 respondents completed the questionnaire. However, 4

respondents were dropped out of the sample as they had never done online shopping. In total, 318 surveys were collected. In Table 1, the demographic characteristics of the sample are displayed. According to our data, 45.3% of the respondents were male, and 54.7% of them were female. In terms of age, 49% of them were less than 30 years old. The majority of them were married (54.7%) and 71.7% of them had no children. 84.6% of the respondents had a monthly income between 700 USD and 3000 USD.

Table 1: Demographic Characteristics of Sampling (n = 318)

Characteristics	*N*	(%)
Gender		
Male	144	45.3
Female	174	54.7
Age		
Less than 20	3	.9
20-29	153	48.1
30-39	115	36.2
40-50	30	9.4
More than 50	17	5.3
Marital Status		
Married	174	54.7
Single	144	45.3
Children		
Yes	90	28.3
No	228	71.7
Income		
700 usd and less	21	6.6
701 – 1700 usd	149	46.9
1701 – 3000 usd	120	37.7
More than 3000 usd	28	8.8

3.2. Measures

In order to measure constructs, five-point Likert scale indicating that 1 for strongly disagree and 5 for strongly agree were used. In the first part of the questionnaire, respondents were asked to answer the questions in consideration of their online shopping style; so that their individual factors and their perceptions' of online shopping websites/platforms were unveiled. In the second part, respondents were asked to answer questions in consideration of the online shopping websites which they had used lastly; so that their behavioral intentions towards online shopping were revealed. The scales used in this study are adapted from previous research and reworded according to online shopping. Susceptibility to interpersonal influence is adapted and reworded from Bearden et al. (1989); while GOSIP is from Blazevic et al. (2014), online transaction self-efficacy is from Kim and Kim (2005), relationship proneness from Parish and Holloway (2010), perceived usefulness is from Park and Chen (2007) and user satisfaction is from Krishen et al. (2015) respectively. Purchase intention scale consists of Kim and Kim's (2005) purchase intention scale in an e-commerce transaction setting and Park and Chen's (2007) behavioral intention to use smartphone scale. Measurement items are presented in Table 2.

Table 2: Factor Loadings and Reliability Scores

Construct		Standardized loadings	Cronbach's alpha	CR	AVE
Susceptibility to Interpersonal Influence **(adapted from Bearden et al. 1989)**			.83	.83	.56
SI1	If other people can see me using a product, I often purchase the product they expect me to buy.	.59			
SI2	I achieve a sense of belonging by purchasing the same products and services that others purchase.	.76			
SI3	If I want to be like someone, I often try to buy the same products and services that they buy.	.73			
SI4	I often identify with other people by purchasing the same products and services they purchase.	.89			
GOSIP **(adapted from Blazevic et al. 2014)**			.94	.94	.76
GO1	In general, I am someone who answers questions of others in online discussion forums.	.78			
GO2	In general, I am someone who enjoys initiating a dialog online.	.84			
GO3	In general, I like to get involved in online discussions.	.90			
GO4	I find the idea of belonging to an online discussion group pleasant.	.92			

GO5	I am someone who likes actively participating in online discussions.	.92			
***Online Transaction Self-Efficacy* (adapted from Kim and Kim 2005)**			.75	.72	.51
OSE1	I am confident that I am usually able to purchase exactly the item that I want from online shopping websites.	.74			
OSE2	I am confident that, in case my order does not come through in a satisfactory manner, I am able to take care of the problem(s) on my own.	.70			
OSE3	I am confident that I am able to find a trustworthy online shopping website based on ratings (e.g., the number of the stars or the smiley faces) provided by other consumers.	.71			
***Relationship Proneness* (adapted from Parish and Holloway 2010)**			.83	.85	.65
RP1	Generally, I prefer to do online shopping from one website.	.86			
RP2	Generally, I am someone who wants to be a steady customer of the same online shopping website.	.90			
RP3	Generally, I am someone who is willing to "go the extra mile" to use the same online shopping website.	.64			
***Perceived Usefulness* (adapted from Park and Chen 2007)**			.94	.94	.72
PU1	Using online shopping website would enable me to accomplish shopping more quickly.	.81			
PU2	Using online shopping website would decrease my duration of shopping.	.78			
PU3	Using online shopping website would increase my productivity.	.89			
PU4	Using online shopping website would enhance my effectiveness of shopping.	.88			
PU5	Using online shopping website would make it easier to do shopping.	.87			
PU6	I would find online shopping website useful when shopping.	.84			
***User Satisfaction* (adapted from Kristen et al. 2015)**			.86	.86	.67
SA1	Using online shopping website makes me happy.	.82			
SA2	Overall, I am satisfied with using online shopping website.	.85			
SA3	Overall, using online shopping website has been a satisfactory experience.	.79			
***Purchase Intention* (adapted from Kim and Kim 2005, Park and Chen 2007)**			.93	.93	.69
PI1	I am likely to purchase the product(s)/service(s) from this website.	.80			
PI2	I am likely to recommend this website to my friends.	.77			
PI3	I am likely to make another purchase from this website if I need the product(s)/service(s) that I am going to buy.	.90			
PI4	I will also intend to use this website in the future.	.91			
PI5	Whenever possible, I intend to use this website when I do shopping.	.85			
PI6	I want to increase my use of this website in the future.	.75			

CCR composite construct reliability. χ^2 = 904.97 (df = 384), $p < .001$; χ^2/df = 2.36; root mean squares error approximation (RMSEA) = 0.07; comparative fit index (CFI) = 0.93; goodness of fit index (GFI) = 0.84, adjusted goodness of fit index (AGFI) = 0.80 and incremental fit index (IFI) = 0.93

3.3. Measure Assessments

In Table 2, the results of the reliability estimates and factor loadings for each construct are presented. The composite reliability scores range from 0.72 to 0.94; which implies a reliable questionnaire (Hair et al., 2010). Besides, Cronbach's alpha scores range from 0.75 to 0.94; which are above 0.70, indicating high overall internal consistency among the items in all constructs as Hair et al. (2010) stated. Factor loadings range from 0.59 to 0.92, which illustrate large and significant items are included in every individual constructs. High correlations among constructs signal convergent validity, also demonstrate that scales measure the concept well (Hair et al., 2010). As a rule of thumb for assessing factor loadings' greatness, 0.33 is considered. As the value of the factor loadings of nearly all constructs are high, items are representatives of the constructs. Furthermore, average variance extracted (AVE) scores in Table 1 displays the existence of discriminant validity.

4. FINDINGS AND DISCUSSIONS

In our research, AMOS 21 and SPSS 21 have been used to test the proposed conceptual model. Table 3 demonstrates descriptive statistics and intercorrelations across the seven constructs used in the model. Except the *Susceptibility to Interpersonal Influence (normative)*, measurements of the bivariate correlations indicate that other correlations are significant and are in the directions we suggested are going to be in the previous parts. With SEM, conceptual model is specified and estimated based on our data set. All of the parameter estimates are displayed in Table 2. Except *the susceptibility to interpersonal influence (normative)*, measurements of the bivariate correlations indicate that other correlations are significant and are in the directions we have expected them to be in hypotheses development. The model fits the measured data quite well (χ2 = 904,97; χ2/df = 2.36; RMSEA = 0.07; CFI = 0.93; GFI = 0.84; IFI = 0.93). Furthermore, eleven out of fourteen hypotheses are supported.

Table 3: Descriptive Statistics and Correlations Estimates

	Mean	SD	1	2	3	4	5	6	7
1. Susceptibility to Interpersonal Influence	1.93	.78	1.00						
2. GOSIP	2.32	1.02	.17 (**)	1.00					
3. Online Transaction Self-Efficacy	3.85	.71	-.04	.17 (**)	1.00				
4. Relationship Proneness	3.48	.89	.10	.20 (**)	.38 (**)	1.00			
5. Perceived Usefulness	3.93	.71	.02	.15 (**)	.40 (**)	.65 (**)	1.00		
6. Satisfaction	3.71	.82	.11	.22 (**)	.45 (**)	.56 (**)	.54 (**)	1.00	
7. Purchase Intention	3.95	.65	-.01	.14 (*)	.41 (**)	.71 (**)	.77 (**)	.43 (**)	1.00

** Correlation is significant at p < 0.01 level (2-tailed)
* Correlation is significant at p < 0.05 level (2-tailed)

Figure 2 shows the proposed model with the estimated path coefficients for the hypotheses suggested. All of the parameter estimates are displayed in Table 4. Regarding hypotheses tested, H1 and H2 which link perceived usefulness (β, standardized path coefficient = 0.77; t = 21.775; p < 0.001) and user satisfaction of online shopping (β = 0.43; t = 8.477; p < 0.001) websites with purchasing intention, are both supported according to the hierarchical regression. In fact, a comparison of the standardized path coefficients shows that among six factors studied, perceived usefulness of shopping websites have the strongest positive effect on consumers' purchase intention. The user satisfaction dimension is a significant predictor of provided service quality, resulting in a positive purchase intention in online shopping. As expected; H3a, H3b and H3c, which link relationship proneness to purchase intention (β = 0.70; t = 17.824; p < 0.001), perceived usefulness (β = 0.65; t = 15.268; p < 0.001) and user satisfaction (β = 0.55; t = 11.941; p < 0.001) are all supported. Additionally, this study has supported that relationship proneness is the most effective factor on purchase intention of consumers of online shopping. Furthermore, findings of the research contribute to academia by showing the strong positive effect of relationship proneness on consumer perceived usefulness of online shopping, since there is very limited research.

Figure 2: Structural Equation Model with Parameter Estimates

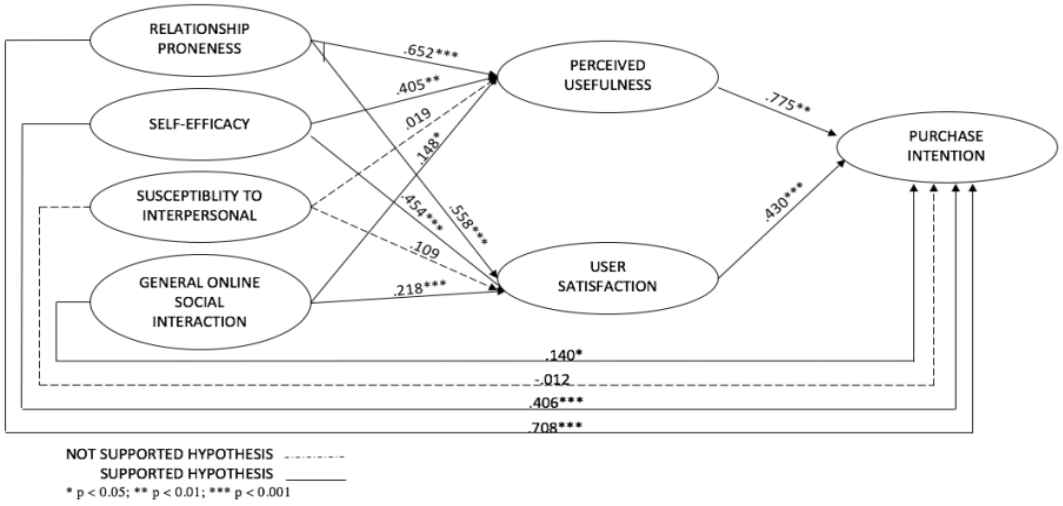


Table 4: Structural Parameter Estimates

	Hypothesized path	Standardized estimates (β)	t value	p value	Results
H1	Perc. Usefulness → Purchase Intention	.775	21.775	.000***	Supported
H2	User Satisfaction → Purchase Intention	.430	8.477	.000***	Supported
H3a	Relationship Proneness → Purchase Intention	.708	17.824	.000***	Supported
H3b	Relationship Proneness → Perc. Usefulness	.652	15.268	.000***	Supported
H3c	Relationship Proneness → User Satisfaction	.558	11.941	.000***	Supported
H4a	Self-Efficacy → Purchase Intention	.406	7.896	.000***	Supported
H4b	Self-Efficacy → Perceived Usefulness	.405	7.878	.000***	Supported
H4c	Self-Efficacy → User Satisfaction	.454	9.046	.000***	Supported

H5a	Susc. to Interpersonal Influence → Purchase Intention	-.012	-.207	.837	Not Supported
H5b	Susc. to Interpersonal Influence → Perc. Usefulness	.019	.341	.734	Not Supported
H5c	Susc. to Interpersonal Influence → User Satisfaction	.109	1.945	.053	Not Supported
H6a	GOSIP → Purchase Intention	.140	2.508	.013*	Supported
H6b	GOSIP → Perceived Usefulness	.148	2.651	.008*	Supported
H6c	GOSIP → User Satisfaction	.218	3.963	.000***	Supported

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

In case of self-efficacy, H4a, H4b and H4c, respectively are all supported, indicating that self-efficacy has a positive influence on purchase intention (β= 0.40 t = 7.896; $p < 0.001$), perceived usefulness (β = 0.40; t = 7.878; $p < 0.001$) and user satisfaction (β = 0.45; t = 9.046; $p < 0.001$). Findings displayed that self-efficacy has the second largest effect on perceived usefulness, user satisfaction of online shopping websites and behavioral/purchase intention to use these websites. However, H5a, H5b and H5c, which suggested positive effect of susceptibility on purchase intention (β = -0.012; t = -0.207; $p < 0.05$), perceived usefulness (β = 0.019; t = 0.341; $p < 0.05$) and user satisfaction (β = 0.10; t = 1.945; $p < 0.05$) are not supported as opposite to prior research. This finding suggests that susceptibility to normative influence has no positive influence on shopping websites' perceived usefulness, not even to the intention to purchase, repurchase or user satisfaction as suggested. The influence is in fact negative, which opens a new topic for further studies. This may indicate that online consumers are not influenced by significant others' or friends' shopping choices compared to outdoor shopping activity because of shopping alone and incognito. Furthermore, the reason of negative effect might be our sample, which is collected online with convenience, having only one prerequisite: have ever shop online. Targeting specific segment might result in different outcome. Finally, H6a, H6b and H6c, which suggested a positive effect of GOSIP on purchase intention (β = 0.14; t = 2.508; $p < 0.05$), perceived usefulness (β = 0.14; t = 2.651; $p < 0.05$) and user satisfaction (β = 0.21; t = 3.963; $p < 0.001$) are also supported by the analysis in spite of its small effect.

5. CONCLUSION

In the digital age where online shopping is rising, in order to understand consumers' intention to actually purchase from online shopping websites rather than just browse, the factors impacting on their intention should be understood. Service providers will take this information into consideration to improve their shopping websites' technological characteristics such as ease of use, user-friendliness, updating online information available. The objective of this study was uncovering which personality factors of consumers were more effective to create favourable behavioural intention of online shopping, as we partially tested the model suggested by Bailey (2015) corresponding to his research's future research directions. In our study we only took the effects of personality factors, perceived usefulness and user satisfaction on purchase/behavioral intention of shopping websites. In doing so, we helped in supporting personality factor side of the model and provided findings of behavioral and purchase intention of consumers. As suggested by Bailey (2015), it is important to make proper online plans, increase consumer engagement and strengthen the relationship by segmenting and targeting online consumers properly. Therefore, this study contributes to the line of research by exploring these behaviors. The analytical results are discussed below. First, the analytical results showed that among variables tested, perceived usefulness has significant effect on purchase/behavioral intention of online shopping websites. This result is consistent with the Davis's (1989) statement that any system high in perceived usefulness will result in positive use-performance relationship. The same counts for study conducted by Mou, Shin, and Cohen (2017), in which they linked trust and perceived usefulness to users' intentions and behaviors toward acceptance of online health services. This means, if consumers believe online shopping website will boost their shopping experience, intention toward purchase and repurchase will grow. Therefore, websites should improve user experience while surfing on the website and pay careful attention to aspects such as web design, readability, visual appeal, user friendliness and similar. Second, user satisfaction dimension is a significant predictor of provided service quality, resulting in increase of purchase/behavior intention in online shopping. Online website shopping satisfaction refers to the extent to which user who has shopped feels that the website has performed as expected (Bailey, 2015). As suggested, our study linked user satisfaction and purchase intention, which is consistent with the previous studies (see Krishen et al., 2015; Lee and Lin, 2005; Kuo et al., 2013).

This study provides evidence that, consumer individual factor of relationship proneness brings about behavioural intention (Bloemer and Odekerken-Schröder, 2006; Chen and Cheng, 2009). As Parish and Holloway (2010) have asserted, consumer relationship proneness has an effect on several behavioural outcomes such as trust, commitment. This study also has supported that relationship proneness is very effective factor on purchase intention of consumers of online shopping. Furthermore, findings of research contribute to academia by showing the strong positive effect of relationship proneness on consumer perceived usefulness of online shopping, since there is very limited research. So, consumers who are prone to use online shopping websites when shopping are supported by this research to perceive the online shopping websites useful. Among aforementioned personality factors in this study, relationship proneness has the strongest effect on user satisfaction of online shopping. Findings are in line with the prior research that consumer proneness of online shopping websites; that is to say consumer's inclination of shopping from most preferred websites results in user satisfaction of this

websites (Bloemer and Odekerken-Schröder 2002; Lin, 2013; Mishra and Vaithianathan, 2015; Noyan and Simsek, 2011). Online transaction self-efficacy is also supported in this research affecting behavioural and purchase intention positively. Findings displayed that, self-efficacy has the second larger effect on perceived usefulness, user satisfaction of online shopping websites and behavioural/purchase intention to use these websites. Findings show that, individual's favourable beliefs about his/her online shopping activity performance are effective in his/her intent to use online shopping websites. This finding is also in line with Compeau and Higgins' (1995) which have found computer usage is increased due to individual's high self-efficacy, Weinstein and Mullins (2012) which have discovered this factor's effect on facilitation of technology adoption among employees. Besides, findings support self-efficacy's positive effect on perceived ease of use of technological devices such as smartphones, mobile data services etc. (Park and Chen, 2007; Yang, 2010). Furthermore, in this study, self-efficacy's positive effect on user satisfaction is supported as Compeau and Higgins (1995) have found that this factor positively affects computer usage experience. Next, in case of susceptibility dimension, our study found negative relationship between perceived usefulness, user satisfaction and purchase intention. Results suggested opposite relationships of those predicted. These findings might indicate that online consumers are not influenced by significant others' or friends' shopping choices, reason for which might be shopping alone and incognito. Furthermore, reason for these relationships to result in negative effect might be our sample, which was randomly selected online, with only one condition: shopping online. Targeting specific segment might result in different outcome.

Finally, although smaller, GOSIP is found to have a positive influence on perceived usefulness, user satisfaction and purchase intention. As suggested by Bailey (2015) and Blazevic et al. (2014), users actively involved in online discussions will foster consumer engagement behavior toward the brand. Furthermore, our findings are consistent with Libai et al.'s (2010) study, who argued that consumers who are active in online conversation play an important role in information colleting process, and have positive effect on sharing experience, reviews, evaluation. In other words, users active in online discussions perceive websites easy to use and manage, which also means user satisfaction and their intention to return to the website, repeated purchasing of services offered is high as well.

For managers, this study intends to help online shopping service providers to improve their shopping websites' technological characteristics such as ease of use, user-friendliness, updating online information available. As it is crucial for firms to understand the purchase intention of consumers of online shopping, individual factors' impact should be obvious for them. Especially, the effect of relationship proneness of consumers with online shopping firms on consumers' purchase intentions can be used to draw consumer attention. Likewise, firms can plan their marketing communications such as advertising strategies and promotional strategies, branding strategies, shopping website's design etc. in a way that appeal to their target customers' personality. With respect to international strategic management field, this research contributes to the firms' strategy formation stage by shedding light to identify target customers. International firms which seek competitive advantage may benefit from understanding the impact of consumer's individual factors on their behavioral intentions, especially purchase intentions which are actual purchasing behaviors' previous stage as suggested by Fishbein and Ajzen (1977). It would be useful for international firms to grasp the local point of view while segmenting target customers in different countries.

The main limitation of this study is using convenience sampling technique, the results may not be generalized to the consumers of the entire country. This study could be applied to different countries, in order to understand cultural differences among individuals. Bearing in mind Fishbein and Ajzen's (1977) Theory of Reasoned Action, attitudes of consumers could be included in future research in order to measure the behavioral intentions of consumers more effectively. Also, measuring real behaviors may be more useful instead of measuring behavioral intentions.

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CREDENCE TO LEADER AFFECTING DESIRED LEVEL OF COMMITMENT: THE MODERATING EFFECT OF EMPLOYEE'S CYNICISM ABOUT ORGANIZATIONAL CHANGE

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ABSTRACT

Purpose- Credence to truthful leader increases employee's commitment level to organization. The over committed members of organizations might cause to performance loss. Natural attitudes such as employee's cynicism about organizational change could be used to moderate organizational commitment. As credence to the leader reduces the cynicism level it would be possible to control the effectiveness of cynicism to change and use it.
Methodology- To test the propositions, a case study has been arranged on an industry leading dressing retail company located in Turkey in 2016. After the validation of measures a series of regression analysis was conducted to test the hypotheses and to define the direction of relations.
Findings- The obtained data from the questionnaires were confirmed the predicted relationships from credence to leader to organizational commitment level, and employee's cynicism about organizational change moderated this relation.
Conclusion- The study was one of the first attempts to propose managers to use cynicism which lose strength by experience of employees and credence to leader for organizational performance.

Keywords: Cynicism, organizational change, credence to leader, desired commitment level
JEL Codes: M10, M12, Z13

1. INTRODUCTION

Credence to leader improves organizational performance by increased solidarity thanks to believing the vision. Employees of the organization experience high levels of communication and commitment to realise the vision. Despite no performance loss might be associated with communication, like low levels of commitment; high levels of the commitment might be problematic. Though employees could rapidly advance in their career plans in exchange with carrying out job requirements, time to time the organizational capabilities could not satisfy and donate them. Organizations could never expect not to look for vacancies and be fully committed even the most committed employee being talked. Moreover illegal behaviours and various unethical endeavours of employees to show how high commitments they have might cause the organization to become vulnerable and to lose creativity (Scott and Hart, 1979). Organizations need tools to moderate commitment of the employee and the moderation includes lowering it to desired level. The choice of top management team of the organization should serve strategically to optimise the costs and outputs.

Employees have concerns about change as well as organizations. Cynicism was believed to result from a usual mood of blaming others for the failure of change (Wanous et al. 2000). This blame could be based on a lack of motivation, and ability but not a result of a situational attribution for the failure of change was made by employees because of unforeseen events or forces beyond the control of management. Wanous et al. treated cynicism as a learned response, rather than a personality-based predisposition. While employees improve cynicism to change, organizations even the most innovative ones resist to implement the innovations they acquire not to lose control on principal capability for consistency (Gündüz, 2013). If organizations have a relation oriented or in other word interdependence sensitive leader whom followers pay

credence than cynicism of the employees could be managed and used as a tool to balance the commitment level. It could have not been possible to find a research specifically tended to utilize any kind of cynicism for organizational purpose. So a research should have been done among a sample group including a truthful leader attracted high credence from followers. Depending on the considerations of the participants of Young Guru Academy Summit held in 2015 and 2016, the industry leading dressing retail Company of which head office located in Istanbul had been chosen as sample case. Vast majority of the participants of the after meeting assessment (88%) evaluated the leader of the Company as a more representative truthful leader deserving credence.

The aim of this research was to find out if organizational change cynicism moderates the effect of credence to leader on employee commitment level. Though it may be harmful if a trusted manager could manage the negative effects of growth and continuous change organizational and individual goals might be achieved for a desired level of personnel turnover. The demographics bias of cynicism might be informative for the following researches too.

In this context, the study begins by a brief literature review of employees' credence to leader, cynicism to change, and commitment, then will go on to development of hypotheses. A multiple regression had been conducted to test the model built on the assumptions. Second section dealt with research analyses and comparison with prior work results. The results of the analyses had been discussed and considered for recommendation for managers and questioned for future work by academicians at the last section.

2. LITERATURE REVIEW

2.1. Credence to Leader

The successful communications of managers in motivating employees were described by motivational language theory (Sullivan, 1988). Among lots of exchanges these managers also supply the information and feedback needed by employees. Their vision about values and goals of organization was shared with employees in frequent informal communications. These types of managers are natural servant leader candidates walking through desks and are ready to assist anyone in case. They are willing to be friends besides to lead if possible and this habit of interest in communicating with employees is crystal clear. These communicating efforts apt to lead to improved employee motivations if the loveable managers were sincere. Motivating behaviour theory favours all types of communicative attempts not only the purposeful communication of uncertainty-reducing information but also the initiative of communicating starting in the down time and lasts all the work day. This means that communication is a precondition of motivation and should never be interrupted by manager. Now a highlight is needed about the style of speaking. The manager has three categories to pay attention about employee needs and values as well as the nature of contingency: (a) what employees need to know, (b) the importance of role play and informal communicating, and (c) the importance of viewing workers as people rather than as instrumentalities (Sullivan, 1988). A fourth emphasis might be on the habit to talk only on issues not personalities to cause only positive types of conflicts to resolve. Then motivated employees were expected to experience high levels of satisfaction and performance thanks to credence to leader. The credence to a truthful leader is apt to increase the employee commitment levels. Although previous researches provided evidence for different contexts supporting that idea there are numerous management implementations and researches that have produced opposite conclusions (Zhu et al., 2015). Especially debates are on truthfulness and peremptory good sense which increase credence. One may argue that truthfulness is a heavy burden for leaders depending on the organization, sectoral environment or country regulations. Providing with enough training and career opportunities to increase employee commitment requires a risky investment with vogue ups behind the other cons discussed up. Accordingly, this study aimed to examine the effects of leadership on the levels of commitment within the moderating effects of organizational change cynicism. On the other hand the conclusions would strengthen the bridge between two different stream of research in organizational behaviour and psychology.

2.2. Cynicism to Organizational Change

Employees probably would become more cynical about their organizations (Harari, 2016). There might be many potential targets for cynicism, such as top managers, a job position of another employee, interest of shareholders, and organizational change efforts (Brown and Cregan, 2008). The different points of views consider that cynicism can be acquired mostly by learning. Dean et al. suggest that "the world is not divided into cynics and non-cynics" which means people have varying degrees of cynicism (Dean et al., 1998). One stream of research has found negative associations between organizational cynicism and organizational commitment, job satisfaction, complaints, a weakened perception of pay for performance among employees, and organizational citizenship behaviour (Andersson and Bateman, 1997; Abraham, 2000; Wanous et al., 2000). Particularly cynicism to organizational change always has been associated with lower organizational commitment. They also reported not surprisingly higher turnover among cynics. Cynicism had not predicted employees' behavioural responses in the organization, either performance or absenteeism (Johnson and O'Leary-Kelly, 2003). The latter research founded that employees' cynical attitudes toward the employer did not influence their absence levels, their work performance, or their organizational citizenship behaviours. Thus the organizational citizenship behaviours could not be

interpreted to have its roots from cynicism. The prediction on these alternative findings might be that cynicism is incidental upon stolidity. Although cynical employees feel disenchanting and report less positive feelings toward their organization, they do not act out this displeasure in behaviours that influence organizational performance directly. Cynicism also can be good for organizations. Research found that cynics feel less intention to comply with requests to engage in unethical behaviour (Brown and Cregan, 2008). Moreover cynic employees can be functional for organizations as cynics may provide a necessary check on the enticement to place adherence to self-serving means over principle or the attraction of assuming that self-interested or dishonest behaviour will go undetected. In their particular manner cynics may act as the voice of conscience for the organization. Furthermore at the individual employee level, people who always believe in others' soundness were likely to be exploited by those who lack it (Dean et al., 1998).

Encouraging leaders to adopt a participatory information-sharing or a decision-making climate as management style has the potential to affect levels of cynicism. Thus it was the duty of managers to cope with or make use of cynicism in order to fulfil any organizational or individual change.

2.3. Commitment

Entrepreneurial orientation is a strategic orientation characterized by risk-taking, innovativeness, and pro-activeness, which provides a basis for entrepreneurial decisions, especially for those who are facing a market opportunity. Employees should acquire more business knowledge because of doing the same job would be possible utmost a five year period from now on. Low entrepreneurial orientation individuals recognize opportunities better when they have accumulated enough business knowledge (Song, 2017). For the individual employee level looking for alternative business vacancies is a routine business while commitment degree should be adjusted at organizational level as a daily managerial task.

Traditional considerations have overestimated the value of performance outcomes that is empirically and logically attributable to leadership (Meindl et al., 1985) Meindl and his colleagues found leaders had little or no real impact on the performance of particularly business organizations or big governmental agencies. The success or failure had been found to depend on factors that cannot be controlled by any individual. However, people believed in leaders, even though leaders had no significant impact on the performance output of organizations. Some researchers had argued that leaders had a symbolic value that might be important (Levine and Moreland, 2006). Leaders might create lovable groups and become symbols of these groups by a clear vision and fair communication. So, the followers of the leader could see no conflicts of interest, and feel no need to hide in the group performing full capacity to improve performance of the organization.

If the commitment level might be categorized as low, moderate and high the choice of the leader preference would be questionable. Low levels of commitment would be desirable because it might compensate high turnover problems with enhanced creativity of new competent employees who seek opportunity to prove themselves. Moreover, organization could quit misfits and provide discontented employees with an opportunity to find more compatible workplaces in low commitment work environment preference. The negative effect of high personnel turnover is hidden unemployment. This occurs when the employees do only what is required by the job descriptions, at the expense of career advancement and commitment to organization. The attitude of hidden unemployed was recognised by steadily looking for new job opportunities in neighbour industries. Meanwhile loyal colleagues suffer from having an unstable, disloyal work environment and a heavy work load.

The advantages of moderate levels of commitment generally outweigh the disadvantages (Randall, 1987). The employees are more committed creating lower rates of turn over. They are mentally satisfied because they execute their work written in job descriptions plus that of their career plans. Organization goals and competitiveness could be assured for strategic planning for a known image and brand in the industry operated. Employees exercise commitment in return for remuneration and career opportunities by the organizations.

At high levels of commitment employees enjoy improved career targets, and remuneration expectation while sharing and contribution organization leader's goals and vision. However the capabilities of organizational life and donations might not always be satisfactory to its members' requirements in this case. Further, the organization might lose flexibility and become vulnerable to a variety of unethical and illegal behaviours of employees to express high commitments to their organization (Scott and Hart, 1979). Even the most committed employee would not fully commit to organization and quit looking for job opportunities. And last but not least commitment is a cost centre in organizational budget including training and enumeration expenses increased due to empowerment of employee capabilities.

Each level provides managers options of commitment to choose. Once existing levels of commitment have been screened considering contingent outcomes, managers might choose the best option for the future of organization. If a change is desired in the level of commitment whatever it might be a strategy would be explored to adjust (Randall, 1987). Despite organizational goals could be best met by a level of commitment the general tendency of the work-force is to refuse to commit totally to the firm.

The lean affective commitment could be enforced by a level of commitment born by long experiences of employees. Employees' images and involvement in decision-making process as proud members of the organization were experienced. There are two other types of commitment (Allen and Meyer, 1990). Second type is the continuance commitment based on the costs that employees forbear to face the barriers of leaving the organization and alternative costs. Third type is normative commitment in the form of employees' feelings of peer pressure to remain with the organization.

2.4. Truthful Leader, Organizational Commitment and Cynicism about Change

The truthful leader incorporates the behaviours of ethical and moral leaders. Truthful leaders gather respect of followers by traditional, classical regulations in communication and relationships. They promote followers who are open to two-way communication, eager to reinforce, and involved in decision-making by transfer of authority (Brown et al., 2005). According to Gini role modelling of the leader by followers importance of ethics goes back to Aristotle who argued "the spirit of morality is awakened in the individual only through the witness and conduct of a moral person" (Gini, 1975: 55). Only words generally were insufficient for followers to fully understand the way of performing business. Though it was hard to find, the witness of moral leadership can prove to be more effective in educating the strategic successor (Gini, 2013). Once witnessed every employee share the same vision with the truthful leader thanks to the notion of individualism. Contrarily bosses were likely to be seen as adversaries, aliens, and bricking stones on the path. The credence to leader is an intrinsic behaviour of followers and certainly for truthful leaders. Hence, the following hypothesis is offered:

Hypothesis 1: Credence to leader affects the intrinsic commitment to the organization.

The research question was whether cynicism to change could be used for organizational purposes or not. This paper proposed the answer was yes. Some researchers discriminate components of cynicism to change by three roots (Tolay et al., 2017). First one was defined as the negative view produced by poor managerial acts of change. Second was bad experiences related with past results of chance. The third was borne by acquisitioned concerns of chance when one felt unease because of the fear of possession lose.

When employees loved and believed in credible leaders the commitment could exceed the desired level in organizations. Then leaders and top management team should find a tool to balance the commitment level in a natural way. People always seek new job opportunities because of say advances in knowledge networks and do not like organizational change inherently. Some degree of cynicism would be useful both in organizational and individual level particularly in times of change. Therefore second hypothesis is stated as:

Hypothesis 2: Organizational change cynicism moderates the intrinsic commitment to organization.

3. DATA AND METHODOLOGY

3.1. Sample and Data Collection

The sample size of the research had been chosen to meet the level of e=0.04 and α=0.05 for generalization of the findings. The sample size that can be accepted for the safety level of 0.95 of the proportional estimation of the principal mass standard deviation and variances is n=600 (Green et al., 1988). The application has been made to a sample above this number as in this case with a coincidental accessibility. The questionnaire forms had been distributed in sufficient number electronically. The required rate of return was minimum n=405 for the statistical method applied. For instance, the rate of return of the questionnaire forms had exceeded 35% and the number of the participants consisting of the employees, being member to organization in case study, has been surmounted over n=600 than it was safe to start the statistical applications in any type of research.

A pilot survey had been executed to eliminate between the CEOs of companies who have participated in the YG Academy Annual Summits starting in the year 2000. The pilot group was 100 randomly chosen participants of 2015 and 2016 summits. The first place was for a CEO of a company leading the retail market in Turkey. Then a second pilot survey had been conducted to scrutinize if the trustworthiness of that CEO was sufficient. After the simplification of survey items, the majority of respondents perceive their leader having high credibility. Every respondent opt the higher values for each of the question representing high credibility for their leader compared low credibility perceptions of the adverse items. In addition the overall perception of all the questionnaires showed quite higher credibility to leader in force. T test values showed significantly bigger means compared the respective answers to questions for followers which declare perceptions about their manager to have low credibility (Kouzes and Posner, 2012). The data collected and discriminated by the stores based as the work teams. So it was safe to work with The Retail Company as a good representer case for the truthful leadership. In this sense, a self-administered survey was mailed to all of 3000 employees working under The Company Headquarters located in Istanbul. In order to test the hypotheses, data was collected from a wide hierarchy range of specialists and managers. After deleting records with missing cases 846 completed questionnaires (return rate: 28%) were remained, which constituted the sample for this study. The demography of the sample was consist of approximately: 40% male, 48%

under 30 years old, 39% 31-39 years old, 13% 40+ years old, 18% had associate degree 59% had undergraduate degree, 15% had graduate degree, 8% had PhD. Work experience totals: 42% less than 5 years, 34% 6-10 years, 12% 11-15 years, 12% 16+ years. Work experience in the current job totals: 59% less than 5 years, 26% 6-10 years, 11% 11-15 years, and 4% 16+ years.

3.2. Analyses

Credence to leader was measured by the criterion of Kouzes and Posner (2012) which consisted of 10 items. To measure cynicism to organizational change 15 item Likert 5 type scale of Wanous et al. (1994) which had reliability of .86 (i.e. coefficient Cronbach's alpha) and 8 items scale of Reichers et al. (1997) in form of agree/ disagree were used for consistency. Antecedents of affective and continuity commitments had been taken from measures of Allen and Meyer (1990) which derived normative component commitment from seven-item "The Organizational Commitment Norm Scale" Buchanan (1974). The reliability for each commitment scale was as follows: affective .87; continuity .75; normative .79. All the necessary transformations for linearizing, validity and reliability analyses had been done before testing the hypothesis.

4. FINDINGS AND DISCUSSIONS

Credence to a truthful leader correlates positively with all the commitment dimensions as shown by Table-1. While cynicism borne from poorly managed change did not show any correlations with credence to a truthful leader or other types of cynicism to change. But other types of cynicism to change had negative correlations with credence to a truthful leader. Normative commitment had correlated with all types of cynicism to change but affective commitment showed correlation only with the cynicism because of the fear of acquisition loss in case of change. The moderator variable created with the variables of credence to a truthful leader and cynicism to organizational change did not showed any correlations with the dimensions of commitment but correlated with all types of cynicism. There were no other significant correlations before the regression analysis which would tell us about the directions of the relations.

Table 1: Descriptive Statistics and Correlation Analysis

Variables	Mean	SD	1	2	3	4	5	6	7
1. Credence to leader	4.14	.85							
2. Continuity commitment	3.79	.93	.297**						
3. Affective commitment	4.02	.39	.369**	.277**					
4. Normative commitment	3.49	.52	.190*	.211*	-.010				
5. Bad Management Cynicism	2.81	.66	-.081	-.094	.039	-.208*			
6. Past Experiences Cynicism	3.07	.50	-.183*	-.023	-.226*	-.116*	-.063		
7. Acquisitioned Cynicism	3.98	.38	-.195*	-.090	-.008	-.233**	-.017	-.100	
8. Credence to leader x Cynicism	13.46	1.72	.053	.091	-.113	.041	.122*	.149*	.195*

n= 846; * p<.05; ** p<.01

The regressions were generally parallel to predictions as shown by Table 2. The regression models were tested (using SPSS ver. 22 package) by a series of models.

Table 2: Regression Analysis Results on the Moderator Effect of Cynicism on Credence to Leader-Commitment

Regression Model	Independent Variables	Depended Variables	Standardized β	Sig.	Adjusted R^2	F Value	Model Sig.
1A	Credence to leader	Continuity commitment	.102*	.04	.086	6.717	.00
1B	Credence to leader	Affective commitment	.176**	.00	.118	16.271	.00
1C	Credence to leader	Normative commitment	.161*	.02	.107	10.122	.00
1D	Credence to leader	Commitment	.146*	.03	.094	7.982	.00
2A	Bad management borne organizational change cynicism	Commitment	-.135*	.04	-.114	9.013	.00

2B	Past experiences borne organizational change cynicism	Commitment	-.214**	.00	-.180	10.128	.00
2C	Acquisition loss borne organizational change cynicism	Commitment	-.235**	.00	-.198	19.261	.00
2D	Cynicism	Commitment	-.195**	.00	-.114	9.277	.00
2E	Credence to leader X Cynicism	Commitment	.104*	.04	.085	6.608	.05
3	Cynicism	Credence to leader	.011	.42	.025	2.324	.05
4	Experience in current job	Cynicism	-.294**	.00	.248	21.396	.00

n= 846; * p<.05; ** p<.01 (all one tailed F tests)

Model 1 with four sub models clearly clarified the Hypothesis-1. Sub models 1A, 1B, and 1C tested if credence to a truthful leader affected positively the dimensions of employee commitment to the organization while 1D and other models used combined commitment.

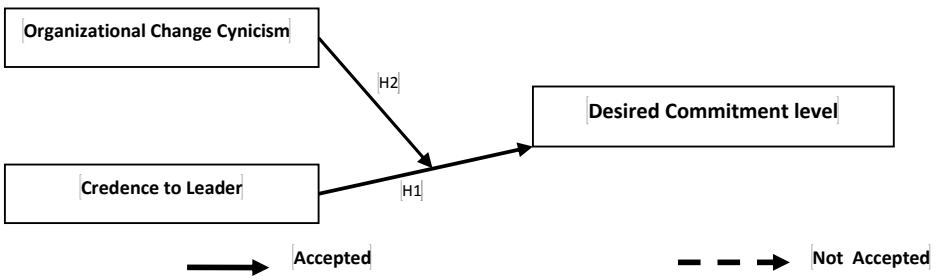
Hypothesis-1 stated credence to leader affects the intrinsic commitment to the organization. All the dimensions and the combined component of commitment (β=.146; p<.05) had been positively affected by credence to leader confirming H1. Affective commitment component had the strongest regression impact (β=.176; p<.01) by credence to leader.

Hypothesis-2 stated that organizational change cynicism moderates the intrinsic commitment to organization. Model-2D showed the highly significant effect (β=-.195; p<.01) of combined cynicism to change on the commitment of employees to organization. This effect was not the only strong predictor of commitment. The cynicism had shown the highly significant negative effects to commitment whatever the reason would have been (Models 2A, B, and C: standardized β's=-.135, p<.05;-.214, p<.01;-.235, p<.01 respectively) as seen on Table-2. Model-2E tested the created moderator variable effect on commitment level. Though the correlations were insignificant there had been a significant positive regression to commitment level. So H2 was fully confirmed.

Although it was not hypothesized two additional checks had been performed to examine the moderator variable. Model-3 checked if cynicism had adversely affect credence to leader. There was not a significant regression as expected. Model-4 was prepared to understand if experiences of employees have an independent effect on cynicism. There found to be a quite significant negative effect (β=-.294; p<.01) proving cynicism is not accumulating by years by learning or being bored by business but lessening by relationships, membership, accepted organizational identity, organizational citizenship, and for any other reasons.

In accordance with the regression analyses results, research model is designed as illustrated in Figure-1 below:

Figure 1: Final Research Model



5. CONCLUSION

Within the context of a case which was for a leading retail dressing company this survey scrutinized the moderator effect of cynicism on the commitment level. All the predicted relations confirmed. Employee's cynicism about organizational change moderates the relation between credence to leader and desired level of commitment. Being one of the first attempts to propose managers to make good use of cynicism there were some constrains. First, the random selection of respondents could not have been met to generalize the results. Following researchers might choose randomly chosen participants from

different industries and populations to confirm the outputs generated. Second insufficiency was generated because of time restriction. A time series analysis would perform better about the cynicism to change taking more than one segment measuring attitudes during change acts in organizations. Third, cynicism has opposite sided effect on commitment comparing credence to truthful leader. Following researches may include other predictors to support moderator effect of cynicism on commitment level. Despite the restrictions some implications for management could be derived from the results. Prior longitudinal research indicated that transformational leader behaviours influence employees' cynicism about organizational change. Direction of causality was consistent in suggesting transformational leader behaviours lower employee's cynicism about organizational change (Bommer et al., 2005). Organizational cynicism had been found related to lack of commitment and turnover intentions. It was also associated with decreased performance, to a greater extent than organizational trust (Chiaburu et al., 2013). These studies have discussed the subject with the lens of negative attitudes. Others which used cure lenses suggested Human Resources practitioners concerned about organizational change cynicism should encourage their line managers to adopt a participatory style of management, such as information sharing, involvement in decision making process. Though this strategy is a generic tool for many challenges of management, it still works especially in those workplaces where employees are more likely to embrace the opportunities for involvement (Brown and Cregan, 2008). The organizational level cynicism was more vogue than individual level in times of change understandings. While there was individual concerns such as trust to change, compulsory new jobs, unforeseen difficulties, and individuals need not change contrary to organizations obligation of change to survive. Individuals are more liable to cynicism than organizations (Battistelli et al., 2014). Cynicism about organizational change often combines pessimism about the likelihood of successful change with blame of those responsible for change as incompetent, lazy, or both (Reichers et al., 1997). As shown by this work cynicism to change can be used by organizations. Some demographic variables had been found related with employees' cynicism level like gender, age, education and department in prior works while others had not been (Işık, 2014). However only work experience has been found negatively related to organizational change cynicism. This finding was consistent with a prior work which founded reducing organizational change cynicism by time (Barton and Ambrosini, 2013).

Managers and truthful leaders powered by credence of followers would be able to use natural attitudes like cynicism to change to moderate the desired level of commitment. Some degree of freedom, automation, and delegation of authority which a truthful leader would willingly offer might awake deep devotion feeling to the entity. This entity would be better performing than an organization full of highly committed members.

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TRANSFORMATIONAL LEADERSHIP AND INDIVIDUAL CREATIVITY: THE MEDIATING ROLE OF INTRINSIC MOTIVATION

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ABSTRACT

Purpose- It is assumed that transformational leadership as an organizational context might have a significant effect on the development of individual creativity capabilities within followers. Further, it is argued that intrinsic motivation mediates the transformational leadership behavior - individual creativity link, which we empirically know little about so far.
Methodology- Given hypothesis were investigated by using 304 questionnaires from 61 manufacturing companies operating in Eastern Marmara region. To more vigorously test the proposed model, partial least squares structural equation modelling (PLS-SEM) was employed with SmartPLS 3.0 statistical program.
Findings- The findings suggest that transformational leadership is an important tool that enhance individual creativity. The SEM results revealed that transformational leadership is positively associated with individual creativity and the effect of transformational leadership on individual creativity is partially mediated by inspirational motivation, which means both of our hypothesis are supported.
Conclusion- According to the findings, transformational leaders provide their followers' with recognition, provide a vision towards future; they act as role models and promote followers' commitment. They encourage the followers to take risks, increase their energy to generate novel ideas and solutions. As a result, followers with increased self-confidence become more inspired motivated and creative. Additionally, these followers, through the way that their leaders behave them, are inspired and motivated to be more creative in doing their tasks. Partially through inspirational motivation transformational leaders can stimulate the creative capabilities of followers. Finally, this study reveals the fact that the effect of transformational leadership is partially mediated by inspirational mediation.

Keywords : Transformational leadership, intrinsic motivation, individual creativity
JEL Codes: M10, M12, M19

1. INTRODUCTION

Over the last decades, further management problems necessitate creative thinking in order to find innovative ideas and solutions. Innovation and creativity are extremely relevant at organizations. Therefore, creative problem solving has become a driving force behind innovation that promotes superior performance. Transformational Leadership - introduced by Burns (1978) and developed by Bass (1985) – is an increasingly important concept in the field of strategic management and leadership theory (Antonakis and House, 2002; Eisenbeiß and Boerner, 2013). Up to now, it has been studied intensely (Avolio, Bass, and Jung, 1999; Shin and Zhou; 2003, Elkins and Keller, 2003.) and has also matched with creativity (Sosik, Kahai, and Avolio, 1998; Gumusluoglu and Ilsev, 2009; Eisenbeiß and Boerner, 2013; Mittal and Dhar, 2015). In particular, transformational leaders possess a shared vision that motivates team's performance, arouse their follower's autonomy and encouragement, and articulate their inspirational behaviours that support innovation climate within the organization. Amabile et al. (2004) also stated that a leader's behaviour is potent on individual creativity at the workplace (Jaiswal and Dhar, 2015; Mathew and Gupta, 2015). Transformational leaders enable their followers to question their thoughts and

assumptions, stimulate them to approach problems with new perspectives and create an organizational culture in their organization where innovation is dominant (Karcioğlu and Kaygin, 2013; Eliophotou-Menon and Ioannou, 2016). By this

supportive innovation climate, followers' demands are met and their creative performance is boosted (Jung et al., 2003; Gupta et al., 2012; Gupta and Singh, 2013; Jaiswal and Dhar, 2015). Also, transformational leaders try to achieve organizational goals by giving importance to the motivation of their employees' and this attitude make their employees feel special, encouraged and motivated (Greenberg and Baron, 2000; Williams, 2004; Naralan, Yıldız and Kahya, 2013). The creativity enhancing features of transformational leaders encourage their followers to develop new and creative ideas and put them into practice to create value and generate innovations (Marcati et al., 2008; Gumusluoglu and Ilsev, 2009; Karcıoğlu and Kaygın, 2013).

Through individualized consideration, the leaders provide each of their followers' with recognition and encouragement to fulfill the developmental needs of them. Through intellectual stimulation, the leaders provide support for exploratory thinking of their followers to find superior solutions for the actual problems. Through idealize influence, the leaders act as role models, promote followers' commitment and enhance their creativity. Through inspirational motivation, the leaders encourage their followers to take risks through organization's vision for innovation, increase their energy to generate novel ideas and solutions (Bass and Avolio, 1995; Avolio et al., 1999; Bass et al., 2003; Gumusluoglu and Ilsev, 2009; Eisenbeiß and Boerner, 2013; Jaiswal and Dhar, 2015). As stated by Amabile et al., (1996), the intrinsic motivation enhances excitement, energy, and concentration of employees by a task which enables them to search for new and better ways of doing things, and as a result increase their creativity level (Oldham and Cummings, 1996; Shin and Zhou, 2003). Shin and Zhou (2003) indicated that intrinsic motivation positively mediates the influence of transformational leadership on creativity (Shalley, *Zhou and Oldham, 2004).*

2. LITERATURE REVIEW

2.1. Transformational Leadership

Leadership has been discussed from various perspectives by scholars in strategic management. Their findings showed that transformational leadership impacts all stages in the strategic management process. First, in 1978, Burns introduced the term of transformational leadership in the U.S. His definition has been further expanded by other researchers, like Bass (1985), Avolio et al., (1999) and Shin and Zhou (2003) etc. Transformational leadership is defined as "the process of influencing major changes in the attitudes and assumptions of organization members and building commitment for the organization's mission, objectives, and strategies" (Yukl, 1989, p. 269). Further, transformational leadership - as an important factor at individual, organizational and societal level – is defined as a leadership approach that causes change in individuals and social systems. Transformational leaders broaden and elevate their subordinates' goals by altering their morale, ideas, interests, and values, and provide them with confidence to perform beyond expectations (Dvir, Eden, Avolio and Shamir, 2002). They facilitate the establishment of a shared vision that substantially motivates followers to achieve team performance (Liu, Liu, Ding and Lin, 2015). Transformational leaders facilitate cooperation by supporting team attachment and encourage their followers to adopt an explorative and open mind-set and to go beyond the routines (Jung, Chow and Wu, 2003; Eisenbeiß and Boerner, 2013), they motivate followers cooperating instead of competing (Liu, Liu, Ding and Lin, 2015), enhance their personal development and performance expectations (Bass, 1995), and transform their personal values for higher level of needs and aspirations (Jung, 2001) and develop their self-efficacy (Bass, 1990).

In their research, Avolio, Bass and Jung (1999) developed a Multi-Factor Leadership Model and succeeded to measure transformational leadership by a questionnaire named MLQ-Form 5X which we also used in our research. According to their MLQ model transformational leadership has four dimensions: idealized influence (charismatic role modelling), individualized consideration, inspirational motivation, and intellectual stimulation. The dimension of idealized influence (charismatic role modelling) indicates charismatic vision and behaviour of the leader that when taken as role model builds trust and confidence and promotes loyalty and admiration among followers. The dimension of individualized consideration indicates highly individualized consideration of the leader, acting as a mentor or coach, considering each follower's needs and concerns individually in order to reveal their talents and knowledge to exhibit creative solutions. The dimension of inspirational motivation indicates inspiring vision of the leader that motivates followers to go beyond their limits of comfort, take risks to submit new ideas or goals and engage in higher-level innovation. And, finally, the dimension of intellectual stimulation indicates the degree of stimulation that a leader can encourage and empower his followers to be innovative and creative. In the strategic management literature, organizations seem to be highest innovation oriented and transformational leaders nourish this goal by influencing their followers' thoughts, changing their behaviors and reforming the organization's social systems.

2.2. Individual Creativity

Nowadays, due to the rise of a knowledge-based economy, the concept of individual creativity at work is becoming a more important interest for organizations. From the strategic management perspective, the organizations agree that encouraging their employees to be creative enhance their effectiveness and success as well as their creativity (such as improving a process to make it more efficient, solving a problem, exploring completely, and becoming more responsive to opportunities etc.). So, they become more adaptable for changes in the market, can fulfil customer needs and compete globally. Given

the important role of employee creativity in the organization, researchers have become increasingly interested in identifying what is creativity. According to Amabile (1983), creativity is about the quality of products or responses judged to be creative by appropriate observers. It is also defined as the complex product of an employee's behavior at a particular situation (Woodman et al., 1993; Wang et al., 2016). Conceptually, creativity can be defined as the production of novel and organizationally valued (or useful) ideas in product, service, practice, and process (Mumford and Gustafson, 1988; Pirola-Merlo and Mann, 2004; Peng, Zhang, Fu and Tan, 2014). To be regarded as creative, there must be a product at hand which is novel, appropriate, useful, correct, or valuable response to the task and the task must be heuristic rather than algorithmic (Amabile, 1983; Dong et al., 2017).

2.3. Intrinsic Motivation

According to self-determination theory intrinsic motivation is one of the six dimensions of motivation that attracts and energize the employees by a task. When the activity is challenging, interesting, or enjoyable the positive feeling about activity makes them engage in the activity, bound up with the task and satisficed inherently (Amabile, 1983; Shin and Zhou, 2003; Conchie, 2013). Intrinsically motivated employees tend to be more flexible and determined to find many alternative solutions for problems and to use non-traditional approaches. Thus, we can say that it is a trigger for individual creativity (Tierney et al., 1999; Shin and Zhou, 2003). Recent studies have shown that transformational leadership behaviour affects the emotions of employee such as happiness, enthusiasm, and optimism which are also enhanced by intrinsic motivation (Deci and Ryan, 1985; Conchie, 2013).

3. DATA AND METHODOLOGY

3.1. Transformational Leadership and Individual Creativity

With the right leadership approach individual creativity can provide dramatic organizational change that can boost organizational effectiveness and survival (Woodman, Sawyer and Griffin, 1993). In line with, transformational leader's highly individualized consideration encourages followers' engagement to creativity-enhancing behaviours and take necessary actions to solve the problems. On the other hand, as the successful conversion of new concepts and knowledge into new products, services, or processes that deliver new customer value in the marketplace, organizational innovation is associated with creativity (Pirola-Merlo and Mann, 2004; Keathley et al., 2013). Thus, it is important for organizations to understand how to encourage individual creativity. Based on the above reasoning, it was hypothesized that:

H_1: Transformational leadership is positively associated with individual creativity.

3.2. Intrinsic Motivation, Transformational Leadership and Individual Creativity

Researches on creativity has shown that, transformational leadership as a situational factor influences creativity via influencing intrinsic motivation (Oldham and Cummings, 1996; Shin and Zhou, 2003; Schopman et al., 2015). Transformational leaders enhance capabilities and competencies of their followers which boost their intrinsic motivation and encourages them to search for new and better ways of doing things which finally leads to higher levels of creativity (Deci and Ryan, 1985; Amabile et al., 1996; Shin and Zhou, 2003). Based on the above reasoning, it was hypothesized that:

H_2: The intrinsic motivation mediates the relationship between transformational leadership and individual creativity.

For the purposes of this study, we assumed that transformational leadership as an organizational context might have a significant effect on the development of individual creativity capabilities within followers. Further, it is argued that intrinsic motivation mediates the transformational leadership behavior - individual creativity link, which we empirically know little about so far.

3.3. Measures, Sample and Data Collection

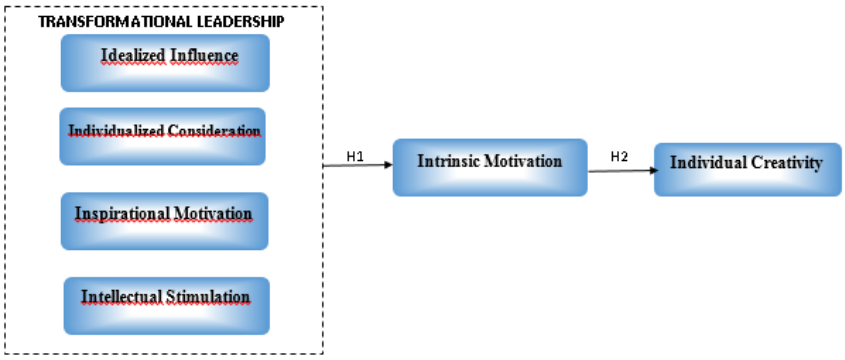
The latent constructs were assessed using multi-item measures on a five-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5) from prior studies. Short explanations of each measure are as follows. In order to measure the transformational leadership behaviour, this study used four dimensions derived from Bass and Avolio (1990); that is: idealized influence, individualized consideration, inspirational motivation, and intellectual stimulation. For each dimension, four questions were asked. To measure individual creativity, this study employed thirteen questions adopted from the creativity measure of Zhou and George (2001). Finally, five question items derived from Tierney et al. (1999) were employed to assess the intrinsic motivation. The empirical analyses for the study are based on data from 61 big firms from manufacturing industry operating in Eastern Marmara region. In order to empirically investigate the hypotheses, tools such as e-mail, letter and face to face interviews are used for gathering data from the owners, top-managers, middle or first line. We obtained 347 surveys, then we discarded some of the surveys that are not suitable for our analyses. After the clarifying, our analysable sample was comprised of 304 participants from 61 different manufacturing companies. We compared the mean of variables, firm size, and ages of the eliminated surveys with the surveys used for the analysis, and found no statistical difference among them. In our sample, the respondents were senior employees/staffs (42%), senior engineers

(17%), functional/department managers (7%), technical leaders (13%), product/project managers (8%), general managers (12%), and owners of the firm (2%). The respondent departments were finance (9%), engineering and design (46%), marketing (13%), manufacturing (22%), and human resources (10%). Of the 304 respondents 159 (52%) were men, and 145 (48%) were women. The majority of the participants 201 (66%) are married and ranged in age from 30 to 40 years 170 (56%). Of the participants, %87 had university educations and %13 had master education.

3.4. Measure Validity and Reliability

To more vigorously test the proposed model (see Fig. 1), partial least squares structural equation modelling (PLS-SEM) was employed with SmartPLS 3.0 statistical program.

Figure 1: Theoretical Model



To assess the psychometric properties of the measurement instruments, we estimated a null model with no structural relationships. We evaluated reliability by means of composite scale reliability (CR), Cronbach's alpha, and average variance extracted (AVE). After dropping the problematic three items for all measures the PLS-based CR and Cronbach's alpha are well above the cut-off value of .70, and AVE exceeds the .50 cut-off value. As suggested by Fornell and Larcker (1981), the AVE for each construct was greater than the squared latent factor correlations between pairs of constructs (see Table 1). Before conducting any path analyses we conducted a second order factor analyse for the four components of transformational leadership; the results demonstrate that the four dimensions of the transformational demonstrate loading between 0.88-0.92. So it is proper to take the transformational leadership as a composite variable instead of a four dimensional one. A composite transformational leadership variable will enable us to see the mediating role of intrinsic motivation on the relationship between the transformational leadership and individual creativity.

Table 1: Discriminant Validity and Reliability Indicators

No	Variables	1	2	3	4	5	6
1	IC	1.000					
2	ICO	0.230	1.000				
3	IS	0.311	0.681	1.000			
4	II	0.221	0.738	0.723	1.000		
5	IM	0.275	0.748	0.756	0.787	1.000	
6	ID	0.291	0.885	0.883	0.898	0.920	1.000
	CR	0.939	0.848	0.846	0.847	0.842	0.931
	AVE	0.561	0.583	0.579	0.649	0.572	0.516
	α	0.929	0.761	0.757	0.729	0.750	0.920

Note 1: Diagonals show the square root of AVEs.
Note 2: IC = Individual creativity, ICO = Individualized consideration, IS = Intellectual stimulation, II = Idealized influence, ID= Individual Creativity, IM = Inspirational motivation, TL = Transformational leadership, CR = Composite Reliability, AVE = Average Variance Extracted, α = Cronbach's Alpha

4. FINDINGS AND DISCUSSIONS

4.1. Hypothesis Testing

In order to test the mediating effect of intrinsic motivation between transformational leadership and individual creativity, we employed the Baron and Kenny (1986) procedure, where a variable (M) mediates the relationship between an

independent variable (X) and a dependent variable (Y) if (a) X is significantly related to Y; (b) X is significantly related to M; (c) after X is controlled for, M remains significantly related to Y; and (d) after M is controlled for, the X – Y relationship is zero for a total mediation or just less for a partial mediation. Also, the presence of the mediator (M) must reduce the impact of the independent variable on the outcome compared with when M is not present (Akgun et al., 2014). Further, entering the mediator into the PLS-SEM model should also result in a significant increase in R_2. To address these issues, we performed three different SEM models, as shown in Table 2. First model shows that transformational leadership is positively associated with individual creativity (β=0.29, p<0.01), thus supporting H_1. The second model demonstrates that transformational leadership (β=0.28, p<0.01) is also positively associated with inspirational motivation. On the third model when we add the inspirational motivation as a mediator, the impact of the direct effect of transformational leadership (β=0.10, p<0.05) decreases; while there is a strong association between inspirational motivation and individual creativity (β=0.68, p<0.01). Thus, the effect of transformational leadership on individual creativity is partially mediated by inspirational motivation, supporting H_2.

Table 2: Path Analyses

Models	Relationships			Path Coefficient (β)	
I. Model	TL	→	IC	0.29**	Supported
II. Model	TL	→	IM	0.28**	Supported
III.Model	TL	→	IC	0.10*	Supported
	TL	→	IM	0.28**	
	IM	→	IC	0.68**	

Note 1: IC = Individual creativity. IM = Inspirational motivation. TL = Transformational leadership
**: p<0.01 *: p<0.05

Additionally Table 3 shows the R^2 of endogenous constructs in our three models. As seen in the table R^2 of individual creativity increases from 0.08 to 0.51 when the mediator inspirational motivation is added. So the last condition is also fulfilled for the mediator analyses.

Table 3: Structural Model

Models	Endogeneous Construct	R^2
I. Model	IC	0,08
II. Model	IM	0.07
III. Model	IM	0.07
	IC	0.51

5. CONCLUSION

Creativity is an central subject for both academicians and practitioners in today`s hypercompetitive business environments. This paper tries to generate a holistic model for individual creativity by shedding a light on the mechanism between transformation leadership and individual creativity. There is a wide held assumption that transformational leadership has a positive effect on individual creativity of employees; but how? Inspirational motivation arises as a possible answer. So basically this paper attempts to reveal the mediating role of inspirational motivation on the relationship between transformational leadership and individual creativity. The findings of the study demonstrated that transformational leadership, inspirational motivation and individual creativity scales which are developed in Western countries, are appropriate for an emerging economy and eastern country; Turkey. Measures demonstrated high validity and reliability, and model results were quite similar with the empirical studies completed in developed and western countries.

The findings showed that transformational leadership was positively related with individual creativity. Transformational leaders provide their followers' with recognition, provide a vision towards future; they act as role models and promote

followers' commitment. They encourage the followers to take risks, increase their energy to generate novel ideas and solutions. As a result, followers with increased self-confidence become more inspired motivated and creative. Here inspirational motivation comes to the scene. Indeed these followers, through the way that their leaders behave them, are inspired and motivated to be more creative in doing their tasks. In addition, this study provided empirical evidence in support of the relationship between transformational leadership and inspirational motivation, as well as the mediator role of inspirational motivation. Partially through inspirational motivation transformational leaders can stimulate the creative capabilities of followers. The findings of this study cannot be taken as certain evidence since several limitations to the study results deserve interpretation. First, this study is conducted on big firms. Second, these results reported here emerge from a local area; East Marmara province. Results may differ for SMEs located on different areas that are operating in different cultural, environmental and political conditions. Third, the sample is composed of employees of the firms operating in manufacturing industries; results may differ for different industries. Notwithstanding these limitations, this study provides important implications from theoretical and practical perspectives. This study indicates that transformational leadership and inspirational motivation have positive influences on individual creativity. In addition, the findings of this study reveals the fact that the effect of transformational leadership is partially mediated by inspirational mediation.

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DEVELOPMENT AND VALIDATION OF A TALENT MANAGEMENT MEASUREMENT INSTRUMENT

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ABSTRACT

Purpose- One of the most important internal resources of the organizations are talented employees. It is very important to invest in talented employees which is a value-created resource for the organizations because in the long run it provides sustainable competitive advantage and high performance. This study aims to fill the gap through conceptualizing and developing a talent management measurement instrument.
Methodology- We established a scale incorporating six dimensions of talent management. Data were then collected from 313 owners=executives of the textile apparel companies and analyzed through confirmatory factor analysis to assess validity and reliability.
Findings- We have attempted to contribute to business executives and academics by providing a valid and reliable talent management scale.
Conclusion- In general, studies have lacked a commonly accepted measurement instrument that comprises all components of talent management. Our study in its originality provided a talent management scale which the validity and reliability analyses are tested through both SPSS and AMOS programs.

Keywords: Talent management, confirmatory factor analysis, strategic HR, measurement instrument.
JEL Codes: M10, M12, M54.

1. INTRODUCTION

Nowadays, the perception of talent management activities varies from company to company. The reason is, organizations have some technical conflicts and misunderstandings in talent management practices. In other words, Human Resources (HR) activities and talent practices are mixed and are not separated easily by some organizations. Furthermore, some organizations apply talent management formally and the others apply it informally. This confusion is a problem area that must be solved for today's value-added and innovative enterprises. Nonetheless, talent management is part of human resource management activities which is examined in two parts; the first part is related with the coordination and interaction between sub-components of human resource function and the second part is evaluated in terms of being a supportive strategic partner and contributing to organization's strategic objectives. Subsequently, the HR function which is critically important to attract, develop and retain talent employees for organizational goals. This has come from classical personnel management to today's strategic human resource point of view. When the sub-factors of human resource management, which are selection, recruitment, development and retention support, the strategic goals of organization rather than strategic HR perspective can be explained in that case. Obviously, different talent management perspectives lead to various and complex definitions about talent management concepts in fact, talent is a relative concept and varies according to time and circumstances. Organizations have questioned the validity of tools and tests for several years. These tools and tests are kind of evaluation criteria which is generally fail to discover talented employees. Despite many studies have been made on talent management, we discovered that no measurement instrument covers all components of talent management we describe here. Existing studies were lack of any valid and reliable talent management scale. Therefore, the purpose of this study is to fill this gap through the conceptualizing and development of a talent management construct and

the assessment of its validity and reliability. Component factors and key variables for the construct are identified through an extensive literature review. Confirmatory factor analysis (CFA) is performed using AMOS 20.0 to assess the construct and identify the model fitness.

2. LITERATURE REVIEW

2.1 Talent Management

Talent management is a rapidly growing area, although there is a serious debate on conceptual framework, the definition, context and the criteria about the practice of talent management. In addition, the effectiveness and value to the organization have not been extensively evaluated in both national and international context. Talent management emerged at the end of 1990. McKinsey consultans introduce talent management concept and then the interest on the concept was increased. Global competition forces companies to make important decisions in international context and globalization leads challenges in talent management practices. As noted earlier, talent management is on the focus of debates in both academic and business world. There are different views on talent management as internal and external approaches introduced by the most important researchers (Festinga, Schafera and Scullion, 2013:1876). Talent management is described with different sub-disciplines such as selection, recruitment, leadership development and performance management. First of all, talent management is a systematic effort to ensure the continuity of employees in key positions and to encourage personal development. Secondly, TM is a process which ensures the flow of resources. This kind of approach focus into the company rather than outside. Another researcher stated that TM has to be managed according to supply, demand and flow of human capital as the engine. Thirdly, some views focus only on talented employees rather than organizational limits and specific positions. According to this approach, talented people are seen as successful resources both inside and outside the company. Therefore, it is necessary to create special structure and HR policies to talent employee. In other words, high potential people should be managed individually in terms of the needs of organizations. Thus, the solution can be found in the long-term goal and requirements of HR policies (Guerci and Solari, 2012:26).

2.2 Dimensions of Talent Management

In academic literature, researchers emphasized that talent management is in its infancy or adolescence. The conceptual frameworks related to the field are still in development stage. However, mostly researchers have a common idea on the definition of talent. Namely, in the 21st century, TM is seen as a source of competitive advantage for organizations (Oltra and Vivas-Lopez, 2013:1853). According to the literature review between 1999-2016, the dimensions of talent management have been prepared and gathered in the table below;

Table 1: Dimensions of Talent Management

Garger 1999							Performance management	
Olsen 2000	Recruitment	Selection						
Sistonen 2005	Attraction			Retention	Development	Transition		
Hill 2005				Retaining high potantials	Developing high potentials			
Forman 2005	Talent acquisition		Talent deployment	Talent retention	Talent development		Talent evaluation	Workforce planning
Chon, Khuranaand Reeves 2005					Leadership development			
T. Listwan 2005	Recruiting talents	Departure				Phase of "transition" (transformation)		
SHRM 2006	Workplace culture	Recruitment and retention	Professional advancement		Development opportunities		Reward management	Planning
Cappelli 2009					Accelerated development paths			Succession planning
Cappelli, 2009						Strategic direction		Effective organisational processes
NHS Employers 2009			Diversity objectives	Ch. executive engagement	Development programmes	Mentoring; and coaching	Performance measurement	Succession planning
Santhoshkumar and Rajasekar, 2012	Attraction		Motivation and engagement	Retention	Development			Succession planning
Petkovic and Dordevic, 2013	Recruitment	Selection	Hiring		Developing		Rewarding	

According to Forman (2005), talent management cycle occurs between the stages and levels as shown below; workforce planning, talent attraction, talent development, talent deployment, talent retainment, talent assessment. Talent management is a modern and efficient way in the implementation of personnel policies. Thus, it is possible to reach the organization's strategic objectives by the potential of people. Organizations establish talent management upon potential employees to create and develop of intellectual capital. TM reveals a deep utilitarian approach and can not refuses epistemological and theory-genetic nature. As previously mentioned that, talent management consists of a set of activities and these activities cover talent acquisition, transformation stage and talent exploitation as presented below; The recruitment stage is an interactive process includes tests and interviews to determine the requirements for the position. Transformation stage covers the development of the capabilities. In exploitation stage, organization creates strategies and culture to keep talents. Researchers do not reject internal resources during the attraction process but they emphasize the importance of external resources. Namely, internship and part-time work periods create opportunities to discover and attract talented employees. On the other hand, the researcher suggests that talent management concept can be used interchangeably with talent development. The reason is, it is much more easy to create talent in organizations which are open to development. Learning and development culture need to be provided both inside and outside the organization. Thus, need for talent meet with expectations as development programs. Considering the selfactualization needs of talented people, the organization has to create an environment according to the demands and expectations. So this effects positively both individual and organizational performance (Moczydłowska, 2012:432-434). On the other hand, Capelli (2009) emphasized that effective organizational processes, culture and strategic orientation lead to manage talent more succesfully. TM is a process that supports succession planning and development path in an executive level. Companies give importance to TM in many reasons. To determine the companys‘ future leaders, increase its efficiency and reveal the culture of excellence, organizations need talent management practices which cover employee loyalty and commitment, retainment and integrating strategic targets. Briefly, TM is an important priority for succesful companies. For organizational growth, to determine strategies attracting the right people and use competencies as leverage can make a big change (cited in Jauhari, Sehgal and Sehgal, 2013:162). According to Chartered Institute of Personnel Development (CIPD) 2006, the most common talent management programs are; in-house development programs, coaching, succession planning, mentoring (guidance), buddying, graduate development programs, courses at external institutions, internal secondments, assigning centers, 360-degree review, job rotation and shadowing, development centers, MBAs, action learning sets and external secondments (CIPD, 2006). According to the study of NHS employees (2009), talent management consists of the following key factors; loyalty and commitment to CEO, diversity objectives, performance measurement, succession planning, development programs and mentoring coaching.

2.3 The Philosophy of Talent Management

According to the literature, there are different perspectives and theories which have explained talent management in organizations. Iles, Chuai and Preece (2010) explained that there are two perspectives on talent management applications. One of them is inclusive (egalitarian) or strengths based approach and the other one is exclusive approach (elitist). Egalitarian perspective stated that talent management is related with managing the talent of all employees. According to the view, all employees in the organization have the potential to become talent. Elitist approach on the other hand, deals with only the talents of high-potential or high performing employees who are separated by their added value to the organization (cited in Ariss, Cascio and Paauwe, 2014:173). Moczydłowska (2012:435) stated that elitist approach is opposed to the opinion that all employees regarded as talent. According to the elitist approach employees can be regarded as talent if they have high level of key qualifications for the organization and are able to contribute substantially to its development. Some of the researchers changed the name of the elitist approach as differentiated approach. They emphasized that talent management practices are limited to high potential employees On the other hand, in the literature there are some theories which clarify talent management through individual-based or organizational-based perspective. For instance, Hoglund (2012) emphasized psychological-contract theory which observe employee perceptions of the rewarding practices about talent qualities and the effect of such perceptions on employee-felt responsibilities to develop skills. Moreover, person–organization fit theory and attraction-selection–attrition framework supported Kim et al.‘s (2012) findings which are workcentric, money oriented, and collectivistic job-seekers were more attracted to Japanese. Farndale, Pai, Sparrow and Scullion claimed that global talent management can be explained by mutual-benefits perspective which point out the balancing act between organization-assigned expatriate assignments and self-initiated assignments by employees. As a matter of fact, social exchange theory emphasized that when organizations invest in their employees, they are eventually respond these corporate investments in positive ways (Cropanzano and Mitchell, 2005 as cited in Bjorkman, Ehrnrooth, Makela, Smale and Sumelius, 2013:196). Organizational Support Theory has investigated employee reactionsconcerning how the organization values talent employees‘ contributions and take care of their wellbeing (Eisenberger, Fasolo and Davis-LaMastro, 1990 as cited in Bjorkman, Ehrnrooth, Makela, Smale and Sumelius, 2013:197). Festinger (1957) has emphasized cognitive dissonance theory which explained that employees can downplay the importance of being the part of talent pool to handle with this situation. Carrell and Dittrich (1978) offered equity theory to

explain talent management perspectives. Researchers investigated that knowledge about the talent status of fellow colleagues could also be included as a variable in order to help shed further light on employees' attitudinal reactions. Talent management has been explained also by economic theories such as human capital theory. The theory has emerged during 1776 when Adam Smith bring out ''The Wealth of Nations''. Human capital theory as cited in Sparrow and Makram (2015:253) suggested that the costs related with the development and retention of talent employees should be considered as investments for the benefits of the firm. Moreover, Wilson (2015:21) also emphasized the human capital theory to explicate talent management in organizations. The theory suggested that investment is the main driver for the process of the organization which includes the correlation between inputs and outputs. According to the researchers the correlation between input and output leads to organizational performance. Accordingly, human capital theory (HCT) in terms of financial view, emphasized talent management as an investment that gained high returns for shareholders (Axelrod, 2001). In other words, the researchers explained that, HCT focused on the organization's investment in a talent employees' development and training. Becker (1964) considers that this kind of investment is as equally considerable as investing in equipment and technology. This perspective reveal that organizations may improve productivity if they invest in talent through education, training and reward management system. The strategic goal of talent management is supported by expert knowledge which is the most important measure of capital that effect competitive positioning (Wilson, 2015:35). On the other hand, resource-based view also explains talent management as Barney (1986) suggested that if organizations need to achieve sustainable competitive advantage, they have to engage valuable resources. If valuable resources are considered in terms of talents who have strategic value with their contribution in their area of expertise is substantially higher than the other employees. Folger (1986) offered referent cognitions theory which is considered in individual context. The theory emphasized that when talent management procedures are seemed as fair, employees will not search and imagine situations that are better than their current situations. Alternatively, self-interest theory defends the same idea with referent cognition theory. Namely, employees want to increase their outcomes. If talent management procedures are unfair and seemed inequitable and unpredictable so employees will feel unsure about future outcomes. This ambiquity forces them to rely more on their current outcomes (Thibault and Walker, 1975). However, social capital theory investigates the importance of the work context such as teams and leadership to identify high potentials even if there is a great focus on talents as individuals (Gelens, Hofmans, Dries and Pepermans, 2013). Researchers also explained that this theory sees talent management as the combination of teams, shared values, culture, leadership and social networking (Preece and Iles 2009; Iles et al. 2010; Preece et al. 2011 as cited in Oltra and Vivas-Lopez, 2013:1858). Furthermore, Lawler and Worley (2006) has brought about built-to-change theory considered that talent management initiatives must be a part of the integrated strategy. However, many companies do not view talent in their strategy. The talent employees and skill sets that are precious in a company may change and an organization should be able to make ready and change for the future. Gelens, Hofmans, Dries and Pepermans (2013:160) offered position-focused perspective which suggested that employees are differentiated in terms of strategic importance of their positions in organizations. On the other hand as cited in Sparrow and Makram (2015:253) developed a different perspective on talent management. Researchers explained that expectancy theory offered that employees have choices about the investments in themselves and if they realize a signal that they are valuable to the organization then they self-invest in the company. According to agency theory, talent management can be explained in terms of ethical problems. When excluded employees perceive exclusion as a barrier to their opportunities, then they may suffer by the action and the ethical problem arises at this time. Thus, agency theory reveals the question of if talent management practices are ethical in itself or not (Haslam 2006 as cited in Downs and Swailes, 2013:270). Moreover, Devine and Powell (2008) offered strategic perspectives of talent management as; competitive perspective – give what talented people want otherwise they will be poached; process perspective – managing talent is part of the everyday organizational life; HR perspective – match right people with right job, strong ownership of HR team; developmental perspective – accelerated development paths for talented people; cultural perspective – talent management as a mindset; and change management perspective – talent management is a driver of change.

3. DATA AND METHODOLOGY

3.1 Development of the Scale

In management and organization literature, there is an absence of a valid and reliable Talent Management scale that covers all dimensions as described in the literature accordance with our research model. Therefore, a new scale developed by adapted variables in studies. The studies include the factors relevant to our topic. To develop scale, scale development methodology has been applied which consists of the following steps in social sciences (from concept to scale) (Churchill, 1979; Llusar and Zornoza, 2002). The scale development procedure was conducted in seven stages presented as; (1) literary definition of the concept; (2) identifications of dimensions;(3) generation of items;(4) reduction of the scale;(5) pretest of the scale;(6) collection of data; and (7) measurement evaluation. According to the results of an extensive research in literature review of management and organization area, despite there are some studies on talent management, there is an absence of a valid and reliable scale which covers entire talent management practices within the scope of our research. Therefore, a unique and original scale has been created. After an extensive literature review, aquestionnaire was composed

by examining the international studies related to our issue. The items in the questionnaire has been translated from English to Turkish and back translated from Turkish to English by experts in the management area who have fluent English. Thus, an appropriate research scale was formed which contribute to Turkish companies. In addition, after the interviews with the academics and managers, the content validity of the questionnaire was provided. After defining the talent management concept, we conceptualized six dimensions of talent management through interviews. In the item generation stage, the items related to talent management used in recent studies. These were combined in the draft questionnaire through a comprehensive literature review. All questions were subjected to the translate, back translate procedure by the experts of both languages. In addition, we discussed possible semantic shifts and awkwardness of expression with the executives participating in the pilot test stage.

3.2 Pilot Study of Scale Development

The pilot study is composed of two parts which the first part composed of interviews with 13 global/international company Ceo/HR Director, 3 medium-sized textile exporter company, 4 experts in the field and 5 academics in economics and business administration field. In the first part, content/face validity of the scale has been tested. The questionnaire form has been revised after the interviews.

3.3 Qualitative Interviews

Qualitative interviews are divided into to two major types as semi- and unstructured interviews. In a classical semi-structured interview the researcher has specific questions or topics they desire to include in the interview however an interview directory there is flexibility in how and when the questions are set. In the unstructured interview the researcher openly has aims for the research and a subject of study, yet the matter of the method is to allow the interviewee to speak from their own view using their own setting of reference and ideas and meanings that are known to them. Flexibility is clue to the unstructured interview and phenomenological approaches underlie the method – constructivism, symbolic interactionism and ethnomethodology. Both semi- and unstructured interviews are qualitative methods benefit in social sciences (Edwards and Holland, 29-30).

3.3.1 Interviews with the Global/International Company CEO/HR Directors

The unstructured qualitative interview technique was used in this study to understand the content validity of the scale and the interviews include the keywords as; talent, talent management and HR. Leading non-food retail groups in Turkey (Vice President): ‘‘HR should be the defender and practitioner of human rights and should protect employee health and safety, accelerate communication, create the culture, lead the change, be the talent hunter, ensure the good work of top management team, adopt ethical leadersip, be catalyst and make succession planning.’’ Financial Services Group (Executive Vice President): ‘‘Employees, especially talented ones are supposed to have a personal vision. Cultural differences are emerging in new talented generation. It is difficult for companies to make this new talented generation happy. Work-family balance is very important for talent employees. They have a great impact on company performance. Even a snail leaves a trail. Enjoy your soul…‘‘ French Cosmetics Company (HR Director): ‘‘In talent management practices, we focus on reverse mentoring programs and flexibility which the new talented generation transfers the technology knowledge and experience to X generation.’’ International Tobacco Group (HR Development Group Director): ‘‘In our company, talent management covers rewarding the success. Passionate employees have priority in recruitment process. In addition, life is changing and different ideas emerge in companies. In talent management activities, we focus on mentoring. Talents should be directed the right way. We consider and protect the issues which the talented employees care about. Working experiences and open communication of talented employees are very important. We also create living space office environment for talented employees. Finally, you are the owner of the business.’’ Global Management Consulting Company (Global Marketing Director): ‘‘We prefer virtual communication with our talented employees. For example: Slack Application. In talent management process, outdoor activities make talent employees more happy such as football etc. In addition, we experienced that energetic and talented people affect the culture.’’ Multinational Professional Services Company (Head of Investigation and Dispute Services): ‘‘Services industry is established on human especially the ones who are stars. It is difficult to select and retain talents or stars. For example this year 70.000 people applied to the company. 15.000 of them are newly graduates and interns. However, we select 412 people. We expect energy, willingness and passion from the applicants. Even if they have a perfect academic background, we prefer the ones who have a desire and ambition to do the job. Talented employees will carry their competence for a life time even if they stay in the company or not. In talent management practices, we implement fast training. Mobility is another way to have a succesfull talent management. We want to be a global player and focus on motivation and flexibility. The new structure of the company is project-oriented which has projects wil be held between 3-18 months. Flexibility is the new trend which means flexible working life. Namely, the new talented generation can work inside or outside the company. Whether they are in or out of the office. We don’t care. The results are important for us. On the other hand, one of the most popular talent management practices of our company is on-the-job training. It is difficult to keep talented employees so winning culture is needed. There is a

relationship between culture and high performance. To retain the talented employees, we have to bring out and focus on the more succesful talented ones. So, we adopt elitist approach. Our company has various talent practices such as; leadership programs, social responsibility projects, entrepreneur willing programs, mentoring. Generation Y needs flexibility, feedback and coaching. They have ambition do not like hierarchy. Our company try to impose these kind of traits to the Generation X leader. Employees have priorities such as; working with the most talented people, learning and selfimprovement, connections and dialogue with the leader, fair salary and inclusive and flexible environment (money is not the pre-condition).'' A Company in Building products, Consumer products and Healthcare Industry (Executive Vice President Building Products Division): ''We are not looking at the profiles of job-seekers. Our company tries to attract the current experienced talented employees woking in another company (it can be costly). We are searching for strong leadership to manage strong profiles. We support team play. Cultural differences, social intelligence, emotional intelligence, individualism rather than collectivism are the main traits of talented new generation. They expect the wages which they deserve.'' Global Management Consulting Company (Group Senior Director): ''In talent management practices, leader is directive, visionary, friendly, participant, perfectionist and coaching. In addition, HR in our company has many roles as; support role, services role, consulting role and leadership role.'' Multinational Beverage Company (General Manager of Turkey): ''Risk-taking and team-work is critical for the company. Human is a value who can not be custody by someone. Not only HR department but all departments have to service to human and be strategic partners. Give the right job to the right person. If you can not, it means, expecting the fish to climb the tree. Build the right team. Namely, to build the right team you should be the expert of the job. HR department is the most valuable department of the company however HR professsionals should leave routine works. For example, payroll will be transferred to finance department. In terms of talent management practices, we adopt egalitarian approach. So everyone is talent in our company.'' Airline Company (Chairman of the Board of Directors): ''All the employees in our company are our family members. We give share of profit to the employees rather than premium. Our company imposes the culture on employees very well. We value the ideas of our employees and adopt participant approach. Rewards are not enough for employee engagement and performance. The most important is, talented employee must feel him/herself as part of the family and aware of the contribution.'' Fast-fashion Apparel Company (Member of the Board of Director): ''Talent doesn't occur with education. We breed our talents. In fast fashion, the most important area is textile engineering. Talent is divided in two as Analytics and Aesthetic. So there are two prior capabilities for fast fashion. Analytics means techniques covers cost, fabric, mold, budget, management. On the other hand, aesthetic means fashion and customer covers creativity, designer, design origin brand manager. Talents can be recognized in their 2nd and 3rd year of university education. So they can directed to take additional courses according to their abilities. Finally, we have management trainee education for talents.''

Health Technology Company (HR Director): ''The environment is more competitive. It is critical to attract and retain talent employees who have different profiles. HR should become the stratejic partner. Attracting the talent is a strategic decision for the company. The most important talent management practices are; talent acquisition, succession planning, education planning, development, identifying gaps, on-the-job learning, employer branding, marketing recruitment, value proposition, individual development planning andaligns employees with the mission. In talent acquisitions program, we have talent acquisiton specialist. On the other hand, for senior managers, we are working with consulting firms. Our target talents are the ones who are not seeking for a job and Hi-Po in their current jobs. Our company try to introduce our brand to talents. We can describe talent as flexible, learning oriented, project-oriented, entrepreneur mindset, open-minded, resilience of changing conditions, agility, ambition and solution mindset. In addition, new talented generation Z is described as individual, impatient, focusless, informal communication. However, new talent generation can be succesfull if they have given the personal opportunity. Companies are not ready for this generation Z. Thus, the structure of our company is ready because we have horizontal structure with diverse teams. In the past we had high potential pools but we have changed our talent management approach. We adopt egalitarian approach. Everybody is talented in our company. I don't believe that we are successful at talent management activities. We have cost pressure however more investment should be done to talent management by the company. We have to find effective creative ways with fewer resources.'' E-Commerce Company (Vice President): ''All the employees in our company are regarded as talent. Because we adopt egalitarian approach.''

3.3.2 Interviews with the Medium-Sized Textile Exporter Companies

Questions regarding the survey were read one by one. Misunderstood questions were revised. The items in the questionnaire were seen very clearly understand by the interviewees. A company without talent management practices could also easily understand the questions. The concept 'Organization' is regarded as more political by the interviewees. It was explained that the concept is used interchangeably with the word 'Company'. On the other hand, interviewers had conflicts on the concept of 'Culture'. In regard of these suggestions, the items in the questionnaire are revised. Lingeria Textile Company (Owner): ''We are struggling with lots of problems in textile industry. The contract manufacturing, preferences for low-cost labor and mechanization are some of the factors that triggered the problems in textile industry. Textile companies in Turkey need to upgrade their brand values. In textile and apparel companies with fast-fashion applications, talents should be in the process of export, design and marketing.'' Textile Overcoat Company in Bağcılar

(Owner): ''The textile companies should hire more woman employees. Moreover, the companies are getting design patterns from abroad or different companies. The reason is, textile companies are lack of creative talented designers. Designs can easily be made in Turkey thus companies prefer the easiest and cheapest way.'' Textile Tricot Company in Bağcılar (HR Director): There are export incentives offered by government however, textile companies are trying to earn a small profit instead of benefit from these kind of government incentives. The reason is the lack of talented managers who can dominate legislation process and issues.

3.3.3 Interviews with the Experts in the Field

Employee Engagement Expert: ''All changes begin with an end. Never do anything about talents without talents. Talents should not trust they just test it. Talents are not resist change.'' Journalist, Author: ''To manage Stars, do not act like a Star, just contribute their career.'' Top 10 Leadership Guru: ''Your mood affects people around you and you affect your environment. Innovation, feedback, communication, engagement and proactiveness are the key words for talent management. Small problem means you are a small hero, medium problem means you are a medium hero and big problem means you are a big hero. So talented people have big problems. They expect fair rewarding however fairness completely subjective.'' Author: ''New talented generation are crystal children who have spritiual mind. We learn these new talented generation from Gezi Park Resistance. New business models are emerged for this generation. Artificial intelligence and flexibility are the main focus of companies. Managers should think about how they can establish a relationship with talents. Every human is a star. We need to know the color of the employee. Human is a value not a source. The office hours from 9:00 to 18:00 is not suitable for the new talented generation. Also for these talented employees, the private life engage to business life in companies. They just want to be happy and want to feel that they are precious. It is not possible to be the boss of stars or talents.''

3.3.4. Interviews with the Academics in Economics and Business Administration Field

Faculty of Economics and Administrative Sciences (Dean): ''The most popular talent management activity in our university is talent hunting. We are the best in student quality because we try to attract talented students. For better talent management practices, you need a great cook who make delicious foods, you need a nice menu and the place of the restaurant must be nice. Our resource is valuable academicians, administrative employees and staff. We are working with brand academicians. To attract talents we focus on students in other words student orientation because talented students attract talented academicians.'' Faculty of Economics and Administrative Sciences (Department of Economics): ''You need a simple and elegant explanation in talent management scale. The reverse questions are supposed to be in the questions of the survey. You need to include the concept of workplace environment instead of organizational culture. You may show the questionnaire forms to the people except academics and managers. Instead of organization you need to use the words company or firm. In the items, you need to use present tense. Is there a company recovery? Are talented people would run away from the company? Is there a transfer from top level? Is there an in-service training?''. According to the common opinion as a result of the interviews, attracting the talent is strategically critical for companies. In other words, talent management mostly covers the attraction of the stars to the company. Furthermore, to assess the validity of the scale we evaluated the content validity evidences. Content validity is the asessment of the correspondence of the variables to be included in a summated scale and its conceptual definition. This form of validity, also known as face validity, subjectively assesses correspondence between the individual items and the concept through ratings by expert judges, pretests with multiple subpopulations, or other means. The objective is to ensure that the selection of the scale items extends past just empirical issues to also include theoretical and practical considerations (Hair et. al. 2010:125). The second part composed of mailing of the questionnaire by mail and social media. Between April to June 37 clearly filled questionnaire received. The first form of the research scale was subjected to pilot test on 37 managers. As a result of the pilot test, the structure, validity and reliability of the scale was examined. At this stage, firstly, internal consistency of the research scale was examined by Cronbach's alpha. It was observed that there is not any item which distort the structure of the factor or construct. In pilot test, only overall reliability analysis is shown in this research to prove the internal consistency however factor analysis of 37 sample is not given in this research. As, Hair et. al. (2010), explained that considering the sample size question, the researcher generally wouldn't factor analyze a sample fewer than 50 observations, and preferably the sample size should be 100 or larger. As a general rule, the minimum is to have at least five times as many observations as the number of variables to be analyzed, and the more acceptable sample size would have a 10:1 ratio. Some researchers even propose a minimum of 20 cases for each variable. One must remember, however, that 30 variables, for example, requires 435 correlations in the factor analysis. At a .05 significance level, perhaps even 20 of those correlations would be deemed significant and appear in the factor analysis by chance (Hair et.al., 2010: 102). Accordingly, the results of the internal consistency of the scale the Cronbach's Alpha is founded as 0,968. To calculate and assess internal consistency, first of all considering relate to each seperate item, including the item-to-total correlation and the inter-item correlation. Rules of thumb suggest that the item-to-total correlations exceed .50 and that the inter item correlations exceed .30 (Hair et.al., 2010:125). According to the results of the pilot test, inter item correlations exceed .30 for 25 items but only TM24 is 0,203

which is less than .30. However, in the overall, TM24 is not disrupt the meaning of the questionnaire and it wasn't removed from the construct. Accordingly, item-to-total correlations exceed .50 for all 26 items. The other type of diagnostic measure is the reliability coefficient, which assesses the consistency of the entire scale, with Cronbach's alpha being the most widely used measure. The generally agreed upon lower limit for Cronbach's alpha is .70. One issue in assessing Cronbach's alpha is its positive relationship to the number of items in the scale. Because increasing the number of items, even with the same degree of intercorrelation, will increase the reliability value (Hair et.al., 2010:125). According to the results of the questionnaire, with sample size of 37, Cronbach's alpha is founded as 0,968. In item-total statistic stable, the values of ''Cronbach's alpha if item deleted'' column is consistent with Cronbach's alpha value of 0,968. Thus, internal consistency of the scale was supported.

3.4 Sample and Data Collection Procedures

The universe of this research is composed of 1.300 apparel/textile companies registered to Turkish Exporters Assembly who export about over 1 million TL. These companies are located in Istanbul. The apparel/textile exporters are also registered to Istanbul Apparel Exporters' Association (IHKIB) which is one of the most important associations of the apparel sectors, which leads Turkey's export. Random sampling method was used in this study. Companies are selected randomly from the list of 1.300 companies registered in Turkish Exporters Assembly. 824 managers were called for an appointment, 313 managers clearly filled the questionnaire. As a data collection method questionnaire survey was selected.

Table 2: Talent Management Scale

Talent Planning (TP) My organization has policies that encourage career growth and developmental opportunities of talent employees. My organization identifies vacancies that will be created as the company advances and expands. My organization builds a deep reservoir of successors at every level. My organisation implements different strategies for recruiting talented individuals.	SHRM,2007/ Detuncq and Schmidt, 2013/ Padmaja and Rao, 2015/ Valverdea, Scullionb and Ryan, 2013/ Poocharoen and Lee, 2013
Workplace Culture (CW) My organization creates a culture that makes talent employees want to stay with the organization. creates a culture that makes talent employees want to join the organization. creates a culture that values talent employees' work. creates culture where talent employees passionately believe in what they are doing. creates an environment where talent employees are excited to come to work each day. creates an environment where talent employees' ideas are listened and valued. aligns talent employees with the mission and vision of the organization.	SHRM,2007/ Slavković, Babić and Stojanović-Aleksić, 2015/ Urbancová and Vnoučková, 2015/ Padmaja and Rao, 2015/ Cravens, Oliver, Oishi and Stewart, 2015
Talent Recruitment and Retention (TR) My organization places the right people in the right jobs. My organisation has developed programs for retaining high-potential employees. Process of selection in my organisation is focused on candidates with high development potentia My organisation makes efforts to engage individuals capable of creative thinking.	SHRM,2007/ Detuncq and Schmidt, 2013/ Slavković, Babić and/ Stojanović-Aleksić, 2015/ Padmaja and Rao, 2015
Talent Development (TD) My organization identifies gaps in current employee and candidate competency level. My organization provides current employees with adequate training that allows them to do their jobs well. My organisation has career development programs for talented individuals. In my organization, trainings activities are focused on developing specific competences and skills that the organisation needs.	SHRM,2007/ Detuncq and Schmidt, 2013/ Slavković, Babić and Stojanović-Aleksić, 2015
Professional Advancement (PA) My organization lets talent employees feel empowered to make desicions that impact their work. My organisation has leadership development programs for high potentials for performing operations. High-performance employees have access to training aimed at developing potential. My organisation focuses employee training on mentoring and coaching.	SHRM,2007/ Urbancová and Vnoučková, 2015/ Slavković, Babić and Stojanović-Aleksić, 2015/ Detuncq and Schmidt, 2013/ Padmaja and Rao, 2015/ Lewis and Heckman, 2006
Rewarding (RW) My organization provides talent employees with salary adjustments as they master significant skills required for the jobs well. My organization rewards top-performing employees. My organization recognise good work and celebrate success using periodic employee evaluation.	Urbancová and Vnoučková, 2015/ Poocharoen and Lee, 2013/ SHRM,2007

4. FINDINGS AND DISCUSSIONS

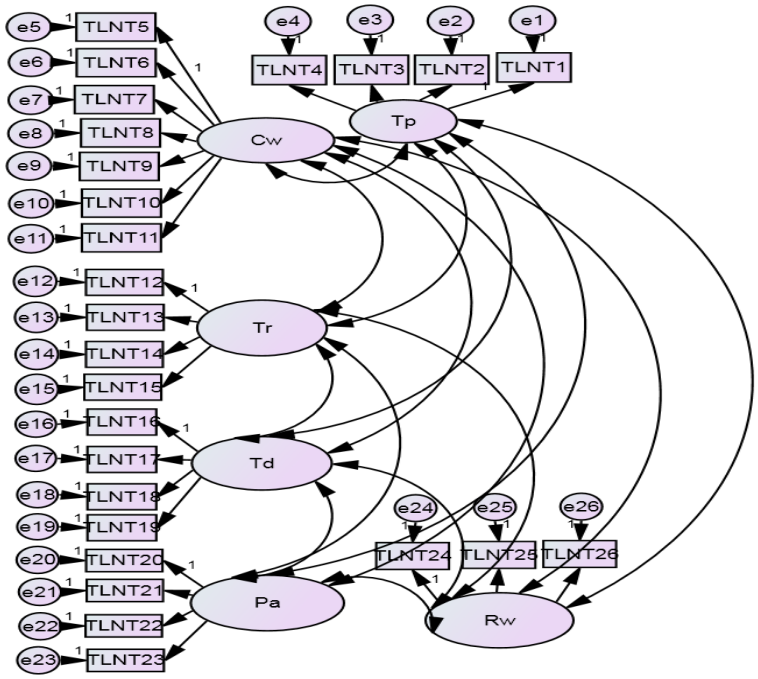
4.1 Analysis for Measurement Validity and Reliability

Structural Equation Modelling (SEM) which is used by many scholars, in particular social sciences, behavioral sciences, educational sciences, economics, marketing and health sciences (Raykov and Marcoulides, 2006). SEM is a multivariate statistical method based on the determination of observable and non-observable variables in a casual and relational model based on a certain theory (Bryne, 2010 as cited in Meydan and Şeşen, 2011:5).

4.1.1. Confirmatory Factor Analysis (Primary level)

The relationship between the factors (latent variables) which are composed in this analysis also included to the model. When the latent variables drawn in the unrelated model are mutually linked, they come to the position to perform the primary level analysis (Meydan and Şeşen, 2011:76).

Figure 1: Measured Factor Structure



In order to be able to decide whether or not the model has been verified, the analysis results should be examined and it should be seen whether the model harmonization values are at the desired level.

Table 3: Confirmatory Factor Analysis (Primary level) Indices

X^2	Df	p	X^2/df	GFI	CFI	RMSEA
545,913	284	0,000	1,922	0,879	0,936	0,054

The values in the text output were examined to see the results of the correlations between variables in the analysis. When the text output is examined, it is seen that all of the model relations are statistically significant. Both the model-fit indices and AMOS modification indices were examined if the the model should be improved or not. It is decided to exclude from the analysis those items for which the factor loadings (predictive powers) are not significant. The DFA is repeated by removing the non-significant factor loadings. TLNT 3 is eliminated according to the value in standardized regression weights table. 0,472 which is lower than 0,5. In addition, in regression weights table, the M.I. (Modification Index) of TLNT 3 is founded as 16,190. So the item is discarded from the construct.

Figure 2: Confirmatory Factor Analysis (Secondary level)

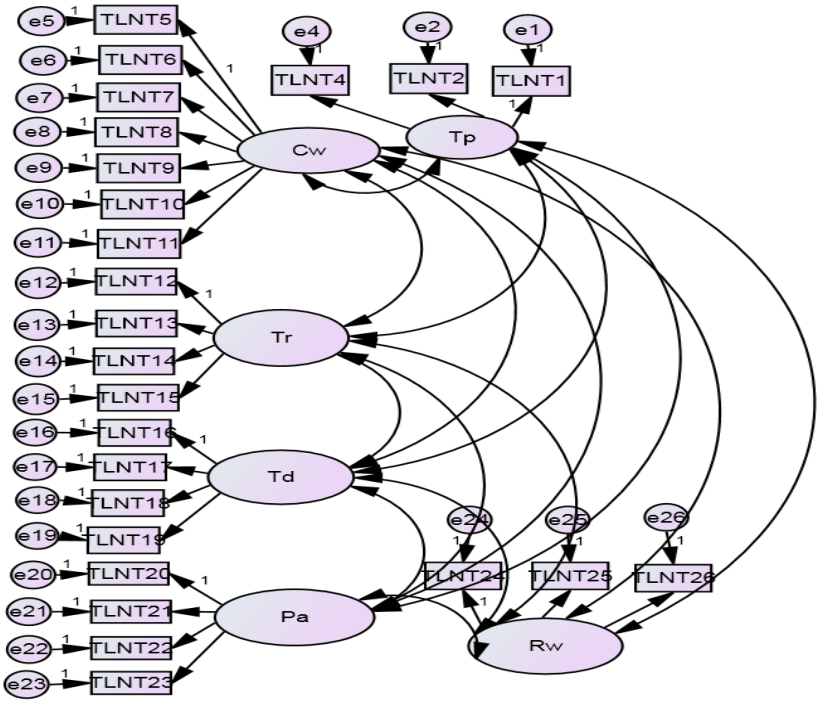


Table 4: Confirmatory Factor Analysis (Secondary level) Indices

X^2	Df	p	X^2/df	GFI	CFI	RMSEA
488,683	260	0,000	1,879	0,888	0,943	0,053

The values in the text output were examined to see the results of the correlations between variables in the analysis. When the text output is examined, it is seen that all of the model relations are statistically significant.

Table 5: Factor Loadings of Talent Management Scale

		Estimate		
TLNT1	TP	,578		
TLNT2	TP	,774		
TLNT4	TP	,746		
TLNT5	CW		,750	
TLNT6	CW		,665	
TLNT7	CW		,682	
TLNT8	CW		,697	
TLNT9	CW		,709	
TLNT10	CW		,674	
TLNT11	CW		,648	
TLNT12	TR			,524
TLNT13	TR			,719

TLNT14	TR	,529			
TLNT15	TR	,681			
TLNT16	TD		,610		
TLNT17	TD		,715		
TLNT18	TD		,679		
TLNT19	TD		,727		
TLNT20	PA			,642	
TLNT21	PA			,665	
TLNT22	PA			,771	
TLNT23	PA			,603	
TLNT24	RW				,717
TLNT25	RW				,875
TLNT26	RW				,845

4.1.2. Confirmatory Factor Analysis (Secondary Level)

Confirmatory factor analysis can also be done at the second level. In the second level factor analysis, the analyzed structure should be explained by factors at the primary level, none of the item loadings in the primary level analysis are zero and the second level factor procedures of covariances of primary level factors shoul be tested (Byrne, 2010). In this analysis, a higher level factor (latent variable) predicted by factors (latent variables) is included in the model. For this, the factor covariances (bi-directional arrows) modeled at the primary level are deleted and the regression paths linking these factors to the new factor at the top level are added.

Figure 3: Final Model in Secondary Level Factor Analysis

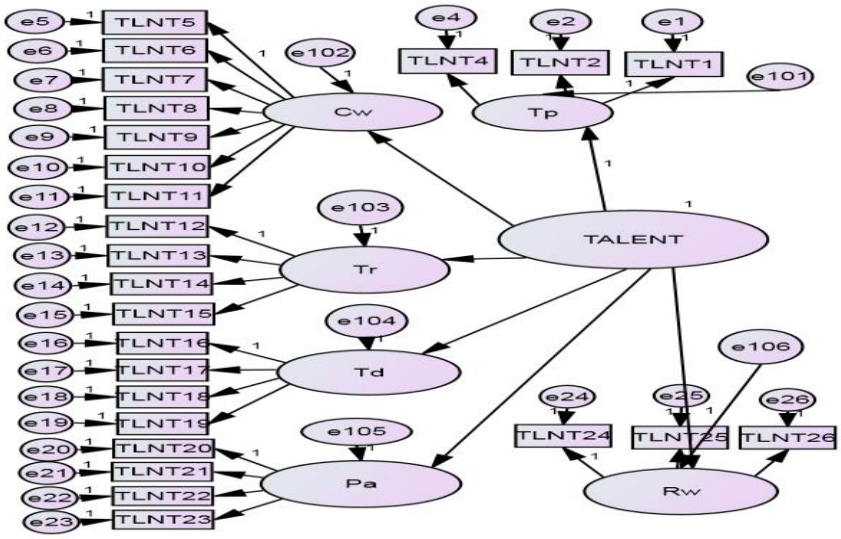


Table 6: Confirmatory Factor Analysis (Final Model) Indices

X^2	Df	p	X^2/df	GFI	CFI	RMSEA
649,981	270	0,000	2,407	0,858	0,905	0,067

5. CONCLUSION

As already mentioned in the study, talent management concept has some limitations in literature. Accordingly, a talent management scale was developed which is expected to contribute to the area. Confirmatory factor analysis (CFA) is performed using AMOS 20.0 to assess the construct and identify the model fitness. According to the common view of the interviews, talent management practices in companies of Turkey context are maintain as follows; creating the culture, leading the change, being the talent hunter, ensuring the good work of top management team, adopting ethical leadersip, being catalyst and making succession planning, having a personal vision, sensing the cultural differences of talented generation, making happy this new talented generation, reverse mentoring programs and flexibility, rewarding the success, attracting and retaining passionate employees, recruitment process, focusing on mentoring, caring talented employees, being the owner of the business, selecting and retaining talents or stars, energy, willingness and passion of talented employees, desire and ambition for doing the job, implementing fast training, focusing on motivation and flexibility, on-the-job training, winning culture, culture and high performance, retaining the talented employees, leadership programs, social responsibility projects, entrepreneur willing programs. In addition, it is critical for talent management practices in local context such as working with the most talented people, learning and self-improvement, connections and dialogue with the leader, fair salary and inclusive and flexible environment, cultural differences, supporting team play, visionary, friendly, participant, perfectionist leadership and coaching, risk taking, giving the right job to the right person, making talented employees feel him/herself as part of the family and aware of the contribution, management trainee, talent acquisition, education planning, development, identifying gaps, on-the-job learning, employer branding, marketing recruitment, value proposition, individual development planning and aligning employees with the mission. Furthermore, the talent activities are also including talent acquisitions programs, high potential pools, fair rewarding, talent hunting, engagement and proactiveness which are the key words for talent management. Managers in global companies regarding talents as flexible, learning oriented, project-oriented, having entrepreneur mindset, open-minded, resilience of changing conditions, having agility, having ambition and solution mindset. The talent management scale is composed and supported in accordance with the components emerged from the qualitative interviews. The results of the qualitative interviews showed that the energetic and talented people are affecting the culture of the companies. Managers emphasized that relationship with talents is very important and talented employees just want to be happy and want to feel that they are precious. According to the results, it is founded that talent management activities varies in terms of global companies and middle-sized export companies. In global companies talent management practices are more comprehensive than middle-sized textile companies in Turkey.

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EFFICIENCY RESEARCH WITH TOTAL FACTOR PRODUCTIVITY AND DETERMINATION OF IMPROVEMENT TARGETS

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ABSTRACT

Purpose - In today's competitive world, when financial crises and economic stagnation are experienced, the effective and efficient use of resources has become an important and necessary condition for companies and country economies. The iron-steel industry, which provides a great deal to the country's economies, also provides raw materials to a large number of industries. In the iron-steel industry, where our country has limited resources and high dependency on external sources, it is necessary to determine whether the resources are used correctly to evaluate the efficiency and productivity and to determine the appropriate improvement targets.

Methodology – In this study, the activities of 9 iron and steel companies listed in Istanbul stock market and operating in the Turkish iron and steel industry have been examined using output oriented Data Envelopment Analysis (DEA) which is a non-parametric approach and Malmquist productivity index (MPI). In the study, 3 input factors have been number of employees, fixed assets and current assets. On the other hand, 2 output factors have been revenue and gross profit . The required data sets were obtained from 2014 and 2015 financial statements of the relevant companies.

Findings – Technical efficiencies, pure efficiencies, scale efficiencies and Malmquist indexes for each company have been found. According to the results obtained, decision making units which are efficient and inefficient were determined. By the way, the reasons for Malmquist Productivity Index, in terms of technical change and technological cahange have been explained.

Conclusion – Iron-steel companies determined to be unproductive may use these results to find out the detailed reasons preventing them to be productive. Since activities are directly proportional to the use of resources, organizations need to reduce input or take measures to increase their output. Increasing the production of high value added products or increasing the production can increase the income. Especially in view of stainless steel, special steel and seamless pipe products, which are insufficient in Turkey, an increase should have been in export and imports. With plans and strategies to be implemented in this way, both the cost of inputs can be reduced and the output can be increased.

Keywords: Iron-steel industry, data envelopment analysis (DEA), malmquist productivity index (MPI), efficiency, productivity
JEL Codes: C81, C61, C67

1. INTRODUCTION

Nowadays, due to the competitive conditions and competition on the global market, effective and efficient use of resources has a great importance for companies. The shrinkage in market shares has forced firms to respond to different production plans, productivity surveys and technological developments. Performance and efficiency studies have made it possible for managers to make advanced plans for resources and increase productivity. Outside managers, efficiency analysis helps investors to think rationally about information and investment decisions. Therefore, analysis of the effectiveness of the activities; Investors, companies, executives and the sector make it almost mandatory. In this study, 9 iron and steel companies listed in Stock Exchange Istanbul were examined by data envelopment analysis and Malmquist total factor productivity. Analysis and necessary improvements were determined. In the first section of the study, information about the iron and steel sector was analysed as a comparison between our country and the global market. The main part includes the concepts of efficiency, data envelopment analysis and approaches in the literature about total factor productivity. Based on this information, optimization solutions have been made and the results of the companies are evaluated and the necessary potential improvement ratios and targets are presented.

Iron and steel industry; Iron ore or slag is melted in oven and made according to the desired chemical and physical structure. The iron and steel industry, which supplies raw materials to many other industries is one of the most important industries. Today, there are two basic methods used in steel production. These are the production of pig iron in blast

furnaces in integrated plants and production of steel in basic furnaces. Another method is steel production by melting scrap steel in electric arc furnaces. An integrated plant uses iron ore as raw material, while electric arc furnaces uses scrap iron in production. Electric arc furnace plants constitute 74% of steel production in Turkey according to the records from 2012. The remaining 25.9% are produced in integrated plants. The reasons for Turkey's orientation to electric arc furnaces are that electric arc furnaces require lower financing for plant installation than integrated furnaces. Further reasons are difficulties in ore mine investments, the absence of mineral deposits and high cost of transportation are required.

In 1925, depended on the Directorate of Military Factories, the first iron and steel industry established in order to meet the steel requirement of the industry. The factory with 50.000 tons of production capacity was built in year 1928. Another step was taken in the name of the iron and steel industry is the launching of the analysis by the Ministry of Economics whether the industry can be established in 1925. Inspections were conducted in Germany, Belgium and Luxembourg, but the work was not resumed. Finally, the second iron and steel company which called Kardemir was established in Karabük at 1932. Kardemir started steel production with a capacity of 150 thousand tons in 1939 and there was no significant improvement in production until 1960's. Between 1970 and 1977, five electric arc furnace plants were established in Turkey. In 1980, the raw steel production capacity reached 4 million 200 thousand tons. The free trade agreement was signed in 1996 and in 1999 steel production reached over 14 million tons. This value accounted for 1.9% of world raw steel production. With this free trade agreement, Turkey's raw steel production has been steadily increased and makes it one of the world's largest steel producers. Turkey has reached 14 million tons of steel production after the free trade agreement. Within last 10 years, Turkey has caught countries such as Italy, Brazil and Ukraine which have 2-fold levels more production quantities than Turkeys and even passed them .Turkey shows continuous improvement in raw steel production and produces more than enough to meet its own needs but they are experiences serious problems in market balance and in the supply of resources. High levels of dependency of scrap for steel production and continuously increase of scrap prices, reduce the competitive power of Turkey. Turkey has a significant market presence in steel exports. In spite of, it is easily affected by steel price, market and market conditions, competitive power and interest rates. In 2014, 17.5 million tons of exports and 13.2 billion dollars of value-based exports were realized. The product group in which Turkey is strongest in steel exports is long products. The main countries in which Turkey exports iron and steel exports are the Middle East, the EU, North African countries and North America. 65% of the raw material used in production is covered by imports. This shows that the minimum share of imports in production has to be 65%. With the increase in scrap prices, Turkey seems to be oriented towards production rather than scrap, which has the largest share in imports. In 2015, 19.06 million tons and 12.32 billion dollars of value-based imports were realized. In recent years Turkey's imports have been more than exports. As a result, Turkey is a net importer. In such an environment, Turkey experience resource constraints and its market share decreases. It is necessary to use its resources efficient and effective in such an environment.

2. LITERATURE REVIEW

Debnath and Sebastian (2014) assessed the technical and scale efficiency of the Indian steelmaking industry in their work. The study measured the activities of 22 companies producing pig iron, steel and sponge iron over 50 million tons per year, with output-based on fixed return on scale and assumption of variable return on scale. Gross fixed assets, current assets and total energy cost were included in the number of employees as input, while output; profit before interest and tax, interest and profit after tax were used as the data set. According to the fixed income assumption, 10 companies and according to the variable return assumption by scale 13 companies were shown as effective.

Kara and Aydın (2011) calculated the activities of selected firms in the sample set of iron and steel producers operating in Turkey with Data Envelopment Analysis (DEA) and Malmquist total factor productivity index. As a result, the industry they have dealt with has determined that there is an incremental increase in scale. They analyzed technical efficiency levels and sources of inefficiency with Tobit model. As a result, the ratio of private sector credit to gross domestic product, the rate of growth of the industrial sector and the number of investment incentives have been influential in explaining the sources of inefficiency.

Kaya, Öztürk and Özer (2010) considered 4 periods of 2008 with the data envelopment analysis of 25 firms listed in Istanbul Stock Exchange which operates in metal goods, machinery and materials manufacturing sector. While 5 firms were efficient in 4 periods, 20 firms were inefficient. For companies that are ineffective, they propose by calculating potential improvement ratios.

Ertuğrul and T. Işık (2008) measured the efficiency through output-based CCR (Charnes, Cooper and Rhodes) models with 2 inputs and 2 outputs based on the financial statements of 2003-2007 periods of 13 companies operating in the metal industry sector. Results for 2007, inefficient firms have identified potential improvement ratios to be efficient.

Chen (1999) analysed the activities of the 35 largest steelmakers in China with data envelopment analysis. Especially in reducing the number of workers and improving the technical efficiency of firms, it is necessary to increase the output of China's steel industry.

3. DATA AND METHODOLOGY

Data Envelopment Analysis (DEA), which is used for efficiency measurement, is named; due to the fact that the activity boundary passes through at least one point in the set of production possibilities and that all other remaining points maintain below or above this frontier (Cooper; Seiford; Tone, 2000). The foundation of DEA based on a study by Debreu (1951) in the work of Farrell in (1957). In Farrell's "The Measurement of Productive Efficiency" study, linear programming was used in efficiency measurement by examining the activities of decision-making units, which are multi-inputs and single outputs for evaluating productivity. The first data envelopment analysis model is a work done by Charnes, Cooper and Rhodes in 1978. Under Cooper's advice, Rhodes evaluated the "Program Follow Through", a training program for disadvantaged students based on the assumption of fixed income on a scale basis in his doctoral dissertation. DEA proportional formulation was born with the desire to project the activities of the schools with multiple inputs and outputs, aimed at this program applied in public schools. DEA, a nonlinear and nonparametric method based on linear programs, provides relative efficiency measures for businesses or companies responsible for transforming input factors into output. The mentioned companies are called decision making units (DMU's). The data envelopment analysis determines the weights of multiple inputs and outputs according to their significance levels, and defines the efficiency frontier, so that we can compare whether the decision-making units are efficient or not. The efficiency frontier is a set of all the facilities used in production. If all of the facilities are used, the efficiency score is defined as 1. Efficiency scores of firms that do not use all of the facilities are below 1 and are considered inefficient. With DEA, activity analysis has been done about many institutions and organizations. In data envelopment analysis, the efficiency criterion is the ratio of total weighted output to total weighted input is shown in figure (1). The methods used in data envelopment analysis can be solved either as input-directed approach or as output-based approach; the same result will be achieved. In the input-directed approach, the output quantity is fixed, the input quantity aim to minimize and the output-based approach, the input quantity is fixed, the output quantity aim to maximize.

$$\frac{u_1y_1 + u_2y_2 + \cdots \ldots + u_sy_s}{v_1x_1 + v_2x_2 + \cdots \ldots + v_mx_m} \quad (1)$$

s: number of outputs; m: number of inputs ;u_s: weighted output
y_s: amount of outputs; v_m: weighted input; x_m: amount of inputs

3.1. CCR Model and Definition

Charnes, Cooper and Rhodes (CCR) established the CCR ratio definition of efficiency (1978a, 1979). This interpretation of efficiency determines the single output to single input classical engineering science ratio definition without requiring reassigned weights to multiple outputs and inputs. This method is based on a constant return assumption to scale. This section contains the basic features of the CCR model. The fractional representation of the output-based CCR model is expressed in following figure (2).

$$\min\theta \frac{\sum_{i=1}^{m} v_i x_{ik}}{\sum_{r=1}^{s} u_r y_{rk}} \quad (2)$$

subject to:

$$\min\theta \frac{\sum_{i=1}^{m} v_i x_{ij}}{\sum_{r=1}^{s} u_r y_{rj}} \geq 1$$

$;u_r, v_i \geq 0$

s: number of outputs; m: number of inputs; u_r: weighted output; y: represent output data for decision making unit; v_i: weighted input; x: represent input data for decision making unit

The models of the linear program generated by the fractional model (2) will be shown in figure (3) (Charnes; Cooper; Rhodes, 1978)

$$\text{Enk} \sum_{i=1}^{m} v_i x_{ik} \quad (3)$$

subject to:

$$\sum_{i=1}^{m} v_i x_{ij} - \sum_{r=1}^{s} u_r y_{rj} \geq 0 \qquad \sum_{r=1}^{s} u_r y_{rk} = 1$$

$;u_r, v_i \geq 0$

3.2. BCC Model and Definition

The BCC model is based on the variable return assumption to scale developed by Banker, Charnes and Cooper (1984). In the CCR model, the assumption of constant return to scale assumes that all companies function at the optimum scale. This method is used to measure the performance of companies with varying returns to scale, as factors such as market conditions and competitive environment prevent them from operating at optimum scale, see figure (4). The difference between the BCC method and the CCR method is that the μk variable is added to the objective function, and the $\sum_{j=1}^{m} \lambda j = 1$ constraint is different from the CCR in the constraints of the formula (Charnes et al., 1994).

The solution of the formula shows:

$\mu_k = 0 \Rightarrow$ constant returns to scale; $\mu_k > 0 \Rightarrow$ Decreasing returns to scale; $\mu_k < 0 \Rightarrow$ increasing returns to scale

$\sum_{j=1}^{m} \lambda j = 1$ constraint allows the definition of relative efficiency to achieve a more flexible structure (Banker; Charnes; Cooper, 1984)

subject to:

$$\min\theta \sum_{r=1}^{m} v_i x_{ik} - \mu_k \qquad (4) \qquad \sum_{r=1}^{s} u_r y_{rk} = 1 \qquad \sum_{r=1}^{s} u_r y_{rj} - \sum_{i=1}^{m} v_i x_{ij} \leq 0$$

$u_r \geq \varepsilon > 0$; $v_i \geq \varepsilon > 0$; μ_k: unconstrained

BCC score is higher than the CCR score; the reason for this is the variable return assumption to scale. The BCC score provides pure technical efficiency.

3.3. Malmquist Productivity Index (MPI)

Total factor productivity is the total output obtained by a manufacturing efficiency is defined as the ratio of the production factors used to obtain the output. Malmquist index (MPI), calculates the ratio of the difference of the two data points based on a common technology, which is a measure of change between data points in total factor productivity. The distance function is used to calculate this measure. Sten Malmquist (1953), who introduced the idea of establishing an index with the help of distance functions, was given this name as Malmquist. The distance function is used to describe multiple inputs and output production technologies without specifying targets such as least cost or maximum profit. According to the output, the distance function can be generated by x, the set of y's being S. $d(x, y) = \min\{\delta : (y/\delta) \in S\}$

Is defined in this model d (x, y) are the values obtain by the distance function, 1.0 if y is above the production limit; y vector within the production limit if it defines the point > 1.0 and y is a non-possible if it defines the point < 1.0. The Malmquist total factor productivity index according to the output between the baseline period and the following period t, following the work of the Färe et al. (1989, 1992); which we express in figure (5).

$$m(Y_s, X_s, Y_t, X_t) = \sqrt{\left[\frac{d^s(Y_t, X_t)}{d^s(Y_s, X_s)} \times \frac{d^t(Y_t, X_t)}{d^t(Y_s, X_s)}\right]} \qquad (5)$$

In this formula $d^s(X_t, Y_t)$, *t* refers to the distance of the period observation from s to period technology. If the value of *m(.)* Function is greater than 1.0, then the total factor productivity increases from period t to period t; and less than 1.0 indicates that the decrease in total factor productivity is the same period. This equation can be expressed in figure (6).

$$m(Y_s, X_s, Y_t, X_t) = \frac{d^t(Y_t, X_t)}{d^s(Y_s, X_s)} \sqrt{\left[\frac{d^s(Y_t, X_t)}{d^t(Y_t, X_t)} \times \frac{d^s(Y_s, X_s)}{d^t(Y_s, X_s)}\right]} \qquad (6)$$

The term other than the square root on the right side of the equation is the measure of Farrell's total technical efficiency change between period's s and t. The term in parentheses refers to technological change. The separation of the Malmquist MPI exchange index as a change in technological change and technical efficiency helps to determine the contribution of these factors to total factor productivity. For this reason, the change in technical activity can be measured with model (7).

$$\frac{D_o^t(x^t, y^t)}{D_o^s(x^s, y^s)} \quad (7)$$

Technological change is determined by formula (8)

$$\sqrt{\left[\left(\frac{D_o^s(x^t, y^t)}{D_o^t(x^t, y^t)}\right)\left(\frac{D_o^s(x^s, y^s)}{D_o^t(x^s, y^s)}\right)\right]} \quad (8)$$

The change in the technical efficiency gives the in process evaluated of the distance of the decision making units to the efficiency frontier. Technological change provides the change in the efficiency frontier in the process (Kula; Kandemir; Özdemir, 2009; Bilişik, 2015).

4. FINDINGS AND DISCUSSIONS

In this study, 9 iron and steel companies quoted on Stock Exchange Istanbul were evaluated of efficiency. Calculation of comparative activities of these companies and determination of potential improvement targets for ineffective companies were aimed. Data envelopment analysis has been chosen as the method to be used in the research because it has more than 1 input and output in practice and measures the relative efficiency of the companies. Efficiency scores for these companies covering the years 2014 and 2015 were calculated and results were included. Inputs in a production system pass through the production process and turn into output. Outputs are seen as a result of production and can also be defined as earnings. Inputs are defined as the sources of decision making units (DMUs) and are factors that affect their performance depending on their use. In the selection of the data to be used in measuring the effectiveness of DMUs, the literature on efficiency analysis in the iron and steel industry was searched and the input and output factors frequently used in the literature were obtained into consideration. In the literature, despite the small amount of change between inputs and outputs, the total number of inputs and outputs to be used must be less than the number of DMUs, so the elimination is performed in the input and output factors. In the measurement of the effectiveness of the DMUs that are the subject of the study, the optimization solution was realized under the assumptions DEA's constant fixed return to scale (CCR) as well as the variable return to scale (BCC). In both methods, output-based approach efficiency measures were made to ensure the highest possible output from sources (inputs).The minimum number of DMUs (n + m + 1) required for analysis was fulfilled. n: number of inputs: 3, m: number of outputs: 2. Frontier Analysis program was used for the analysis and efficiency measurement.

Table 1: Efficiency Scores and Malmquist Index with Technical Efficiency Results

DMUs	CCR score (TE) (2014/ 15)		BCC score (PE) (2014/ 15)		Scale efficiencies		Returns to scale (2014/ 15)		Technical efficiency change	Techno-logical change	Malmquist Index (MPİ)
Asil Çelik	1	0,90	1	1	1	0,90	c.	i.	0,90	0,77	0,69
Burçelik	0,69	0,76	1	1	0,69	0,76	d.	d.	1,10	1,03	1,13
Çemtaş	1	1	1	1	1	1	c.	c.	1	0,83	0,83
Erdemir	0,84	0,55	0,86	0,59	0,98	0,92	d.	d.	0,65	1,29	0,84
İsdemir	1	1	1	1	1	1	c.	c.	1	3,22	3,22
İzmir D.Ç.	1	1	1	1	1	1	c.	c.	1	0,89	0,89
Kardemir	1	0,64	1	1	1	0,64	c.	i.	0,64	0,74	0,48
Tuğçelik	0,09	0,11	1	1	0,09	0,11	d.	d.	1,26	0,84	1,06
Özbal	1	1	1	1	1	1	c.	c.	1	1,31	1,31

*(TE) Technical efficiency; (PE) Pure efficiency; (i) increasing returns to scale; (c) constant returns to scale; (d) decreasing returns to scale

Scale efficiency is an efficiency form based on the size of the output / input ratio. If the increase in the input rate is greater than the increase in the output rate, it is expressed as a decreasing return to scale; If the increase in the input rate is equal to the increase in the output rate, it is expressed as constant return to scale; If the increase in the input rate is less than the increase in the output rate, it is expressed as increasing the return to scale. The DMU Asil Steel, Çemtaş, Isdemir, İzmir Demir Çelik, Kardemir and Özbal, according to the activity scores belonging to 9 iron and steel companies in 2014, all shows efficient production scale and efficient resources in terms of scale efficiency. Burçelik and Tuğçelik DMUs are not efficient in scale. This is because they are purely efficient but not technical. Erdemir is not efficient in terms of pure technical efficiency and technical efficiency. It is seen that Burçelik and Tuğçelik, which have pure technical efficiency score 1 but not technical

efficiency, have lower scale efficiency than the pure and technical inefficient Erdemir. It is seen that Erdemir has greater scale efficiency because the DMUs technical efficiency and pure technical efficiency values are close to each other. Burçelik, Erdemir and Tuğçelik companies have a decreasing return to scale. Other companies have shown constant return to scale due to their full effectiveness in all efficient observations. When the efficiency scores of 9 iron and steel companies obtained for the year 2015, data and the imports according to the scale are examined, Çemtaş, Isdemir, İzmir Demir-Çelik and Özbal own the largest scale efficiency. These companies used both their resources properly and operated at the most effective production scale. Erdemir is not located on any efficiency frontier. Nonetheless, DMUs with pure technical efficiency is more effective in terms of scale efficiency than technical inefficient DMUs. This is because the difference between the efficiency scores is very low. DMU Asil Çelik and Kardemir shows increasing return to scale. Çemtaş, Isdemir, İzmir Demir-Çelik and Özbal shows a steady return to scale and operates at the highest scale. DMU Burçelik, Erdemir and Tuğçelik show a decreasing return to scale and it is necessary to use their resources efficiently. When the Malmquist total factor productivity results of 2014 to 2015 are examined, it is seen that Burçelik, Isdemir, Tuğçelik and Özbal DMUs increase in total factor productivity. It is seen that the increase in total factor productivity of Burçelik is mainly due to the increase in technical efficiency. The DMU Isdemir has the highest Malmquist total factor productivity index (MPI). It is seen that the main reason for the growth in total factor productivity of the DMU, which is technically efficient in both periods, is due to the increase in technological change. The DMU Tuğçelik shows an increase in Malmquist total factor productivity. The reason for this is that the company increases its technical efficiency according to the previous turn. Özbal emerged as another company with an increase in the Malmquist total factor productivity index (MPI). DMUs technical efficiency values for 2014 and 2015 shows that the DMU is full efficient. The reason for the increase in MPI is due to the increase in technological change. According to the Malmquist total factor change index DMU Asil Çelik, Çemtaş, Erdemir; İzmir D.Ç. and Kardemir experienced a decrease. A decrease in total factor productivity, compared to the previous turn was seen because of the decrease in both, technical and technological change of Asil Çelik. Due to a decrease in technical efficiency from the DMU Erdemir, the total factor productivity reduced as well. Erdemir misused his resources according to the previous turn. This DMU also has not used the advantage of technological development. Kardemir has the lowest Malmquist total factor productivity index. During the period from 2014 until 2015, the company reduced its efficiency and remained behind in technological change.

5. CONCLUSION

Investments in the steel sector and the trade agreement after the 1990s, Turkey made a substantial advance. Considering the iron and steel consumption rates, which are also indicated as the level of development of the countries, Turkey is seen among the developing countries. That Industry also provides raw materials for many sectors such as transportation, machinery, construction, automotive, white goods and transportation. In recent years, import and export balances have moved in the negative direction to become a net importer. More than half of the raw material needed by the industry is also covered by imports. In addition, nearly 70% of the iron and steel production in our country is provided by electric arc furnace plants. These plants use scrap as raw material in production. Considering large producers, around 70% of the world production is realized in integrated plants. Integrated plants use iron ore as raw material in basic oxygen furnaces. In recent years with the decline in iron ore prices and the increase in scrap prices, the price difference between these two raw materials has been fully opened. Therefore, Turkey's use of scrap in most of its production has reduced its competitive power compared to other countries. In addition, the resources used as raw materials are reflected in dollars as an extra financial difficulty for companies every day because of the exchange rate difference. In this context, it is imperative that companies convert their scarce resources to the highest possible output. In this study, which includes the efficiency study of iron and steel companies, data envelopment analysis was used for efficiency measurement. A non-parametric method, DEA measures the distances to the efficiency frontier by making relative comparisons of the companies called the decision making units (DMUs). It uses the various constraints to provide values to the DMUs (0,1), which allows the DMUs with multiple inputs and outputs to measure the activities, avoids the need to make input and output transformations to measure, and offers suggestions for identifying and eliminating inefficiencies it provides important information to the managers. 3 inputs (number of employees, fixed assets, current assets) and 2 outputs (revenue, gross profit) obtained from the financial statements for 2014 and 2015 of 9 iron and steel companies listed in Stock Exchange Istanbul were analysed via output-based CCR and BCC methods. In addition, the change in total factor productivity of firms over the 2-year period has been examined by the Malmquist index. An effective and efficient use of available resources is not an appropriate input-based approach to reduce the number of employees in today's conditions, where the increase in unemployment rates is more concerned with the reduction of resources than the reduction of resources. We consider as an important indicator, the CCR efficiency in 2014 and 2015 from the DMU Erdemir, which is well above Tuğçelik. Considering the BCC efficiency scores DMU Erdemir lagged behind of Tuğçelik. Erdemir was not efficient, while Tuğçelik was efficient. In scale efficiencies for the year 2014, DMU Asil Çelik, Çemtaş, İzmir Demir Çelik, Kardemir and Özbal has operated in the most efficient scale of production. Burçelik, Erdemir and Tuğçelik shows decreasing returns to the scale. These DMUs can increase their efficiency by reducing their resources and they can suitable operate at maximum scale. Considering the scale efficiencies for the year 2015, the DMU Çemtaş, Isdemir and İzmir Demir-Çelik Özbal were found to operate in the most efficient production scale.

Considering returns to scale, DMU Asil Çelik and Kardemir have shown increasing return to scale. By increasing their input, these DMUs can achieve a greater output and increase their efficiency. In 2015 Burçelik, Erdemir and Tuğçelik also showed decreasing return to scale comparable as in 2014. The Malmquist total factor productivity index is the result of the reviews. In general terms, the average of MPI has been increased. While the technical efficiency value decreased, the average technological change has been increased. While the hugest MPI exchange is seen in Isdemir, the reason for this change is that it is the company that benefits the most from technological change. DMUs also seen growths with İsdemir are Burçelik, Tuğçelik and Özbal. DMU Tuğçelik increases MPI due to technical efficiency change, unlike other increasing DMUs. In this process, DMUs that shown a decrease in total factor productivity are Asil Çelik, Çemtaş, Erdemir, İzmir Demir-Çelik and Kardemir. Total Factor Productivity and two-year activities have been observed in more than half of the total factor productivity. The total factor productivity considered in two-year activities observed that more than half of the DMU's have decreased in MPI. It is seen that inefficient companies also have shown an increase in total factor productivity. Since activities are directly proportional to the use of resources, organizations need to reduce input or take measures to increase their output. The components that weaken Turkey's competitive power need to be rescued from these burdens in order to enable the sector to gain momentum. One of the greatest factors is that the support to the iron and steel sector is hindered from the government. The agreement with ECSC (European coal and steel community) should be re-audited and state benefits and subsidies should be provided. The energy cuts that increase the input costs, which affect competition in exports, will relieve the sector from the withdrawal of funds. Increasing the production of high value added products or increasing the production can increase the incomes. Especially in view of stainless steel, special steel and seamless pipe products, which are insufficient in Turkey, should have an increase in export and imports. With plans and strategies to be implemented in this way, both the cost of inputs can be reduced and the output can be increased.

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COMPARISON OF VALUE AT RISK METHODS: APPLICATION OF ISE 30

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ABSTRACT
Purpose- The main purpose of this paper is to measure the potential losses of the portfolio obtained from ISE-30 using three different methods with VaR methods.
Methodology- Historical Simulation, Variance-Covariance Method and Monte Carlo Simulation are used for the calculation of VaR. These three methods are examined regarding their results on the portfolios created according to different criteria. The price series of ISE 30 are used to create different three portfolios and their VaR results are compared. The performance of VaR results are checked by backtesting process after calculating VaR. VaR results are discussed by examining the performance of the methods for each portfolio.
Findings- When the VaR of the portfolios are examined, the lowest VaR result of three portfolios is obtained in Portfolio 2 which is formed according to volatility criterion. One of the remarkable results of this study is that, as mentioned above, V-C and MCS methods give similar results. On the other hand, VaR results of the Historical Simulation Method are higher, and emerge in the green area in test process.
Conclusion- It may be advisable for banks or other investors in the financial sector to move to the top of the order of preference according to the retrospective test results of TS method under high confidence level conditions. On the other hand, the results of the V-K and MCS method should be tested with the Backtesting by extending the observation period.

Keywords: Value at Risk, historical simulation method, variance-covariance (parametric) method, Monte Carlo simulation method, ISE 30.
JEL Codes: C10, C14, C19

1. INTRODUCTION

Nowadays, technological advances have become the most important factor that affects all humanity agenda and daily life. Several reasons such as the liberalization movements across the world, multinational companies, nesting of the countries' economies, markets that can be traded for twenty-four hours a day and the diversity of traded securities have turned the world economy into almost a single market. Adapting to this rapid change is an important requirement for both the future of countries and all big/small investors as well as financiers.

Orange Country event in February 1994, Barings Bank collapse in February 1995, Enron bankruptcy in 2000 are the recent examples for "failure to manage" the risk. Another recent example is the Lehman Brothers' bankruptcy in 2008. These "noteworthy" examples drew much attention to the necessity of the risk management. The fact that the way to survive in finance sector not only depends on profit, but also the necessity to estimate the loss draws the world's attention. JP Morgan name draws attention with regard to estimating the possible losses. By use of the risk measurement technic called as 4:15 matrix, JP Morgan initiated a method defining financial risks undertaken only with one number instead of many numbers and values. This name has been given to the method because of the meetings carried out afternoon at 4:15 pm every day.

The used methods have diversified over the time and begun to be used in finance sector. However, there are three methods leading in not only academic field but also in the sector. These methods are Historical Simulation (HS), Variance-

Covariance (V-C), and Monte Carlo Simulation (MCS) methods. There is no mentioning about an absolute superiority among these three methods, but each one has certain advantages and disadvantages to one another. The decision maker can perform risk measurement by preferring the most appropriate method after determining his/her needs.

In this study, three fundamental Value at Risk (VaR) calculation methods are applied upon 4 portfolios in total, three of which are formed by using ISE 30, and one of which is formed by golden, foreign currency and overnight interest rate. VaR calculations were made by using the hypothetical portfolios' daily data between 22.04.2013 and 30.04.2014. The calculations were carried out at 99%, 95% and 90% confidence levels. However, the obtained results were not solely enough in order to determine the performances of the methods. For this reason, the found results were assessed through performing Backtesting process at all confidence levels.

2. LITERATURE REVIEW

2.1 Value at Risk

Value at Risk is defined as the greatest expected losses for a given holding period at a specified confidence level. We can say that we can also be sure that there is no more loss than "X" TL in "t" day at "X" confidence level for the kept portfolio. As can be understood from these definitions, the holding period and confidence level are two important variables.

VaR calculation is made by using Equality 1.

$$RMD = Z_{\alpha}\sigma w\sqrt{t} \tag{1}$$

In Equality 1, the meanings of the symbols are that *Z* is standard Normal Distribution Coefficient complying with the meaning level, *σ* is standard deviation, *W* is monetary value of the portfolio and t is holding period.

When various risk management methods are used in literature, VaR research has developed rapidly with the influence of Basel's suggestions. Küçüközmen (1999) emphasizes that finding wide usage area for VaR is connected with expressing the risk of entire portfolio with a single number.

VaR calculation methods which are preferred in literature and financial markets are Historical Simulation (HS), Variance-Covariance (V-C) and Monte Carlo Simulation (MCS) methods.

2.1.1. Historical Simulation Method

Historical Simulation method defined as "nonparametric VaR" shows the distribution of profit and loss ranges at a given confidence level by examining the effect of backdated data on the existing portfolio. This method is easy to understand and explain and it can also be described as a simplified version of Monte Carlo Simulation.

The idea behind the VaR calculation by using HS method is to simulate VaR with the assumption that we have kept the current portfolio since the beginning of the historical data, by using the distribution of historical returns of the securities under the portfolio. In order to implement this, the historical returns of the assets in the portfolio should be primarily obtained for a specified period of time. It is assumed that historical returns of the assets that form the portfolio are kept since the beginning of the historical returns, in order to calculate the hypothetical returns of the existing portfolio. By assuming that the distribution of the portfolio returns reflects the future, the related confidence level of this distribution gives the expected VaR of the portfolio (Dowd, 1998).

2.1.2. Variance-Covariance Method

Another commonly used method is Variance-Covariance method that is a parametric method. In order to calculate the volatility and correlations of the portfolio returns, this method is based on V-C matrix of portfolio returns by use of the historical time series. Therefore, this approach is called as Variance-Covariance method. Meanwhile, this approach is a parametric approach because the accuracy of the model depends on correct estimation of distribution parameter and proper formation of return distribution of assets (Gökgöz, 2006).

2.1.3. Monte Carlo Simulation Method

Monte Carlo Simulation Method is another method suggested by Banking Regulation and Supervision Agency (BRSA) in the "Notification Concerning the Assessment of the Market Risk Calculation with Risk Measurement Models and Risk Measurement Models" dated 3 November 2006. MCS Method is a preferred method for VaR calculations, and also frequently used in quantitative finance field.

MCS method is the most powerful and comprehensive method when it is used correctly in terms of measuring market risk. Therefore, it is a computer-intensive VaR calculation method. Generally, it is used with normal distribution, but it may also

work with different distribution assumptions. In addition, the model risk appearing in the other methods is almost eliminated completely in this method (Şahin, 2004), as well.

In fact, it can be said that MCS Method is a mixture of V-C Method and HS Method. Variance covariance matrix of the historical returns is required in MCS; it is also required in V-C method. However, MCS approach is not satisfied with this, and it creates a new series with correlation based on the variance covariance matrix in question. The process after this is the same as HS method. If the period of time which is used in the method is same with the period of time which is used in order to create variance-covariance matrix, and if portfolio exhibits a linear behavior; the results of MCS and HS are more or less the same. However, if the portfolio exhibits nonlinear behavior (due to the reasons such as the options), the results will be different (Selimov, 2006).

2.2. Backtesting

Financial models are established upon the assumption that actual price movements experienced in the finance markets will occur in the future, as well. Backtesting ensures the comparison of the results which are produced with the risk measurement models with the real market data. Backtesting is benefited in both forming stage of new models and reassessment stage of the existing models. Although only one model is not formed for backtesting, financial institutions have to apply backtesting in order to check the accuracy of the internal VaR models which are used for the measurement of their capital adequacies. Financial institutions perform backtesting applications in monthly and quarterly periods per year in order to measure the accuracy of the VaR models. The aim of these tests is to compare the maximum loss of the portfolio which has been estimated previously by VaR models with the realized values (JP Morgan, 1996).

In line with the suggestions of Basel Comity, risk-based capital adequacy can be calculated as a result of Backtesting of VaR applications that are performed in financial institutions. In consequence of the deviations of the model, the capital that should be found is calculated by being multiplied with the multiplication factor in the existing area.

Determination of the multiplication factors is performed as in Table 1.

Table 1: Determination of the Multiplication Factor Used in Backtesting

Area	Deviation Number	Increase in the Multiplication Factor	Capture Percentage for 99%?	Cumulative Probability
Green Area	0	0.00	8.1%	8.11%
	1	0.00	20.5%	28.58%
	2	0.00	25.7%	54.32%
	3	0.00	21.5%	75.81%
	4	0.00	13.4%	89.22%
Yellow Area	5	0.40	6.7%	95.88%
	6	0.50	2.7%	98.63%
	7	0.65	1.0%	99.60%
	8	0.75	0.3%	99.89%
	9	0.85	0.1%	99.97%
Red Area	10 and above	1.00	0.0%	99.99%

Source: BIS, 2006, p.321.

Basel Committee specifies error acceptance numbers for different confidence intervals, regarding Backtesting. Error acceptance numbers are shown in Table 2.

Table 2: Error Acceptance Numbers Used in Backtesting

VaR Confidence Interval	The Area Where Error Amount (N) Can Be Accepted		
	T = 255 days	T = 510 days	T = 1000 days
99%	N<7	1< N<11	4< N<17
97.5%	2< N<7	6< N<21	15< N<36
95%	6 N<21	16< N<36	37< N<65
92.5%	11< N<28	27< N<51	59< N<92
90%	16< N<26	38< N<65	81< N<120

Source: Jorion, 2001, p.136.

Backtesting, in other words, is the identification medium for the capital that will be kept by the business. Backtesting becomes prominent here because the businesses do not want to keep an excessive amount of capital. Therefore, the anticipation of the probable losses should be made at an optimum level.

3. DATA AND METHODOLOGY

In this study, three fundamental VaR calculation methods are examined upon three portfolios by comparing them in the observation period between 22.04.2013 and 30.04.2014. The portfolios that have been formed are chosen according to return, volatility and price criteria, among the stock certificates that are processed in the ISE 30 index. Price series of the stock certificates that are processed in ISE 30 are obtained from Istanbul Stock Exchange.

Risk quantification of the portfolios that are formed in this part of the study is carried out via using HS, V-C and MCS methods. According to the results obtained, the results given by the VaR methods are compared. Whether the loss amount which is calculated for portfolios is correctly determined or not, is analyzed through the Backtesting method. Therefore, the method that gives the best results is specified according to the performances which are displayed by the VaR calculation methods.

3.1 Forming the Portfolios and Obtaining the Return Series

Firstly, ISE 30 price series is obtained between the dates 22.04.2013 and 30.04.2014, in order to determine the portfolios that are used in the study.

In the second stage, the criteria to be used in forming the portfolios are specified, and portfolio choices are made according to these criteria. The criteria that are chosen for first, second, and third portfolio are respectively return, volatility, and price criteria. Portfolio is formed by choosing 6 stock certificates among the stock certificates, through applying these criteria to the stock certificates which are processed in ISE 30. In Portfolio 1, the weights of the assets are specified according to the return of the assets. Among the assets that are evaluated in this portfolio, the asset with the highest return is given the maximum weight, and the asset with the lowest return is given the minimum weight proportionally. In Portfolio 2, the weights of the assets which are used in that portfolio are specified according to volatilities of the assets. In contrast to Portfolio 1 which is specified according to the return criteria, the asset with the low volatility is given the maximum weight, and the asset with high volatility is given the minimum weight in this portfolio. The weights of the assets which are evaluated in Portfolio 3 are specified according to the price criteria. By choosing 6 stock certificates among the stock certificates that are processed in ISE 30 which is ranged from low price to high price, these certificates are formed through giving great weight to the one with low price, and small weight to the ones with high price.

The assets and their weights which are put into process in the portfolios are shown in Table 3.

Table 3: The Assets and the Weights Which Are Put Into Process in the Portfolios

Portfolio 1	Weights	Portfolio 2	Weights	Portfolio 3	Weights
EREGL	50.81%	**TCELL**	18.11%	**KRDMD**	27.07%
ENKAI	21.14%	**EREGL**	18.00%	**ASYAB**	20.07%
TCELL	14.86%	**PETKM**	16.86%	**EREGL**	14.35%
TOASO	8.52%	**TTKOM**	16.74%	**EKGYO**	13.41%
PETKM	2.03%	**KCHOL**	16.11%	**SISE**	12.77%
ARCLK	2.64%	**SISE**	14.18%	**PETKM**	12.33%
	100%		100%		100%

Current value for all the portfolios that are subjected to analyze is specified as 1,000,000 TL. This value is distributed to assets, in accordance with the weights specified for the portfolios.

3.2 Application of VaR Calculation Methods on Different Portfolios

In VaR calculations, Historical Simulation, Variance-Covariance and Monte Carlo Simulation methods are preferred in both literature and in the sector. In this study, the methods are compared, applying these methods to 3 portfolios that are formed through using stock certificates which are processed in ISE 30. All data between 22.04.2013 and 30.04.2014 are used in calculations. All three methods in VaR calculations are examined separately for confidence levels of 99%, 95% and 90% and for holding periods of 1 day, 10 days, and 1 year.

3.2.1 VaR calculation through Historical Simulation Method

According to HS method, VaR calculation is made over the current value of 1,000,000 TL as per different confidence levels and different holding periods for each portfolio.

As a result of the application of the HS method which is carried out for Portfolio 1 that is formed according to return criterion, VaR result is specified approximately as 152,795 TL with the confidence level of 99% and holding period of 10 days. When the holding period is kept fixed, VaR result decreases approximately to 50,213 TL, provided that the confidence level is specified as 90%. Application results of HS method for Portfolio 1 are shown in Table 4.

Table 4: VaR with HS Method for Portfolio 1

Portfolio 1			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day)	48318.01	21713.87	15878.76
VaR (10 Days)	152794.97	68665.29	50213.04
VaR (252 Days)	767024.68	344697.01	252067.47

When application results of HS method for Portfolio 2 that is formed according to the volatility criterion seen in Table 5 are examined, 10 days' VaR result with confidence level of 95% is 86,752 TL, and when the holding period increases to 1 year, this value increases up to 435491.43 TL.

Table 5: VaR with HS Method for Portfolio 2

Portfolio 2			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day)	45635.04	27433.38	15896.94
VaR (10 Days)	144310.65	86751.97	50270.55
VaR (252 Days)	724433.73	435491.43	252356.15

When Table 6 is examined, remarkable results are obtained for Portfolio 3 which is formed according to price criterion. Rather high results are obtained in comparison with Portfolio 1 and Portfolio 2 for all confidence levels. While average 140,000-150,000 TL result is obtained for Portfolio 1 and Portfolio 2 with confidence level of 99% and for 10 days of holding period, 191,010.86 TL is obtained for Portfolio 3.

Table 6: VaR with HS Method for Portfolio 3

Portfolio 3			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day)	60402.94	30372.43	22126.03
VaR (10 Days)	191010.86	96046.05	69968.65
VaR (252 Days)	958866.91	482147.35	351239.82

When HS results for Portfolio 1, Portfolio 2, and Portfolio 3 which are formed with stock certificates that are chosen from ISE 30 are examined, the lowest VaR results are obtained for Portfolio 2 that is formed according to low volatility criterion. In this circumstance, Portfolio 2 should be preferred when a portfolio with low VaR that is formed only with stock certificates is required.

3.2.2 VaR calculation through Variance-Covariance Method

According to Variance-Covariance method, VaR calculation for each portfolio is made over the current value of 1,000,000TL.

Before the application of V-C method, normality hypothesis, which is the most important hypothesis of the method, is checked. The control of normality hypothesis for each portfolio is demonstrated in Table 7. According to the results obtained, Portfolio 1, Portfolio 2, and Portfolio 3 comply with the normal distribution (sig>p=0.05)

Table 7: Test of Normality Results for the Portfolios

	Number of Data	**Average Return**	**Standard Deviation**	**Kolmogorov-Smirnov**	**Sig**
Portfolio 1	252	987.5398	16506.699	1.125	0.159
Portfolio 2	252	69.1514	16066.837	1.138	0.150
Portfolio 3	252	-335.9776	21124.836	1.106	0.173

Portfolio's standard deviation is calculated by forming correlation and covariance coefficient matrix of each portfolio in order to obtain the results according to V-C method. VaR results are obtained for each portfolio according to 1-day, 10-day and 1-year holding periods at 99%, 95% and 90% confidence levels through using the calculated portfolio's standard deviations.

VaR result is obtained approximately as 121,381 TL for 10 days' holding period at 99% confidence level as a result of the application of V-C method which is performed for Portfolio 1 that is formed according to return criterion. When the period is kept fixed, VaR result decreases approximately to 67,202 TL, provided that the confidence level is specified as 90%. Detailed results for Portfolio 1 are shown in Table 8.

Table 8: VaR with V-C Method for Portfolio 1

Portfolio 1			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day)	38384.22	27181.96	21251.35
VaR (10 Days)	121381.57	85956.91	67202.67
VaR (252 Days)	609330.64	431500.24	337354.73

The results of the V-C method for Portfolio 2 which is formed according to volatility criterion are demonstrated in Table 9. When the obtained results are examined, VaR result per 1 day with 95% confidence level is 26,458 TL, and this value increases to 420,001.43 TL when the holding period increases to 1 year.

Table 9: VaR with V-C Method for Portfolio 2

Portfolio 2			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day)	37361.38	26457.63	20685.06
VaR (10 Days)	118147.06	83666.37	65411.89
VaR (252 Days)	593093.52	420001.85	328365.08

The results of VaR calculation that is made with V-C method for Portfolio 3 which is formed according to price criterion are demonstrated in Table 10. VaR result with 1-day holding period and with 90% confidence level is 27,196.92 TL, and this value is obtained as 49,123.11 TL when 99% confidence level is specified with the same holding period.

Table 10: VaR with V-C Method for Portfolio 3

Portfolio 3			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day)	49123.11	34786.75	27196.92
VaR (10 Days)	155340.92	110005.37	86004.20
VaR (252 Days)	779805.23	552222.59	431737.66

3.2.3 VaR calculation through Monte Carlo Simulation Method

According to MCS method, VaR calculation is made over the current value of 1,000,000TL according to different confidence levels and different holding periods for each portfolio. MCS application is performed by operating the model formed for each portfolios, 100*10000 times (produced randomly) with the return. The lowest, average and the highest result values of VAR which are found according to 1-day, 10-day and 1-year holding periods at 99%, 95% and 90% confidence levels are tabulated.

VaR results with MCS method for Portfolio 1 which is formed according to return criterion are demonstrated in Table 11. The average VaR result is calculated as 127,540.98 TL with 10-day holding period at 99% confidence level, while the highest VaR result is found as 131,550.75 TL.

Table 11: VaR with MCS Method for Portfolio 1

Portfolio 1			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day) (Lowest)	38900.00	27700.00	21500.00
VaR (10 Days) (Lowest)	123012.60	87595.09	67988.97
VaR (252 Days) (Lowest)	617518.36	439723.87	341301.92

VaR (1 Day) (Average)	40332.00	28364.00	22130.00
VaR (10 Days) (Average)	127540.98	89694.84	69981.20
VaR (252 Days) (Average)	640250.65	450264.54	351302.86
VaR (1 Day) (Highest)	41600.00	29300.00	22600.00
VaR (10 Days) (Highest)	131550.75	92654.74	71467.48
VaR (252 Days) (Highest)	660379.53	465123.08	358763.88

VaR calculation results with MCS method for Portfolio 2 which is formed according to volatility criterion are demonstrated in Table 12. The average VaR result is determined as 65,098.65 TL with 10-day holding period at 90% confidence level. This value increases to 118,079.45 with the same holding period and at 99% confidence level.

Table 12: VaR with MCS Method for Portfolio 2

Portfolio 2			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day) (Lowest)	35800.00	25600.00	20000.00
VaR (10 Days) (Lowest)	113209.54	80954.31	63245.55
VaR (252 Days) (Lowest)	568307.38	406387.40	317490.16
VaR (1 Day) (Average)	37340.00	26282.00	20586.00
VaR (10 Days) (Average)	118079.45	83110.98	65098.65
VaR (252 Days) (Average)	592754.12	417213.82	326792.62
VaR (1 Day) (Highest)	38900.00	27000.00	21100.00
VaR (10 Days) (Highest)	123012.60	85381.50	66724.06
VaR (252 Days) (Highest)	617518.36	428611.71	334952.12

VaR calculation results with MCS method for Portfolio 3 which is formed according to price criterion are demonstrated in Table 13. The average VaR result is determined as 148,540.24 TL with 10-day holding period at 99% confidence level, while the highest VaR result is obtained as 154,002.92 TL with the same holding period and confidence level.

Table 13: VaR with MCS Method for Portfolio 3

Portfolio 3			
Confidence Level	**0.99**	**0.95**	**0.90**
VaR (1 Day) (Lowest)	45000.00	32300.00	25200.00
VaR (10 Days) (Lowest)	142302.49	102141.57	79689.40
VaR (252 Days) (Lowest)	714352.85	512746.60	400037.60
VaR (1 Day) (Average)	46972.55	33149.02	25939.22
VaR (10 Days) (Average)	148540.24	104826.40	82027.00
VaR (252 Days) (Average)	745666.10	526224.37	411772.28
VaR (1 Day) (Highest)	48700.00	34400.00	27100.00
VaR (10 Days) (Highest)	154002.92	108782.35	85697.72
VaR (252 Days) (Highest)	773088.53	546083.07	430199.16

3.3 Backtesting of VaRs that are Calculated through Three Basic Method

For each portfolio, daily VaRs are back tested by comparing them with portfolios' incurred losses which are calculated with three basic VaR methods. Backtesting process is performed for 99%, 95% and 90% confidence levels.

In Backtesting process, VaR's average lines obtained from MCS results are compared. It is observed that there are huge discrepancies when the lowest and the highest values are compared.

Daily VaR results which are obtained through VaR calculation methods are compared with the daily return of each portfolio, and deviation numbers are recorded. In other words, daily expected losses at a specific confidence level for each portfolio are obtained via VaR calculation; the power of the calculations made is checked by comparing these expected losses with the actual losses. In Backtesting process, the acceptability of the deviation numbers of the methods is controlled according to green, yellow and red area expressions that are stated in Table 1 and according to acceptable error numbers specified in line with various confidence levels and observation periods in Table 2.

VaR results which are obtained through using three basic VaR calculation methods for Portfolio 1 that is formed according to return criterion, are demonstrated in Table 14. When the deviation numbers are examined, the lowest deviation number

at 99% confidence level is obtained through HS method and it is determined that this number exists in green area according to Table 1. In other words, it is specified that the numbers obtained are consistent. The deviations of the numbers that are obtained through V-C method and MCS method at 99% of confidence level are determined as 7 and 6, respectively. These values that are concluded as a result of Backtesting are compatible with error acceptance numbers that are used in Backtesting according to Table 2. However, the error numbers of the results that are obtained through V-C and MCS methods are acceptable, due to the fact that the deviation numbers of the V-C and MCS methods, in contrast to HS method, exist in yellow area according to Table 1, but the results should be doubted.

Table 14: Backtesting Results of VaR Results for Portfolio 1

Portfolio 1			
	99%	**95%**	**90%**
Historical Simulation Method	3	13	26
Variance-Covariance Method	7	8	15
Monte Carlo Simulation Method	6	8	13

VaR results that are calculated for Portfolio 2 which is formed according to volatility criterion are demonstrated in Table 15. The results of Backtesting which is performed for VaR results obtained at all confidence levels are concluded to have been in the area where the error amount is acceptable at all confidence levels according to Table 4.6. However, when the obtained results are examined at 99% confidence level according to Table 1, the Backtesting result for HS emerges in green area; while the other methods' results emerge in yellow area. Considering these results, it can be interpreted that "the error numbers of the results obtained according to V-C and MCS methods are acceptable, but the results should be doubted anyway".

Table 15: Backtesting Results of VaR Results for Portfolio 2

Portfolio 2			
	99%	**95%**	**90%**
Historical Simulation Method	3	13	26
Variance-Covariance Method	6	14	17
Monte Carlo Simulation Method	6	14	17

VaR results that are obtained through using three basic VaR calculation methods for Portfolio 3 which is formed price criterion are demonstrated in Table 16. As a result of the test for VaR results that are obtained at 99% confidence level, all of the obtained results for each of the three methods emerge in the acceptable area. When the error numbers are examined, the lowest error number at 99% confidence level is obtained through HS method and it is specified that this number exists in the green area according to Table 1. The deviation of the results which are obtained through V-C method and MCS method is specified as 6 and it is in the yellow area according to Table 1. Even if these results obtained as a result of Backtesting according to V-C and MCS methods are acceptable according to error acceptance numbers that are used in Backtesting according to Table 2, these results are obtained as the ones to be doubted.

Table 16: Backtesting Results of VaR Results for Portfolio 3

Portfolio 3			
	99%	**95%**	**90%**
Historical Simulation Method	3	13	26
Variance-Covariance Method	6	11	20
Monte Carlo Simulation Method	7	11	20

When Backtesting processes that are applied on Portfolios are examined, and when the error numbers of the methods are compared at 99% confidence level, the lowest error is obtained from HS method. The Backtesting result of HS method for all three portfolios which are examined emerges in the green area. However, when the examined confidence levels are changed into 95% and 90%, the error numbers for HS method approach to the error numbers of V-C and MCS methods; furthermore, they exceed the ones of V-C and MCS methods as seen in Table 15.

When the Backtesting process of Portfolio 2 which gives the lowest VaR result for TS, V-C and MCS methods is examined from Table 18, it is observed that TS method gives good result at the highest confidence level again, but the error numbers approach to the error numbers of V-C and MCS methods at 95% confidence level, and it is observed that the error number of HS method exceeds significantly the error numbers of the other two methods at 90% confidence level.

From the results obtained, it can be recommended for the investor to choose the most appropriate portfolio, considering the possible losses that he/she can bear and the risks that she/he can undertake. The advantages and disadvantages of VaR methods should be taken into consideration in order to evaluate the chosen portfolio and the most appropriate VaR method for the portfolio should be preferred. HS method at high confidence level can principally be used by considering the performance which was shown at high confidence level by HS method.

4. FINDINGS AND DISCUSSIONS

In this study, the effect of the methods of VaR calculations upon the hypothetical portfolios that are formed according to different criteria is investigated, by taking into consideration the importance of VaR calculations. The performances of the methods are tried to be determined by controlling the obtained results with Backtesting process. To that end, among the portfolios formed, the ones which give the lowest VaR result are tried to be determined.

The portfolio that is used in Bostancı's study (2006) has become an important reference in determining the portfolios which are used in this study. In the aforementioned study, the weighting in the portfolio which is formed by using ISE 100 Index, golden and dollar is performed with 60%-40% rule.

In the first step of the study, the returns are calculated by using the price series between 22.04.2013 and 30.04.2014 in order to determine the portfolios that are to be used. Hypothetical portfolios are formed by using the obtained return series, and the returns of the portfolios are calculated according to the determined weights. One of the attention-grabbing results in the three portfolios which are formed according to return, volatility and price criteria by using ISE 30 is that stock certificates named EREGL and PETKM are involved in all of these three portfolios. The stock certificate named SISE, however, is involved in the portfolios which are formed according to volatility and price criteria.

After the general assessment regarding the assets and portfolios to be evaluated, the application of VaR calculation methods is made over 1,000,000TL, the current value. First of all, the application of Historical Simulation Method is performed. According to the results of HS method, for 1-day withholding period and at 99% confidence level, VaR is calculated as 48318.01 TL for Portfolio 1 which is formed according to return criterion, 45635.04 TL for Portfolio 2 which is formed according to volatility criterion, 60402.94 TL for Portfolio 3 which is formed according to price criterion. When Backtesting process is performed for all portfolios of HS method, the results emerge in the acceptable area according to Table 2, and in the green area according to Table 1. In other words, the analyses performed with HS method give consistent results at 99% confidence level.

When Variance-Covariance Method, another method that is used in VaR calculation, is applied at 99% confidence level and 1-day withholding period, VaR is calculated as 38384.22 TL for Portfolio 1, 37361.38 TL for Portfolio 2, and 49123.11 TL for Portfolio 3. When these obtained results are subjected to Backtesting process, at the specified confidence level, they emerge in the acceptable area according to Table 2, but in the yellow area according to Table 1. The results are acceptable according to V-C method; however, these results are obtained as the ones to be doubted in any way.

Finally, Monte Carlo Simulation Method is applied to portfolios. According to this, VaR is determined as average 40332 TL for Portfolio 1, 37340 TL for Portfolio 2, and 46972.55 TL for Portfolio 3 at 99% confidence level and with 1-day withholding period. When these results are examined with the Backtesting process, at the specified confidence level, they emerge in the acceptable area according to Table 2, but in the yellow area according to Table 1. As in the V-C method, the obtained results of Backtesting process which is performed for MCS are acceptable, but are determined as the ones to be doubted values in any way.

When the VaR of the portfolios are examined as a result of method applications, the lowest VaR result of three portfolios is obtained in Portfolio 2 which is formed according to volatility criterion. Specifying the assets to be evaluated, Portfolio 2 according to the lowest VaR criterion outclasses the other two portfolios.

When the results of the analyses and test processes are examined, VaR results that are obtained from Variance-Covariance and Monte Carlo Simulation are so close to each other, but they emerge in the yellow area in the Backtesting process. On the other hand, VaR results of the Historical Simulation Method are higher, and emerge in the green area in test process.

When the thesis study of Bostancı (2006) which is used as a reference in forming Portfolio is examined, the highness of VaR results that are obtained with HS method draws attention. Even the content and weighting ways of the portfolios that are formed are different; HS Method's giving high VaR results similarly in different portfolios appears as an important result.

It is seen that V-C and MCS Methods give similar results (in yellow area) at 99% confidence level. When HS method is examined at 99% confidence level, it is observed that it gives good results, however it gives similar and even higher error numbers compared to V-C and MCS methods at low confidence levels.

When the regulation published by BRSA (Banking Regulation and Supervision Agency) is examined, 99% confidence level is expected for banks in VaR calculations. In the light of the findings obtained in this study, it can be recommended for banks or other investors in finance sector that HS method is moved to higher ranks in preference ranking, according to Backtesting results in high confidence level conditions. On the other hand, the results of V-C and MCS methods should be tested with Backtesting by expanding observation period.

One of the remarkable results of this study is that, as mentioned above, V-C and MCS methods give similar results. One of the reasons why V-C and MCS methods give similar results is that methods are evaluated to study based upon normality hypothesis. In addition, the fact that both of these methods use the same variance covariance matrix is considered as another reason for giving similar results.

5. CONCLUSION

The risk management process, which affects banks along with Basel negotiations, has also become the focus of other investors in the finance sector. VaR calculations have been one of the most important ways to make predictions about the future of portfolio holders for all investors who are big or small. The possibility of anticipating the potential future loss of the portfolio planned to be invested directly affects the decisions of the investor.

When the VaRs of portfolios are examined as a result of the method applications, the lowest VaR results among the four portfolios are obtained for Portfolio 4 which is constructed by using gold, foreign exchange and interest rate. When only the portfolios created by stock evaluation are examined, Portfolio 2, which is constructed according to the volatility criterion in these three portfolios, yields the lowest VaR results.When the number of overages in the GARCH results is examined, the lowest number of exposures is obtained in these portfolios giving the lowest VaR result. Portfolio 4 and Portfolio 2 provide the superiority of the other two portfolios according to the lowest RMD criteria by determining the assets to be evaluated.

When the results of constructed analyzes and test process are examined, the results of VaR obtained from Varyans-Covariance and Monte Carlo Simulation methods are very close to each other and they are in the yellow region during the Backtesting. On the other hand, the VaR results of Historical Simulation Method were higher in the green region during the test process.

In the light of this study, it may be advisable for banks or other investors in the financial sector to move to the top of the order of preference according to the retrospective test results of TS method under high confidence level conditions. On the other hand, the results of the V-K and MCS method should be tested with the Backtesting by extending the observation period.

This study can be repeated on the portfolios which are formed by using different methods of forming portfolio. Therefore, the results of the methods in different conditions can be observed. Another way to develop this study is to evaluate the series for the conditions in which the series do not provide the normality hypothesis, by expanding the observation period. Therefore, the changes in the results which are presented by the methods can be observed closely when different conditions come into question in the long observation periods.

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NON-FINANCIAL CREDIT INFORMATION SHARING AND NON-PERFORMING LOANS: AN ANALYSIS USING DOING BUSINESS DATABASE

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ABSTRACT

Purpose- This paper suggests that sharing of credit information from non-financial information sources decrease the non-performing loan rate. To analyze whether the differences in non-financial information sharing across countries have any effect on the percentage of non-performing loan, a sample of 55 countries from Doing Business 2017 is analyzed.
Methodology- Cross section regressions on country level data for the year 2015 is estimated by Ordinary Least Squares Method.
Findings- Analysis findings reveal that availability of non-financial credit information from retails and utilities companies, as addition to financial sources, in a credit reporting institution lower the bank non-performing loan rates.
Conclusion- It can be concluded that the payment behavior reported by non-financial information providers can cause to a reduction in information asymmetries between lenders and borrowers.

Keywords: Credit information sharing, non-financial information, comprehensive credit reporting, non-performing loans
JEL Codes: D82, G21, E44

1. INTRODUCTION

Theoretical and empirical studies have revealed that credit information sharing has usually positive effects on financial markets. One of these effects is its reducing effect on default rates through solving adverse selection and moral hazard problems. Asymmetric information between creditors and borrowers induce adverse selection and moral hazard problems. During due diligence, lenders may not evaluate creditworthiness and repayment performance of borrowers effectively because of lack of reliable information. After extending loans, creditors cannot intervene directly to incentive borrowers make their loan payments and to prevent them from engaging into risky investments. First cause adverse selection and the latter cause moral hazard problems.

One way to overcome asymmetric information problems of lenders is to generate specific information from monitoring borrowers past behaviors during the bank relationship. But capturing these special borrower information has some drawbacks such as being costly, time consuming, having limited scope and coverage and causing informational rent (Miller, 2003: 26; International Finance Corporation [IFC], 2012: 1-4). Sharing information about borrowers between lenders is the more common and beneficial way to gain reliable information and to reduce information asymmetries. On the lender's adverse selection effect, creditors can improve their ability to predict repayment probability using broad information exchanged. On the borrower's moral hazard effect (or incentive effect), information sharing can have incentive effect on repayment behavior thus reduce moral hazard problem. Incentive effect of information sharing can be in the form of disciplinary effect and hold up effect.

The theory confirms that, as a result of credit information sharing, the increase in the accuracy of loan repayment predictions and the improvement in the debt repayment incentives cause the default rates to drop in micro or macro level analyzes. Some studies explain the reducing effect of credit information on default rates with the improvements in banks' ability to predict loan defaults (Pagano& Japelli, 1993; Kallberg & Udell, 2003; Powell, Mylenko, Miller & Majnoni, 2004; Dierkes, Erner, Langer & Norden, 2013), while others with the enhancements in borrower's incentive to make repayments

(Padilla & Pagano, 1997; Brown & Zehnder, 2007; Doblas & Minetti, 2013; Büyükkarabacak & Valev, 2012). Houston, Lin, Lin and Ma (2010) and Jappelli and Pagano (2002) discuss this relationship by looking at both adverse selection and the moral hazard sides.

The depth (scope, content or quality) of credit information systems varies across countries and within countries (Lyman, Lythgoe, Miller, Reille & Sankaranarayan, 2011: 5; Houston et al. 2010: 487; IFC, 2012: 17). The scope of information, as much as the existence of a credit reporting system, may influence the defaults. Based on this idea Jappelli and Pagano (2002) and Powell et al. (2004) focused on the impact of sharing negative and positive data. Padilla and Pagano (2000) discuss the positive information relation with disciplinary effect. The comprehensive credit reporting system not only combines black (negative) information with white (positive) information but also combine information obtained from non-financial (non-traditional) sources as well as from financial (traditional) sources. Doing Business (DB) (2017) research revealed the importance of a comprehensive credit reporting system including credit history data from non-financial institutions such as trade creditors, leasing and factoring companies, retailers and utilities and microfinance institutions. It is seen that there has not been enough papers to investigate the effect of non-financial information sharing on defaults. The only empirical study that directly incorporates non-financial data sharing with credit market performance (access to credit) is Peria and Singh (2014).

This paper contributes to the existing literature aiming to investigate the relationship between the non-financial credit information sharing and non-performing loans as proxy for defaults. Ordinary least squares (OLS) method with heteroskedasticity robust standard error is applied on country level sample covering 55 countries for 2015, controlling country specific macroeconomic and institutional factors. The results suggest that non-performing loan rate depends on the level of non-financial information sharing and unemployment rate in a country. The plan of the paper is organized as follows: section 1 includes introduction, section 2 details comprehensive credit information sharing, section 3 is a literature review, section 4 contains data structure and methodology, section 5 reports the results and section 6 concludes.

2. COMPREHENSIVE CEDIT REPORTING SYSTEM

Borrowers evaluate their investment risks and repayment probability better than lenders do. In the credit market, the existence of borrowers with different repayment possibilities and the presence of creditors with inability to estimate these probabilities correctly lead to adverse selection. Failure of creditors to make accurate evaluations of creditworthiness increases the default rates[1] (Stiglitz & Weiss, 1981: 393; Doing Business [DB], 2017: 59). Lenders having more information about characteristics and behavior of their borrowers (Brown & Zehnder, 2007: 1884) through information sharing can improve their credit failure prediction ability. Banks that benefit credit information also can prevent lending to high risk credit applicants with bad payment history or can make better pricing for them (Miller, 2003: 26-27; Jappelli & Pagano, 2002: 2018-2019).

First incentive effect of information sharing is to discipline borrowers into exerting high effort in repaying loans (Brown & Zehnder, 2007: 1884). When borrowers realize that default information will be shared with other creditors and will damage their reputation with other lenders, they have greater incentive to repay and thus try harder to avoid defaults (Padilla & Pagano, 2000: 1952, 1978). The information shared becomes part of the borrower's reputation collateral. Borrowers try to develop a good morality of payment because late payments or defaults, as a signal of bad quality, reduce the value of this reputation collaterals making credit accessibility difficult or more expensive. This incentive mechanism, known as disciplinary effect reduces moral hazard (Padilla & Pagano, 2000: 1953; Jappelli & Pagano, 2002: 2018-2019; Miller, 2003: 26-27).

Second positive incentive effect of information sharing on borrower behavior is to lower the informational rents that banks extract from borrowers. If lenders don't share private information developed throughout the relationship, other creditors and quality borrowers cannot be aware of this information. This lowers the bargaining power of the good borrowers and causes banks to receive informational rents from them (Miller, 2003: 26). Under this situation that is also expressed as "hold-up", banks apply interest for the low-risk customer as high as for the risky customers and worsens incentive to perform and repayment performance of quality borrower's. Information sharing reduces the extraction of informational rents. Exchange of private information forces banks to make fairer loan pricing. Reduced interest rates increase borrower return and encourage borrowers to make timely payments and consequently lower delinquency and default rates (Padilla & Pagano, 1997: 227; Jappelli & Pagano, 2002: 2018-2020; Kallberg & Udell, 2003: 453; Doblas & Minetti, 2013: 202).

[1] Default is the failure to complete a payment obligation under a credit or loan agreement. Delinquency is the situation where the borrower fails to meet his/her financial obligations as and when due (World Bank, 2011: 68).

Most common vehicle of credit information sharing has been public credit registers and private credit bureaus that are also known as credit reporting service providers (CRSP)[2]. Public credit registers and private credit bureaus differentiate from each other basically in objectives, ownership and information collection way. The main objective of most credit registries is to assist banking supervision, provide high quality data for supervised financial intermediaries, improve their credit risk management and increase quality of their credit portfolios (Lyman et al. 2011: 6; IFC, 2012: 24). Credit registries are usually owned and managed by central banks or bank supervisory authorities (Peria & Singh, 2014: 7) and sharing of information is compulsory by regulations (Jappelli & Pagano, 2002: 2028). Many credit registries were established to improve the banking industry after crises led by large defaults (Powell et al. 2004: 18). Credit bureaus are usually privately owned commercial enterprises generally focusing on providing credit information to lenders to use for credit decisions (IFC, 2012: 24). They are founded by volunteer members and operate on the principle of reciprocity; members who do not provide information to the system cannot receive information (Pagano & Japelli, 1993: 1714). Public credit registries have higher coverage and are perceived more reliable. On the other hand credit bureaus present more detailed and informative information in individual loans, so more capable of solving the credibility problems (Kallberg & Udell, 2003: 451; Jappelli & Pagano, 2002: 2028) and they can provide additional value-added services such as credit scores (Peria & Singh, 2014: 7) on a competitive basis (Powell et al. 2004:25). Each types of credit reporting service providers (CRSP) have its own positive and negative aspects. No type is superior to another and each type can coexist in a market by meeting a need (IFC, 2012: 2). So registries and bureaus complement each other (Miller, 2003: 54; Powell et al. 2004: 25) even as stated in Jappelli and Pagano (2002: 2034, 2036), private and public information sharing arrangements are substitutes and they have similar effects on lending behavior and default rates.

Payment history data may be black or white. Lenders may share only black information about delinquent debts, defaults, arrears amounts, court judgments and other negative (blacklist) information. On the other hand, most credit reporting systems[3] gather also positive data that could have a bearing on creditworthiness. Positive credit data includes timely repayment, debt maturity structure, current debt exposure, credit limits, loan type, lending institution, main financial ratios, guarantees and private information such as address, birth date, family, job history and various information from public institutions (Padilla & Pagano, 1997: 206; IFC, 2012: 12; Padilla & Pagano, 2000: 1952-1953; Jappelli & Pagano, 2002: 2022; Miller, 2003: 27).

In systems where positive information is not shared, a borrower's loan application may be denied due to a single negative behavior in the past, even if the current payments are regular. In addition, in these systems, there is no information available for potential debtors with no delayed payment (IFC, 2012: 12). The most banks (76%) stated that any negative information would disqualify borrowers from receiving credit. This indicates that lack of positive data prevent lenders from making a complete credit analysis using a fuller picture of a borrower's credit history (Miller, 2003: 51). There may be disciplinary effect of black information but it has less predictive power than white and black information combined (Jappelli & Pagano, 2002: 2033; Powell et al. 2004: 13) and often result in inaccurate credit risk assessment (IFC, 2012: 14). The evaluation of positive and negative information together is more effective in establishing reputation collateral. The credit history is sometimes referred to as reputational collateral because physical collateral can be supplemented with a good payment history especially for borrowers who do not have sufficient physical. The value of reputational collateral tends to be greater when positive information is added to negative ones. Positive data are also needed for developing some decisions tools like scoring (Powell et al. 2004: 13; IFC, 2012: 1, 4). IFC (2012) includes some research that has shown that comprehensive credit reporting systems including positive information in scoring models improve the repayment prediction ability of lenders. For example findings of Powell et al. (2004) for Brazil and Argentina indicate that inclusion of positive information decrease default rate or increase credit decision success and increase lending volumes to new categories of borrowers. At the end of the 1990s, Hong Kong SAR, China and the Republic of Korea experienced a significant increase in credit defaults due to the lack of positive information. Lenders who were not aware of the debt level of current and potential borrowers continue aggressively to market credit card and faced a large number of credit card defaults. After crises, these countries switched to a comprehensive credit reporting system including both positive and negative information (IFC, 2012: 12-14).

Financial (traditional) data providers include commercial banks, other financial institutions and credit card companies. Non-financial (non-traditional) data sources usually include retailers, utilities providers, suppliers extending trade credit and all

[2] Credit registries and credit bureaus are expressed as the credit reporting service providers that administers a networked credit information exchange (World Bank, 2011: 67). A networked credit information exchange is a mechanism enabling credit information collection, processing and further disclosure to users of data, as well as value-added services based on such data (World Bank, 2011: 68). Credit reporting system is used to express networked credit information exchange. Padilla and Pagano (1997), use reputation system or reputation mechanism terms as credit information sharing system.

[3] According to Doing Business 2012 survey data, the ratio of providing both positive and negative data at credit reporting agencies is about 70 percent.

private and public entities that collect information on consumer[4] (IFC, 2012: 10; Jappelli and Pagano, 2002: 2021). Non-financial data contributors are categorized as trade creditors, retailers and utilities, leasing and factoring companies and microfinance institutions according to Doing Business (2017). Retailers may have a long history of payment data on both individuals and firms in some markets (Lyman et al. 2011: 4). Utility companies (gas, water, electricity, cable, telephone, internet, and other service providers) may also provide payment data. Trade creditors that are the source of costless and unsecured credits can also share information about how firms are committed to their payments (DB, 2017: 60; IFC, 2012: 17). Trade credit data provide fairly reliable information for small firms, but this information is not available in many systems. Similarly, leasing and factoring companies can also provide valuable data but very few factoring companies share their data with credit reporting providers. There are 36 economies collecting data from trade creditors and 110 economies reporting repayment history from financing corporations and leasing companies (DB, 2017: 61-63). Comprehensive credit reporting is expanding and the main CRSP in 50 countries report these data (DB, 2017: 63-64). Doing Business 2012 survey data report that over 40 percent of credit bureaus include data from utility companies (IFC, 2012: 17). In a survey conducted by Miller (2003), of the 63 private reporting firms that provides information about the source of their credit data, 50 included trade credit data and 43 gathered data from retail merchants (Miller, 2003: 46).

However the greatest source of credit data for most credit bureaus and credit registries is the financial sector (Miller, 2003: 37), non-financial sources of data improve the accuracy and scope of credit information and this broader information generates incentives to improve borrower discipline and allows lenders to evaluate more clearly the creditworthiness of their potential clients (DB, 2017: 64). Utility bill payment behavior may be a reliable predictor of future repayment behaviors and defaults. Collecting credit data from utility companies expand to access to finance for customers with no prior credit history and lower the arrears. For example, collecting data from telecoms can enhance the predictive power of the inquiry database and increase the acceptance rate of new loans for new borrowers who lack past payment information (IFC, 2012: 77; DB, 2017: 63).

Small business in developing countries (Miller, 2003: 46) and low-income individual borrower (at the base of the pyramid)[5] with a thin credit files may most benefit from non-financial white data. Creditors may not be willing to extend credit to unbanked (underserved) borrowers who do not have a banking relationship and tend to charge high interest rate or require collateral to cover the losses of default and the cost of due diligence. Non-financial sources of data bolster information on thin file clients most of whom lack assets to secure a loan and enhance the value of reputational collateral (IFC, 2012: 1-4; DB, 2017: 61). Developing countries are striving to increase credit access for these thin file borrowers which has limited access to the credit market (IFC, 2012: 27). As the need for reliable and accurate information on these unbanked borrowers grows (Lyman et al. 2011:3,6), the importance of non-financial resources offering credit history for them (IFC, 2012: 17) increases. Credit reporting tends to decrease defaults and delinquencies especially for the informationally opaque firms (Doblas & Minetti, 2013). Low income borrowers and micro, small, medium size enterprises (MSMEs) have been also benefited from microcredit industry that establishes repayment histories for them over the past 30 years. Some countries (Egypt and Pakistan) that have witnessed an increase in non-performing loans have reduced the level of non-performing loans by integrating microfinance institutions into their formal credit reporting systems and (IFC, 2012: 32, 33, 89). Similarly in Bolivia and Bosnia and Herzegovina inclusion of microcredit data reduced non-performing loans (DB, 2017: 63).

3. LITERATURE REVIEW

Although the aim of this study is to explore the impact of non-financial credit information sharing on the cross- country default rates, the lack of empirical studies that directly examine the relationship between them cause to focus on the literature investigating traditional credit information sharing. Therefore the paper builds on the earlier studies that have examined the role of credit information sharing on credit markets as well as the default rates. Most of the studies at country, firm, individual, contract level or model based suggested that credit information sharing has positive effects on lenders, borrowers and so whole financial market and economic conditions.

Based on their own credit market models, two premise studies, Jaffee and Russell (1976) and Stiglitz and Weiss, (1981) show that credit rationing is a rational response to adverse selection and that interest rate or any other instrument could not clear the credit market. Jaffee and Russell (1976) develop a model to analyze the loan market behavior in the case of information asymmetry about the likelihood of default between borrowers and lenders. Their model divides borrowers into two groups as honest and dishonest and lenders are unable to differentiate them. Stiglitz and Weiss, (1981) suggest a credit

[4] Public records (for instance court judgment data, bankruptcy notices, and telephone directory information) and other data sources such as databases on bounced cheques, promissory notes and protested bills of exchange, collateral registries, vehicle registries, real estate registries, personal identity records, company registries, tax authority databases, and some court records are potential data sources supplied from private and public entities that collect information on consumers (World Bank 2011: 9; IFC, 2012: 10, 12, 17; Jappelli & Pagano, 2002: 2021).

[5] Micro borrowers who are generally unbanked, poor, informally employed and having irregular income are implied as the consumers at the base of the pyramid in Lyman et al. (2011).

rationing model focusing on the role of interest rate as a means of separating low and high risks. The adverse selection aspect of interest rate emerges from risky borrowers who are willing to pay high interest rate because of their low repayment possibility.

Other researchers examined, except for two articles (Jaffee & Russell, 1976; Stiglitz & Weiss, 1981) can be divided into 4 categories. The first group includes the studies which directly (Brown & Zehnder, 2007; Doblas & Minetti, 2013; Dierkes, Erner, Langer and Norden, 2013) or indirectly (Houston et al, 2012) investigate the effect of information sharing on default rates as the basic purpose of them. In the second stage, the papers (Pagano & Japelli, 1993; Padilla & Pagano, 1997; Jappelli & Pagano, 2002; Kallberg & Udell, 2003¸ Millller, 2003; Powell et al. 2004) examining the role of exchanged information or credit reporting systems on the financial market performance and also presenting additionally findings or discussions about default rates are included. The third category consists of studies (Padilla & Pagano, 2000; Djankov, McLiesh & Shleifer, 2007; Brown, Jappelli & Pagano, 2009; Giannetti & Jentzsch, 2013; Beck, Lin & Ma, 2014; Peria & Singh, 2014) that investigate the impact of credit information system on the overall credit market, without examining its effect on the default rates. Finally, last category covers researches or working papers (Lyman et al. 2011; IFC, 2012; DB, 2017) aiming to present detailed information about credit reporting systems worldwide.

Among these studies Peria and Singh (2014) is the only paper that incorporates non-financial credit information sharing into the empirical analysis as an independent variable. Also Kallberg and Udell (2003) show that trade credit information sharing helps lenders for failure prediction by building a default prediction model.

Three of the first group authors include default rate indicators such as repayment rate, delinquency or days past due and probability of defaults as the dependent variable. Brown and Zehnder (2007) examine how credit information sharing affects loan repayment and how this incentive effect of information sharing related to relationship banking. They document that information sharing has positive effect on repayment behavior. They also find a high relationship between the incentive effect and credit activity and the presence of relationship banking conducting an experimental credit market model having 17 subjects during 20 sessions. According to their model, relationship between lenders and borrowers substitute disciplining effect of credit information sharing mechanism. Doblas and Minetti (2013) confirm that information sharing has reducing effect on contract delinquencies and defaults and this effect is more pronounced for the informationally opaque firms. They concluded that information sharing among creditors tends to enhance the repayments of firms reducing the defaults probability using firm and contract-level data. Main findings of Dierkes et al. (2013) providing aggregate and firm level evidence, document that credit information sharing improves the default prediction accuracy ratio (by nearly 20 percent) of unlisted private firms from the largest credit bureau of Germany. Firm's repayment behavior sharing and coverage ratio of the credit bureau enhance this improvement and as the value of credit information increases, the default rates decrease.

The relationship between information sharing and bank risk taking and banking crises has been tested by two cross-country studies assessed in the first group. Houston et al. (2010) examined the interactions between the creditor rights and information sharing and bank risk taking analyzing the bank data in 69 countries. Their findings suggest that stronger the creditor rights higher the bank risk taking and likelihood of financial crisis, whereas greater information sharing is associated with lower bank risk taking and reduced likelihood of financial crisis. Non-performing loan is used as one of the proxy for bank risk taking. Büyükkarabacak and Valev (2012) examine the relationship between credit information sharing and likelihood of banking crises using data from 98 countries. They offer evidence that information sharing decrease the likelihood of banking crises and this effect is more powerful in low income countries. Dependent variable is dummy variable covering systematically important banking crises in which financial and corporate sectors experience sharp increase in defaults, delinquencies and non-performing loans. It can be said that the bank crises variable is an indicator for the aggregate level of default rates.

Studies categorized in the second group aim to examine whether information sharing can enhances credit market performance by solving moral hazard and adverse selection problems and they present findings about default rates. Pagano and Japelli (1993) build a model of adverse selection when information sharing arises. Their findings show that information sharing through credit bureaus increase lending volume, decrease interest rates and default rates benefiting safe borrowers who are priced out of market by adverse selection. Kallberg and Udell (2003) conclude that past payment information sharing helps lenders for prediction of borrower failure. Including several firm-specific credibility variables gathered from Dun and Bradstreet paydex score on trade payments, they construct a failure prediction model. According to a worldwide survey conducted by Miller (2003) and aimed to collect detailed data on the credit reporting systems, 70 percent of the surveyed banks indicated that a lack of credit information would increase defaults by 25 percent or more. Also for credit review process of bankers, credit information gathered from CRSPs is more important than other data such as collateral, financial data and previous banking accounts.

Other three study included in second group provide empirical and theoretical evidence about both on general information sharing and white data inclusion. Results of a credit market model focused on the incentive problems and developed by

Padilla and Pagano (1997) show that information sharing stimulates incentive effects (hold up and disciplinary), more in the case of black information rather than white information. Also sharing information is related to lowered default rates, decreased interest rate on average and increased lending. Jappelli and Pagano (2002) provide cross-country survey based evidence revealing that information sharing increases bank lending and decreases default rates. Credit risk proxies for default rates and information sharing are also related with reduced non-performing loan. While the disciplinary effect arises only from the exchange of black information, both black and white information sharing are accepted to increase bank ability of credit evaluation. According to the findings of Powell et al. (2004) presenting empirical evidence for Argentina, Brazil and Mexico, public credit registries may improve credit access or reduce bank credit risk. The findings showed that information sharing improves the bank's ability to determine the likelihood of loan default. Also inclusion of positive information in addition to negative ones increases this predictive power.

The third category of researchers offer evidences of what effects information shared have on the financial markets, lenders and borrowers. Padilla and Pagano (2000) examined whether information sharing can correct moral hazard problem, focusing on disciplinary effect in their two-period model. Confirming experimental evidence of their earlier research (Padilla & Pagano, 1997), they indicate that sharing more information (white information or characteristics) than just past defaults (black information or behavior) reduces borrowers' incentive to make payments. When high-quality borrowers realized that banks will disclose main characteristic about their creditworthiness, they may spend less effort to avoid defaults. Brown et al. (2009) investigated the credit information sharing effect on credit market performance in 24 countries combining the Doing Business country level data and Business Environment and Enterprise Performance Survey (BEEPS) firm-level data. Findings reveal that information sharing is correlated with higher credit access and cheaper credit especially for opaque firms and in countries with weak creditor protection. Covering a data set of 129 countries, Djankov et al. (2007) argue that private credit ratios are higher in countries having creditor rights protective legal systems and credit reporting institutions. Positive effect of both public registries and private bureaus on private credit is more powerful in developing countries whereas public registries are more common in French civil law. Giannetti and Jentzsch (2013) found a positive correlation between the introduction of a compulsory identification system and financial service quality and credit access and show that this correlation is higher in countries with a credit reporting system. Beck et al. (2014) provide evidence that firms in countries with better credit information sharing systems and higher branch penetration tend to disclose all of their sales and pay higher taxes.

Among other authors, only Peria and Singh (2014) included the non-financial data into the empirical analysis investigating the impact of introducing credit information sharing systems on firms' access to bank finance. They combined firm-level World Bank Enterprise Survey (WBES) data with Doing Business (DB), World Development Indicators (WDI) and International Country Risk Guide (ICRG). The results reveal that after credit bureau reforms, access to finance increases, interest rates drop, maturity lengthens, and the share of working capital financed by banks increases. These effects are more pronounced in the presence of higher coverage, scope and accessibility of the credit reporting systems and the weaker the legal environment. Relatively small, young and opaque firms are more likely to benefit from the effects of credit bureau reform.

Finally, last category refers to the researches or working papers covering detailed information about credit reporting systems worldwide. Lyman et al. (2011) focused on the effective credit reporting for microcredit industry and suggest that bureaus, registries and microfinance institutions serve similarly but each have different limitations. IFC (2012) presents detailed information on credit reporting systems via second "Credit Reporting Knowledge Guide". This guide focuses primarily on the emerging markets, individuals and MSMEs that will benefit greatly from the development of credit reporting systems. DB (2017) provide results of a research focusing on the importance of a comprehensive credit reporting system including credit history data from non-financial institutions such as trade creditors, leasing and factoring companies, retailers and utilities and microfinance institutions. This research shows that in economies utilizing these alternative entities that provide payment history information especially on low-income or non-bank clients, coverage ratios of credit reporting system are higher.

In summary, the reducing effect of information sharing on default rates through solving either adverse selection or moral hazard problems has been reported in the credit information literature. Literature review is summarized in Table 1 covering data level, observation number, analysis period and the impact of credit information sharing on the main factor examined as well as on the default rate.

Table 1: Summary of the Credit Information Sharing Literature Review

Authors, Publication Year	Data level	Observation No.	Period	Default effect	Main effect
Jaffee and Russell, 1976	model				credit rationing
Stiglitz and Weiss, 1981	model				credit rationing
Brown and Zehnder, 2007	model			lower default	lower default
Doblas and Minetti, 2013	firm + contract	USA, 28.623	1995-2007	lower default	lower default
Dierkes et al. 2013	firm	Germany, 25.344	2002-2005	lower default	lower default
Houston et al. 2010	country + bank	69 + 2.400	2000-2007	lower default	lower bank risk
Büyükkarabacak and Valev, 2012	country	98	1975-2006	lower default*	lower bank crises
Pagano and Japelli, 1993	model			lower default	higher lending
Padilla and Pagano, 1997	model			lower default	higher incentive effect
Jappelli and Pagano, 2002	country	40	1994-1995	lower default	higher lending
Kallberg and Udell, 2003	firm	USA, 2.723	1988	lower default	higher predictive power
Millller, 2003	country	77	1999-2001	lower default	reporting systems
Powell et al. 2004	country+ contract	3+ 316.6313	1999-2002	lower default	higher access, lower credit risk
Padilla and Pagano, 2000	model				lower disciplinary effect**
Djankov et al. 2007	country	129	1978-2003		higher private credit ratio
Brown et al. 2009	country + firm	24+ 5.717	1996-2004		higher access, lower credit cost
Giannetti and Jentzsch, 2013	country	172	2000-2008		higher financial services
Peria and Singh, 2014	country + firm	63+75.000	2002-2013		higher access
Beck, Lin and Ma, 2014,	country + firm	102 +64.000	2002-2010		sales and tax
Lyman et al. 2011					microcredit industry
IFC, 2012					low income borrower
DB, 2017					comprehensive reporting

Note: The data level in the second column indicates whether the researches are conducted at the country or firm level or both or use a hypothetical model. The third column shows the observation numbers as the number of countries, firms or contracts. Period covered by analyzes can be seen in the fourth column. While fourth column shows researches that have findings about default rates, the last column exhibits how the main dependent variable of articles is affected from information sharing.

* denote indirectly. Information sharing has a reducing effect on bank crises that is an indicator for the aggregate level of default rates.

** represent the conditions when white information shared. Sharing more information than negative black data reduces borrowers' repayment incentive rather than increasing them (Padilla & Pagano, 2000: 1978).

Apart from the literature on credit information sharing, papers that investigate the determinants of non-performing loan are reviewed in this part of the article. Berger and Young (1997) relate non-performing loans (problem loans) to bank efficiency. Salas and Saurina (2002) investigate the macroeconomic and bank-level determinants of problem loans (credit risk) of Spanish banks. Ranjan and Dhal (2003) indicate that non-performing loans of Indian banks are influenced by terms of credit in the presence of bank size and macroeconomic conditions. Fofack (2005) searched the main driving factors of non-performing loans in Sub-Saharan Africa. Jiménez and Saurina (2006) find strong relation between non-performing loans (loan losses) and credit growth. Louzis, Vouldis and Metaxas (2012) explain the non-performing loans in Greek banking system by macroeconomic factors and by bank ownership concentration. Atanasijević and Božović (2016) found that exchange rate, GDP growth rate and loan size induce non-performing loans in Serbian banks. Yağcılar and Demir (2015) and Isik and Bolat (2016) explain the main determinants of non-performing loan in the Turkish banking sector by bank-specific and macroeconomic variables. Findings of Cifter, Yilmazer and Cifter (2009) reveal a relationship between sectorial production cycle and sectorial non-performing loans in the Turkey. Boss (2002) for Austrian banking sector and Jakubik and Schmieder (2008) for Czech and the German credit risk environment modeled credit risk on macroeconomic factors. Rinaldi and Sanchis (2006) build an empirical model of non-performing loan ratio to find the best combination of factors causing financial fragility for seven euro area countries. Empirical model developed by Berge and Boye (2007) reveals that real interest rate and unemployment significantly contribute to the banks share of problem loans rises.[6]

4. DATA AND METHODOLOGY

To analyze whether the differences in non-financial information sharing across countries have any effect on the percentage of non-performing loan, cross-sectional analysis method is employed on a sample of 55 countries for 2015. Data set is mainly shaped according to the basic independent variable, non-financial information sharing (NFIS) data. Data on non-financial data availability that is collected from "depth of credit information index" of World Bank Doing Business 2017 (WBDB, 2017) includes data between June 2015 and June 2016. Therefore 2015 is the analysis year on which all other variables are collected.

[6] Although there are differences in their meanings, it is seen that non-performing loans are often expressed as problem loans, bad loans, loan losses, loss loans, doubtful loans, default, delinquency, arrears, past due or overdue loans. And also non-performing loan can proxy for bank credit risk, bank asset quality and bank crises.

4.1. Data Construction

Based on the literature on credit information sharing and on the non-performing loan, information sharing variables and cross-country control variables are determined and explained in the data construction section.

4.1.1. Non-Performing Loan

The dependent variable, non-performing loan (NPL) data is obtained from the WDI. The ratio of bank non-performing loans to total gross loans measures asset quality in the loan portfolio and a high ratio may be an indicator of the increased risk of credit portfolio. Loans with delays in principal or interest payments over 90 days or with payments that are not expected to be received are classified as non-performing (www.worldbank.org). Volume of non-performing loans is one of the indicators of exposure to credit risk of a financial institution (IFC, 2012: 85). Non-performing loan rate was used as alternative measure of bank risk taking in Houston et al. (2010: 496) and as instrumental variable in Beck et al. (2014: 777). In Jappelli and Pagano (2002), information sharing is associated with lower non-performing loan and according to Büyükkarabacak and Valev (2012) bank crises include sharp increases in the non-performing loans.

4.1.2. Non-Financial Information Sharing

WBDB index measures rules and practices affecting the coverage, scope and accessibility of credit information available through CRSPs. This index ranges from zero to eight and these eight characteristics included are (www.doingbusiness.org):

1. Data on both firms and individuals are distributed,

2. Both positive and negative credit data are distributed,

3. Data from retailers and utility companies (in addition to data from banks and financial institutions) are distributed,

4. At least 2 years of historical data are distributed

5. Data on loan amounts below 1% of income per capita are distributed

6. Borrowers have the legal right to access their data in the credit bureau or credit registry

7. Banks and financial institutions can access borrower' credit information online,

8. Credit bureau or credit registry offer credit scores as a value-added service to help banks and financial institutions evaluate the creditworthiness of borrowers?

When a country's credit information providers have each of these attributes; a value of one is added to the index. Data on the use of non-financial credit information is obtained from the third question that includes credit information sourced from retailers and utility companies. There are 30 economies with 8 score, highest level of the index, answering all question as yes and so utilizing credit information from retailers and utilities. 23 economies of 48 economies with 7 score utilizing data from retailers and utilities are excluded from sample because they are lacking of one of the other characteristics. Remaining 25 economies having 7 score and not using non-traditional source of credit information from bureaus or registries are included in the sample. So the sample is limited to 55 economies according to the main explanatory dummy variable, NFIS. Peria and Singh (2014), Houston et al. (2010), Büyükkarabacak and Valev (2012), Beck et al. (2014), Brown et al. (2009) either used this index directly or constructed their own index based on the depth of credit information.

4.1.3. Coverage Ratio

One of the independent variable, coverage ratio (COVER), represents the percentage of adult population covered by the largest credit bureau or credit registry of the economy (DB, 2017). Coverage ratio is the number of records (about individual and firms) in the bureau or registry divided by the adult population in the country (IFC, 2012: 7). The data is derived from the main index, depth of credit information index-WBDB 2017. However coverage data are obtained from WBDB-2017 reports, the information is mainly on the information of the year 2015. The 2017 coverage ratio discloses the number of adults and companies listed in a bureau or registry as of January 1, 2016 taking into account the credit information for the past five years. Also those that have no borrowing history in the past five years but for whom a creditor requested a credit report from the system in the period between January 2, 2015, and January 1, 2016, are also included in the coverage ratio (www.doingbusiness.org). Depth of credit information index includes both credit bureau and credit registry coverage separately. Higher coverage ratios are used for each economy. Averaging the bureau coverage and registry coverage may not generate meaningful information because of differences in their primary objectives and benefits. So using the higher one of these coverage ratios fits more this research purpose. As explained and exemplified in the DB (2017), collecting negative or full payment data from non-financial companies can lower the arrears by increasing coverage ratio of the CRSPs. Houston et al. (2010) use coverage ratio of both registries and bureaus to capture their effect on NPL as proxy of

banks risk taking and found significant negative relation. Coverage ratio is one of the variables analyzed in the Giannetti and Jentzsch (2013) and Peria and Singh (2014).

4.1.4. Macroeconomic Factors

Several variables are added to control macroeconomic and institutional differences. Seven of among the nine control variables included in this research; gross domestic product per capita (LGDPPC), gross domestic product (LGDP), gross domestic product growth (GDPG), unemployment rate (UNEMP), interest rate (INTR), inflation (INF), bank capital to asset ratio data (CAR) were obtained from the WDI. These seven WDI based variable are used to homogenize economic and financial performance of countries.

As the most relevant summary of aggregated economic performance (www.worldbank.org), gross domestic product (GDP), GDP per capita and GDP growth rate variables are entered in the regressions. Houston et al. (2010), Büyükkarabacak and Valev (2012), Jappelli and Pagano (2002), Djankov et al (2007), Giannetti and Jentzsch (2013) and Beck et al (2014) use all of these economic indicators together or separately. And also papers (Jiménez & Saurina, 2006; Louzis et al. 2012; Atanasijević and Božović, 2016; Fofack, 2005; Salas & Saurina, 2002; Isik & Bolat, 2016) exploring the causes of non-performing loans analyzied GDP growth rate. Unemployment rate (UNEMP) is the broadest indicator of economic activity as reflected by the labor market and usually high values point to inefficiencies in resource allocation (www.worldbank.org). Unemployment rate is one of the macroeconomic indicators in bad loan literature (Louzis et al.2012; Berge & Boye, 2007; Boss, 2002; Jakubik & Schmieder, 2008; Isik & Bolat, 2016). As in a number of credit information studies (Brown & Zehnder, 2007; Houston et al., 2010; Büyükkarabacak & Valev, 2012) and general non-performing loan studies (Louzis et al. 2012; Fofack, 2005), real interest rate (INTR) reflects the differences in competitive conditions of economies. Inflation, annual GDP deflator, (INF) that shows the rate of price change in the economy is one of the economic control variables as in the other papers examined (Houston et al. 2010; Büyükkarabacak & Valev, 2012; Powell et al. 2004; Djankov et al. 2007; Brown et al. 2009; Giannetti & Jentzsch, 2013; Peria & Singh, 2014; Fofack, 2005; Isik & Bolat, 2016). The ratio of bank capital to total assets ratio (CAR) indicates the level of financing of assets with leverage ratio. As measure of capital adequacy, CAR shows the extent to which banks can cope with unexpected losses (www.worldbank.org). Higher CAR implies stability in Houston et al (2010) and lower CAR reflects solvency ratio in Salas and Saurina (2002). Berger and Young (1997) found that reduction in bank capital leads to increased problem loans.

4.1.5. Institutional Factors

The institutional environment will likely influence lending decisions. Weak institutional and judicial systems deteriorate the credit market performance through increasing information asymmetries, bank risk taking, contract enforcement costs and reducing incentives to lend and to make repayment and so decreasing access to finance. Credit reporting can mitigate these negative effects and even may substitute for inadequate institutional environment. General view is incentive effect of information sharing is stronger in economies with weak institutional environment and poor legal protection (Jappelli & Pagano, 2002; Brown et al. 2009; Houston et al., 2010; Peria & Singh, 2014; DB, 2017). However, legal and regulatory framework that is clear, predictable and supportive for all participants in the system, contributes to the effective operation of credit reporting systems in the long run (IFC, 2012:2, 3739).

Different indicators from various sources have been used to proxy for the institutional quality differences in country level researches. Rule or Law, Corruption, Government Effectiveness indicators from WGI project and Law and Order, Contract Enforcement, Creditor Rights, Legal Origin indicators from other sources are among the commonly used variables in articles examined (Jappelli &Pagano, 2002; Büyükkarabacak & Valev, 2012; Beck et al. 2014; Houston et al. 2010; Djankov et al. 2007; Giannetti & Jentzsch, 2013; Peria & Singh, 2014). To be able to control legal and institutional discrepancies among economies, legal rights (LEGAL) and governance (GOVERN) variables are included.

Legal Rights: Jappelli and Pagano (2002); Djankov et al. (2007); Brown et al. (2009), Houston et al. (2010) used creditor rights index. These authors take into account only creditor right that provide more protection to lenders in case of default, however according the IFC (2012: 37), the legal framework should be designed to protect consumer rights as well as the creditors. Therefore, “strength of legal rights index-WBDB, 2017” including legal rights of both borrowers and lenders is used to control for the changes in legal environment of countries. The strength of legal rights index indicates the protective level of collateral and bankruptcy laws for borrower and lenders rights. This variable ranges from 0 to 12, and higher values correspond to stronger legal rights facilitating credit access (www.doingbusiness.org).

Governance: Governance control variable, sourced from Worldwide Governance Indicators (WGI) project, is a broader institutional quality indicator. The WGI project, initiated by Daniel Kaufmann and Aart Kraay, are composite governance indicators based on over 30 underlying data sources (www.govindicator.org). The WGI measures governance with six comprehensive sub-components, covering more than 200 countries since 1996. Six indicators are Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and

Control of Corruption (Kaufmann, Kraay & Mastruzzi, 2010: 2). Houston et al. (2010) include all of six dimensions of WGI as separate variables; Beck et al. (2014) use Rule of Law, Control of Corruption and Government Effectiveness from the WGI database. Rule of Law and the Corruption Index in the Büyükkarabacak and Valev (2012) are from ICRG and Jappelli and Pagano (2002) use rule of law index from La Porta, Lopez-De-Silanes, Shleifer and Vishny (1997). The simple average of six governance dimensions of WGI index is measured and entered in the regressions to proxy for governance quality[7]. This index provides a variable that can ranges from 0 and 100. Higher governance scores indicate that corporate governance can create an appropriate environment to enhance the performance of the credit market.

4.2. Descriptive Statistics and Methodology

Descriptive statistics of variables are reported at the Table 2. Apart from governance (0-100) and legal rights (0-12) variables that are index values, variables are percentage and logarithmic values of the related data. NFIS is the only dummy variable that takes 1 in the case of non-financial data availability. Research sample contains economies with different income level (21 high income, 17 upper middle income, 14 lower middle income and 3 low income economies). Summary statistics appear to reflect these differences which are controlled in analyzes. The average of the NPL ratio is 6.7%. NPL takes the minimum value in Uzbekistan (0.4) and highest value in Greece (36.7). Coverage ratio of the sample with a 64% mean is relatively high. The high variability in coverage (32.2) and in governance (24.2) variables represents the diversity among countries.

Table 2: Summary Statistics of Variables

Variable	Symbol	Data type	Source	Mean	St.Dev	Min	Max
Non-performing Loan	NPL	%	WDI	6.7	7.6	0.4	36.7
Non-financial Information Sharing	NFIS	dummy	WBDB	0.5	0.5	0.0	1.0
Credit Provider Coverage	COVER	%	WBDB	64.3	32.2	7.0	100.0
Gross Domestic Product Per Capita	LGDPPC	Log	WDI	3.9	0.5	2.8	4.8
Gross Domestic Product	LGDP	Log	WDI	11.2	0.8	9.9	13.3
Gross Domestic Product Growth	GDPG	%	WDI	3.7	4.6	-9.9	26.3
Unemployment Rate	UNEMP	%	WDI	7.7	5.3	0.5	25.9
Real Interest Rate	INTR	%	WDI	7.1	6.5	-12.0	25.7
Inflation, GDP deflator	INF	%	WDI	3.5	7.6	-17.2	38.4
Bank Capital to Assets	CAR	%	WDI	10.5	2.9	5.1	20.3
Legal Rights	LEGAL	index	WBDB	5.4	3.1	0.0	12.0
Governance	GOVERN	index	WGI	52.5	24.2	8.5	98.9

Note: The analysis covers a sample of 55 countries; Argentina, Armenia, Bahrain, Belarus, Canada, China, Czech Republic, Dominican Republic, Ecuador, Egypt, Georgia, Germany, Greece, Honduras, Hong Kong, India, Iran, Ireland, Italy, Jamaica, Kenya, Korea, Latvia, Lithuania, Malaysia, Mexico, Morocco, New Zealand, Nicaragua, Pakistan, Panama, Peru, Poland, Portugal, Romania, Russian Federation Rwanda, Saudi Arabia, Serbia, Singapore, Taiwan, Tajikistan, Tanzania, Thailand, Turkey, Uganda, Ukraine, United Kingdom, United States, Uruguay, Uzbekistan, Venezuela, Vietnam, West Bank-Gaza and Zambia.

This paper regresses the NPL on the 11 explanatory variables in 6 regression specifications determined according to the correlation between the variables. Following equations express this relationship, where, NPL: dependent variable, X_i: independent variables, ε_i: error term.

$$NPL_i = \alpha + \beta X_{i} + \varepsilon_i$$

$$NPL_i = f \text{ (credit information sharing variables, macroeconomic variables, institutional quality variables)}$$

$$NPL_i = \alpha + \beta_0(NFIS) + \beta_0(COVER) + \beta_0(LGDPC) + \beta_0(LGDP) + \beta_0(GDPG) + \beta_0(UNEMP) + \beta_0(INTR) + \beta_0(INF) + \beta_0(CAR) + \beta_0(LEGAL) + \beta_0(GOVERN) + \varepsilon_i$$

Table 3 presents correlations among variables included in the analysis. NPL is negatively correlated with the main explanatory variable NFIS and positively correlated with UNEMP. Variance inflation factor values (VIF) in the Table 3 and Table 4 that are below 5 indicate that there is not an important multicollinearity problem[8].

[7] A simple average index of the six subcomponents of WGI is also measured in the Kaufman, Kraay and Mastruzzi (2003, 2008, and 2009). Daly and Vo (2013) and Şahin, Doğukanlı and Şengül (2016) also used the average of the WGI index in their analysis about the international portfolio investment.

[8] The VIF value is commonly compared to 5 (or 10) to determine whether multicollinearity is effective and if VIF is greater than 5 (or 10), multicollinearity is accepted as important (Güriş, Çağlayan & Güriş 2013: 294).

Table 3: Correlations between Variables

	NPL	NFIS	COVER	LGDPPC	LGDP	GDPG	UNEMP	INTR	INF	CAR	LEGAL
NFIS	**-0.49***	1.00									
COVER	-0.06	0.25	1.00								
LGDPPC	-0.14	0.14	**0.77***	1.00							
LGDP	-0.15	0.00	**0.48***	**0.57***	1.00						
GDPG	-0.19	0.03	-0.15	-0.06	-0.07	1.00					
UNEMP	**0.49***	-0.08	0.01	-0.07	-0.29	0.09	1.00				
İNTR	-0.12	0.07	-0.34	-0.40	**-0.52***	**0.53***	0.12	1.00			
İNF	0.27	-0.23	-0.06	-0.27	-0.10	-0.33	0.00	**-0.55***	1.00		
CAR	0.12	0.01	-0.18	-0.32	**-0.52***	0.16	0.18	**0.48***	-0.04	1.00	
LEGAL	-0.17	0.13	0.23	0.14	0.07	-0.04	-0.24	-0.21	0.08	-0.09	1.00
GOVERN	-0.15	0.22	**0.67***	**0.80***	0.35	0.05	-0.10	-0.29	-0.29	-0.31	**0.46***
VIF	3.99	4.10	3.72	2.49	2.20	2.01	2.15	1.40	1.21	1.20	1.00

Note: * denotes the correlation coefficients of variables are significant at the 1% level. The last row shows variance inflation factor values (VIF) that ranges from 1 and 4.10.

According to correlation matrix of variables in the Table 3, statistically significant correlations among independent variables are accepted to be decisive when constructed regression models. Variables that are found to be statistically high correlated with each other are not included in the same regression model. For example COVER variable is not entered in the same regression with variables that has significant correlation with itself such as LGDPPC (0.77), LGDP (0.48) and GOVERN (0.67). It can be said that LGDP may be substitutes for LGDP variables. CAR and LGDP are analyzed in different regression equations. The INTR variable is not entered into the regressions model in which the one of the variables INF, CAR, LGDP or GDPG are included. Due to the high correlations, GOVERN excludes LGDPPC and LEGAL in the same equations. In this way, 6 regression equations were formed considering the level of correlation and mutually exclusive variables. The 6 regression equations generated by considering this correlation constraint are as follows.

1. $NPL_i = \alpha + \beta_0(NFIS) + \beta_0(COVER) + \beta_0(GDPG) + \beta_0(UNEMP) + \beta_0(INF) + \beta_0(CAR) + \beta_0(LEGAL) + \varepsilon_i$

2. $NPL_i = \alpha + \beta_0(NFIS) + \beta_0(COVER) + \beta_0(UNEMP) + \beta_0(INTR) + \beta_0(LEGAL) + \varepsilon_i$

3. $NPL_i = \alpha + \beta_0(NFIS) + \beta_0(LGDPPC) + \beta_0(GDPG) + \beta_0(UNEMP) + \beta_0(INF) + \beta_0(CAR) + \beta_0(LEGAL) + \varepsilon_i$

4. $NPL_i = \alpha + \beta_0(NFIS) + \beta_0(LGDPPC) + \beta_0(UNEMP) + \beta_0(INTR) + \beta_0(LEGAL) + \varepsilon_i$

5. $NPL_i = \alpha + \beta_0(NFIS) + \beta_0(GDPG) + \beta_0(UNEMP) + \beta_0(INF) + \beta_0(LEGAL) + \varepsilon_i$

6. $NPL_i = \alpha + \beta_0(NFIS) + \beta_0(GDPG) + \beta_0(UNEMP) + \beta_0(INF) + \beta_0(GOVERN) + \varepsilon_i$

All parameter estimates of 6 regressions based on ordinary least squares (OLS) are presented in Table 4. Heteroscedasticity is common in cross-sectional data and the presence of heteroscedasticity leads to inefficient OLS estimates (Long & Ervin, 2000: 217; White, 1980: 817). Breush-Pagan/Cook–Weisberg (BP/CW) test and White test are applied to determine the presence of heteroscedastic errors. According to the BP/CW test results, the rejection of the hypothesis Ho, which expresses the constant variance, at 1% level in all of the regressions reveals the the heteroscedasticity problem. Results of White test that have the same Ho hypothesis confirm the heteroscedasticity problem at %5 level for most of the regressions. The heteroscedasticity problem was corrected by using robust standard errors.

5. FINDINGS AND DISCUSSIONS

Table 4 presents the results of cross-sectional ordinary least squares regressions with heteroskedasticity robust standard errors for a sample of 55 countries in the year of 2015.

Table 4: Coefficient Estimates of Explanatory Variables.

Dependent variable: Non-Performing Loan (NPL)						
	1	2	3	4	5	6
NFIS	**-6.744**	**-5.552**	**-6.866**	**-5.420**	**-6.816**	**-6.762**
	[0.002][a]	[0.026][b]	[0.001][a]	[0.017][b]	[0.000][a]	[0.000][a]
COVER	-0.013	-0.045				
	[0.742]	[0.299]				
LGDPPC			-0.365	-3.921		
			[0.865]	[0.115]		
LGDP						
GDPG	-0.336		-0.326		-0.300	-0.298
	[0.326]		[0.323]		[0.340]	[0.348]
UNEMP	**0.677**	0.335	**0.663**	0.269	**0.679**	**0.671**
	[0.021][b]	[0.192]	[0.017][b]	[0.259]	[0.009][a]	[0.011][b]
INTR		-0.151		-0.225		
		[0.626]		[0.444]		
INF	0.082		0.076		0.086	0.086
	[0.601]		[0.646]		[0.565]	[0.580]
CAR	0.246		0.247			
	[0.356]		[0.367]			
LEGAL	0.091	0.013	0.069	-0.086	0.047	
	[0.703]	[0.959]	[0.774]	[0.746]	[0.841]	
GOVERN						-0.003
						[0.942]
CONSTANT	3.829	10.388	4.652	24.072	5.695	6.142
	[0.362]	[0.018][b]	[0.646]	[0.034][b]	[0.015][b]	[0.033][b]
Nu. of obser.	45	32	45	32	46	46
F statistics	4.28	1.94	4.41	2.00	4.62	4.55
prob > F	[0.002][a]	[0.122]	[0.001][a]	[0.112]	[0.002][a]	[0.002][a]
R2	0.53	0.36	0.53	0.41	0.52	0.52
BP/CW Test	16.02	20.55	15.17	16.58	12.8	13.51
prob > chi2	[0.000][a]	[0.000][a]	[0.000][a]	[0.000][a]	[0.000][a]	[0.000][a]
White's test	42.98	30.79	43.27	30.49	37.41	37.44
prob > chi2	[0.139]	[0.043][b]	[0.132]	[0.046][b]	[0.007][a]	[0.007][a]
Mean VIF	1.18	1.24	1.19	1.26	1.14	1.12

Note: Table 4 reports the estimations of the 6 cross section regressions estimated by OLS. P-values that are presented in parenthesis under independent variables imply heteroskedasticity robust standard errors. a, b and c represent the significance at the 1%, 5% and 10% levels, respectively.

The dependent variable is non-performing loan (NPL). Main explanatory variable is the non-financial information sharing (NFIS). Control variables are coverage ratio (COVER), gross domestic product (LGDP), gross domestic product (LGDPPC), gross domestic product growth (GDPG), unemployment rate (UNEMP), interest rate (INTR), inflation (INF), bank capital to asset ratio (CAR), legal rights (LEGAL) and governance (GOVERN). NFIS is a binary variable that equals 1 for countries in which information from retailers and utility companies are shared via credit reporting institutions.

Examining the heteroskedasticity consistent OLS estimation results in Table 4, it is seen that coefficients of NFIS are negative and statistically significant and this negative relation are meaningful for the 4 of the 6 specifications. The coefficients of NFIS are significantly different from zero at the 1% level in these four estimation (1., 3., 5. and 6. regressions). In countries where credit reporting institutions collect data from retailers and utility companies, the non-performing loan rate tends to be lower than in those where such information is not available.

This relationship is similar to findings of the Peria and Singh (2014) and Kallberg and Udell (2003). Peria and Singh (2014) provide evidence that non-financial information sources facilitate the access to finance. In their research, to reflect the scope and quality of credit information, depth of credit information index and its subcomponents are entered in the regressions separately. Data from non-financial institutions (retailers and utility companies) is analyzed as one of the credit bureau reform indicators. It is found that non-financial credit information has positive impact on the access to finance at

the 10% significance level but its contribution is lower than other components. According to the model developed by Kallberg and Udell (2003), trade credit information sharing allows creditors to more accurately predict defaults.

Also empirical evidence confirms the results of Jappelli and Pagano (2002) and Powell et al. (2004) concluding that sharing positive information in addition to negative payment history data provides more information to lenders for accurate credit risk evaluation and thus reduces the level of problem loans. Furthermore, findings is consistent with the Doing Business (2017) research focusing on the comprehensive credit reporting system and with the existing literature (detailed in the literature review section as first and second group) suggesting that credit information sharing has reducing effect on default rates.

This cross-sectional relationship continues when the other economic and institutional determinants of the NPL are controlled. Examining the 4 specifications, there is a significant positive correlation between NLP and only one of the control variables, the unemployment rate. This relationship is consistent with the findings of some NPL studies (Berge & Boye, 2007; Jakubik & Schmieder, 2008; Louzis et al. 2012). These studies conclude that unemployment significantly contribute to the problem loans, non-performing loans or household defaults. The explanation for these similar findings is often that unemployment reduces the income level and increases the borrowing rate, thereby reducing the repayment ability and contributing to default rates.

Overall, the suggestion that credit information collected from a broader source of information reduce non-performing loan rates is confirmed. However with these country level findings, any clear conclusions cannot be drawn as to how non-financial information sharing reduces asymmetric information, theory confirm that this can be possible through reducing adverse selection or moral hazard problems. Non-financial information sharing can solve the problem of adverse selection by helping lenders to determine the default risk of borrowers. Payment behavior data reported by non-financial sources, in this case by retailers and utility companies may be combined with financial information and allows for a full credit analysis by creditors. These data may be more valuable for the credit evaluation process of borrowers with limited borrowing history with a financial institution. Comprehensive data may contribute to establish good relationship with lenders and to create credit records. Utility bill and retailer payment record of small and young firm's owners may be also needed. Evaluating credit history of a business and its owner together gives more accurate insight for risk assessment. Non-financial information sharing can be helpful in solving the problem of moral hazard by promoting borrowers who have delays in past payments to non-financial institutions. That is, the reputation of a loan candidate who has a delayed telephone or gas payment, or fails to pay a trade credit on time, or who has trouble with leasing and factoring payments, is relatively weak. When this borrower knows that this non-financial payment information is shared via credit bureaus or credit registries, he will be able to pay more attention to financial payments in order to strengthen his reputation and increase his credibility in banks.

6. CONCLUSION

The information asymmetries on the credit market brings with it adverse selection problems during the credit appraisal process and moral hazard problems after extending the credit line. Theory confirms that credit information sharing systems reduce information asymmetries, adverse selection and moral hazard problems. Information shared are presented to led to reduced default rates by increasing the prediction accuracy of borrower defaults and enhancing the incentives for debt repayments in the micro or macro level analyses. This reducing effect of information sharing on the defaults may be more pronounced in the credit reporting systems that collect information from all related sources beyond just financial institutions. Although the relationship between the comprehensive information sharing and defaults has not been investigated empirically sufficiently, a few detailed universal research (DB, 2017; WB, 2011; IFC, 2012) discuss that information collecting from broader source of data contribute more to the credit market performance.

The aim of this study is to examine whether sharing information from wider data sources is a mitigating effect on defaults. To achieve this aim, the relationship between the presence of non-financial information sharing and the bank non-performing loan was investigated at the country level. According to the depth of the credit information index, 55 countries considered having a comprehensive credit reporting system for collecting and distributing data from retailers and utilities were analyzed by controlling country-specific economic and institutional factors. Estimation results indicate that countries that integrate the data of retailers and utility companies into their credit reporting systems have lower non-performing loan rate. It can be concluded that information asymmetries between lenders and borrowers tend to be decreased by comprehensive information sharing. By extending the scope of shared information, creditors can access more information for a broader borrower group and can more accurately predict repayment probability of their potential borrowers. In addition, the negative non-financial payment history can motivate borrowers to regularly make credit payments and maintain a good reputation.

The findings of this study should be confirmed by further research conducted at firm or contract level. The impact of the development within the scope of a country's credit reporting system on non-performing loans can be examined in detail. If

appropriate data is available, the effects of information obtained from other non-financial sources, such as microfinance institutions or trade creditors, on credit repayment behavior may be listed also among the topics to be discussed in the future.

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CATCHING ZEITGEIST: SOCIAL MEDIA PRESENCE OF TURKISH INTERMEDIARY INSTITUTIONS

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ABSTRACT

Purpose- Social media has become an important aspect of finance in the past few years and all reputable firms like to present themselves in social media, because it implies a corporate identity from the investors' point of view. Especially for generation Y and millennials who are born to the age of internet, social media has become a way of life. It is also the key of life for corporations that want to reach these generations as a part of their client portfolio. The aim of this paper is to investigate the social media presence of Turkish intermediary institutions and figure out whether these institutions have managed to make an online impression and whether this impression has taken an effect on the financial front for these firms by analyzing related income and other related indicators such as client complaints as well as taking into account the strategies involving Istanbul Financial Center Project (IFC).

Methodology- Data belonging to a total of 66 intermediary institutions are collected and independent t-test and parametric and nonparametric correlations analyses are applied to data.

Findings- According to analysis results there is a significant relationship between social media presence of intermediary institutions and authorization certificate types of these institutions, forex income and the number of client complaints. Location of intermediary institutions is found not to be significant, opposite of suggested by IFC.

Conclusion- Only half of Turkish intermediary institutions are found to be effectively present in social media. This unwillingness of intermediary institutions limits the promotion of finance sector and contradicts the IFC project.

Keywords: Intermediary institutions, finance, social media, income, corporations.
JEL Codes: G24, O16, M20

1. INTRODUCTION

Andy Warhol predicted that "in the future, everybody will be world-famous for fifteen minutes" (Anon., 2016). Social media has made it possible that indeed everyone has access to online platforms that can make them famous, or act as if famous in his or her social circle. While psychology and sociology reflect upon the impact of this phenomenon on the human psyche; today's global and intricate way of life makes sure that financial institutions are increasingly becoming part of this virtual world to reach Generation Y and millennials as potential customers. This paper investigates the social media presence of intermediary institutions established in Turkey. The advances in digital platforms affect how a business can be developed and flourished. Thus, social media has become a critical medium for promoting businesses. For intermediation sector, this is especially important because efficient markets can only exist in an environment where information flows freely and as quickly as possible (Malkiel, 2003, p. 59) and the quickest and free way of conveying information is through social media platforms such as Facebook, Twitter, and Youtube.

Even though social media is an important part of data feeds, not all intermediary institutions are interested in being present in these platforms and promoting their brands online via these platforms by being in continual touch with their clients. As very well explained in the literature, customer loyalty increases when customers engage with a brand that promotes a particular lifestyle by forming lasting relationships (Nyadzayo and Khajehzadeh, 2016). Social media appears to be the

handiest tool for intermediary institutions to improve an investor based lifestyle engagement with 24/7 operating markets all around the world. The aim of this paper is to depict the lack of presence in social media platforms and how intermediary institutions that are present in social media differ from those that are not present. Data concerning the social media presence of Intermediary Institutions are gathered from related government agency websites, Intermediary Institutions' websites and social media platforms and analyzed by using independent samples t-test and parametric and nonparametric correlation analyses.

2. LITERATURE REVIEW

Social media has become a unique aspect of everyday life, and this situation has created its culture by forming online communities and groups (Islam and Rahman, 2017). Under such conditions, firms are under pressure to represent themselves and create communities in social media platforms. Especially millennials make up a significant part of online shoppers (Bilgihan, 2016). In Turkey, also young population is found to be dominant in social media platforms. According to Hootsuite survey (2017), social media penetration (being active on social media accounts) is 60%, which is quite over the world average and an average Turkish citizen spends 3 hours on social media each day. These numbers are paramount in showing any firm where to find clients.

Especially Facebook is an important platform for marketing purposes in Turkey since Turkey is the top seventh country with 48,000,000 users and 21% of these users are between ages 18 and 34 (27,620,000 people – which makes up approximately 35% of the total population) (Hootsuite, 2007). The numbers show how important social media presence is if a company wants to reach young people or a significant part of the population and this consequence is repeated throughout the world (Correa, Hinsley and Gil de Zúñiga, 2010 and Hristova, Panzarasa and Mascolo, 2015). The effectiveness of social media in creating a brand value is emphasized in various aspects such as "stimulating sales, increasing brand awareness, improving brand image, generating traffic to online platforms, reducing marketing costs, and creating user interactivity on platforms by stimulating users to post or share content "(Felix, Rauschnabel and Hinsch, 2017, p. 119).

Corporate reputation management can be most efficiently carried out via social media platforms since it is quite easy to communicate with clients and help build a brand name. On the other hand lack of communication is evaluated as poor reputation management by customers (Altunbas and Diker, 2015). There are three ways to use social media for intermediary institutions. Firstly, a social media account can be used to publicize the company to reach a wider mass of potential clients. Secondly, social media can be used to educate people who do not have financial literacy on financial markets and products. This situation can be considered as middle – term investment; once a potential client is educated on investing, s/he might consider investing in capital markets via the institution she or he received education and notwithstanding considerable attention. Once the client starts investing, the intermediary institution can install the third way of usage of social media: conveying timely and accurate information on markets and related developments that will provide market efficiency for the client.

Once the third stage is active, the company has to maintain the relationship by consistent posting; it is vital to keep the bond between client and the firm strong. "The higher the social presence, the larger the social influence that the communication partners have on each other's behavior" (Kaplan and Haenlein, 2010, p. 61). With such impact on business, social media "brings a new point of view to existing jobs"(Uzgören and Korkmaz, 2015). Thus companies that are not involved in social media fall behind in competition as well as innovation in marketing. One of the major benefits of social media is that it allows small cap firms to compete with large cap companies; in a sense, all companies have equal chances of reaching customers (Halis, 2012). Thus, it is possible to suggest that an active social media presence will show its impact on income generating abilities of the firm. In this context, one of the problems to be investigated in this paper is the association of social media presence of intermediary institutions and forex operations income. Since it is mandatory for clients to have an online presence to be able to open an account to perform forex operations according to Capital Markets Board of Turkey (CMB) Communiqué no III-37.1 on "Principles Regarding Investment Services, Activities and Ancillary Services" article 27/C. The same prerequisite is not necessary for performing other transactions such as buying/selling shares, derivatives, funds. Thus, it is possible to follow the association between social media presence and forex income of intermediary institutions.

In addition to this, intermediary institutions that have a wider choice of products, and that have substantially high capital, have more personnel to contribute to social media accounts. The need of marketing is greater for these firms because of their product mix. Also, businesses that have higher capital amounts are likely to be located in traditional business venues, and such companies are expected to have a significant presence in social media. Another problem to be depicted with this paper is the association of client complaints with social media presence. Since customers create communities on social media platforms, they have more power over firms. Increased means of communication helps clients to reach investment firms and get quicker responses to their complaints.

3. DATA AND METHODOLOGY

3.1. Sample and Procedure

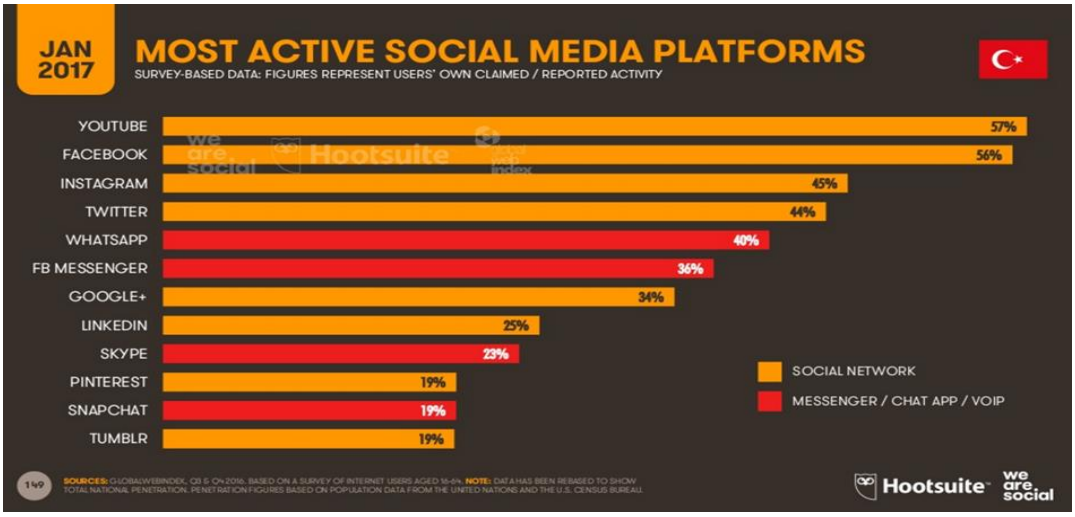
Correlations and independent samples t-test analyses are conducted to determine the aspects of the Investment Firms that are present in social media platforms. The analyses are conducted on the whole population of active investment firms in Turkey. As of April 30, 2017, there are 84 intermediary institutions established in Turkey, however, due to various reasons, there are only 68 actively operating intermediary institutions according to Turkish Capital Markets Association. According to research results, only 66 of these institutions are active as of April 1, 2017. Thus only these active 66 institutions make up the population. Since inactive intermediary institutions are not engaged in any brokerage activities or operating activities, they are excluded from the analyses. There are five variables that are included in the analyses, and these are explained in detail in the next section.

3.2. Variables

3.2.1. Social Media Presence

Social media presence shows whether an investment firm has any social media accounts and it is the dependent variable in this paper. According to a recent survey done by Hootesuite (2017) called "Digital in 2017 Global Overview: A Collection of Internet, Social Media, and Mobile Data from Around the World" Graph 1 depicts the most popular social media platforms in Turkey below. According to the chart, the most popular social media platform is Youtube with 57% preference of users. Facebook comes in second with 56% user preference. Instagram is third with 45%, and Twitter is in fourth place with 44% user preference.

Graph 1: Most Active Social Media Platforms in 2017 in Turkey



Source: https://www.slideshare.net/wearesocialsg/digital-in-2017-global-overview

Being a member in the most popular social media platforms increase the institutions' recognition by masses that are using these platforms. The bigger the social media platform, the greater the chance to increase potential clients.

As can be seen from the graph above, social media platforms are divided into two groups:

i. Social networks
ii. Messenger and chat applications.

However, it is not always possible to find out which messenger or chat applications an intermediary institution is using. Thus they are excluded from the analyses. Furthermore, according to Communiqué no. III-45.1 Article 8 called "Documentation and Recording Regulation Regarding Investment Services and Activities and Ancillary Services" published Capital Markets Board of Turkey (CMB); all client orders received in the electronic environment have to be logged to show various details on order including IP numbers. It is deemed not possible to take orders from such messenger and chat applications under this regulation. The social media platforms included in the analyses are; Youtube, Facebook, Instagram, Twitter, Google+ and Linkedin. To find out which social media platforms are used by intermediary institutions, the links present on the institutions' websites were tracked. Also, the author used her social media accounts to double check the

existence of such links. The presence of an investment firm is marked as 1, and lack of presence is represented by 0 in the coding of data. Also, the timeline of social media posts are investigated and firms that have recurring entries within one week are evaluated as very active users and coded as 3. Companies that have opened accounts, but never posted any entries are evaluated not efficient and coded as 1. Firms that are between these two, meaning firms that post occasionally are assessed as semi-effective and coded as 2. Firms that do not own any accounts are coded as 0.

3.2.2. Authorization Certificates

According to Article 8 of CMB Communiqué no. III-37.1 on "Principles Regarding Investment Services, Activities and Ancillary Services," intermediary institutions are grouped into three categories:

i. Narrowly Authorized Intermediary Institutions
ii. Partially Authorized Intermediary Institutions
iii. Broadly Authorized Intermediary Institutions

Table 1 gives the content of authorization each level provides for intermediary institutions below.

Table 1: Groups of Intermediary Institutions and List of Activities They Are Allowed to Perform

Intermediary Institution	Order Reception and Investment Advice	Order Execution, Best Effort, Limited Custody & Portfolio Management	Proprietary Trading, General Custody, Underwriting
Narrowly Authorized	✓	X	X
Partially Authorized	✓	✓	X
Broadly Authorized	✓	✓	✓

Narrowly authorized intermediary institutions are coded as 1, partially authorized intermediary institutions are coded as 2, and broadly authorized intermediary institutions are coded as 3.

3.2.3. Location

According to Istanbul Financial Center Project, Istanbul is to become a financial hub for the Middle East and Balkans region (http://www.istanbulfinansmerkezi.com/). Atasehir district is in the heart of this project. Following this thought, whether the actual location of an investment firm has any association with its presence in social media is investigated.

The business districts are scattered throughout Istanbul without much planning involved and whether a firm's location being a business district has an association with how the firm likes to present itself is an important point to consider.

For this study, investment firm locations are grouped and coded into two categories as follows:

1. 4. Levent, Levent, Maslak, Esentepe, Mecidiyekoy & Sisli: The business district where the majority of financial institutions are based.
2. Other Districts: This group includes Bağcılar, Batı Ataşehir, Bayrampaşa, Beşiktaş, Beyoğlu, Çağlayan, Dikilitaş, Elmadağ, Etiler, Gümüşsuyu, Kadıköy, Kağıthane, Kartal, Kavacık, Sarıyer, Taksim, Teşvikiye, Ümraniye, and Yenisahra; 1 or 2 firms located in each district.

3.2.4. Forex Income

Forex transactions cannot take place on paper. Thus all clients who want to engage in such transactions have to have e-mail addresses and mobile phones, to be able to use internet based platforms where these transactions take place. Thus, clients that are more active on the web are expected to have social media accounts, and intermediary institutions can increase their forex income by targeting such clientele. Turkish Capital Markets Association announces forex revenue for the period ending December 2016 on its website (https://www.tspb.org.tr/en/data-bank/).

2.2.5. Number of Client Complaints

Social media has made it easier to reach firms and as a result client complaints are addressed quicker when they are posted online. In addition to this, if the complaining client has many followers, this leaves the firm with a bad reputation. A circulation of a company's bad reputation is not acceptable regarding reputation management. Thus firms are expected to react swiftly to such complaints, which in turn affects the number of client complaints. They are supposed to be high for investment firms that have social media accounts. Turkish Capital Markets Association also announces the number of client complaints on its website.

2.2.6. Hypotheses

Hypothesis 1: Authorization certificates of institutions that have social media presence are significantly different from institutions that do not have social media presence.

Hypothesis 2: Locations of institutions that have social media presence are significantly different from institutions that do not have social media presence.

Hypothesis 3: Forex incomes of institutions that have social media presence are significantly different from institutions that do not have social media presence.

Hypothesis 4: Number of client complaints of institutions that have social media presence is significantly different from institutions that do not have social media presence.

4. FINDINGS AND DISCUSSIONS

4.1 Descriptives

Of the 66 active intermediary institutions, 22 (33%) of them are not present on any social media platform. The remaining 2/3 are present in at least one social media platform. According to Table 2, which categorizes intermediary institutions first by social media participation, then type of authorization certificate; only ten nonparticipant institutions can generate forex income of 38.243.576 ₺. On the other hand, institutions that have some social media presence can generate a total of 371.078.612 ₺ of Forex income, which in turn makes up 91% of total forex income in the sector as depicted in Graph 2. In both firm types (nonparticipant and participant), client complaints are higher in broadly authorized institutions; although there is a substantial difference between complaint numbers as can be seen from Table 2 when compared. The number of client complaints is significantly low in nonparticipant institutions when compared to participant institutions due to participant institutions' presence in social media makes it easier for clients to make their voice heard.

Table 2: Investment Institutions and Participation in Social Media

Investment Institutions			
Nonparticipant in Social Media	**22**		
Type of Authorization Certificate	Number of Institutions Allocated According to Authorization Certificate	Forex Income	Number of Complaints
1	**2**	**0**	**0**
2	**10**	**0**	**0**
3	**10**	**38.243.576 ₺**	**10**
Participant in Social Media	**44**		
Type of Authorization Certificate	Number of Institutions Allocated According to Authorization Certificate	Forex Income	Number of Complaints
1	**0**	**0**	**0**
2	**2**	**1.836.527 ₺**	**3**
3	**42**	**369.242.085 ₺**	**143**

Graph 2: Distribution of Forex Income

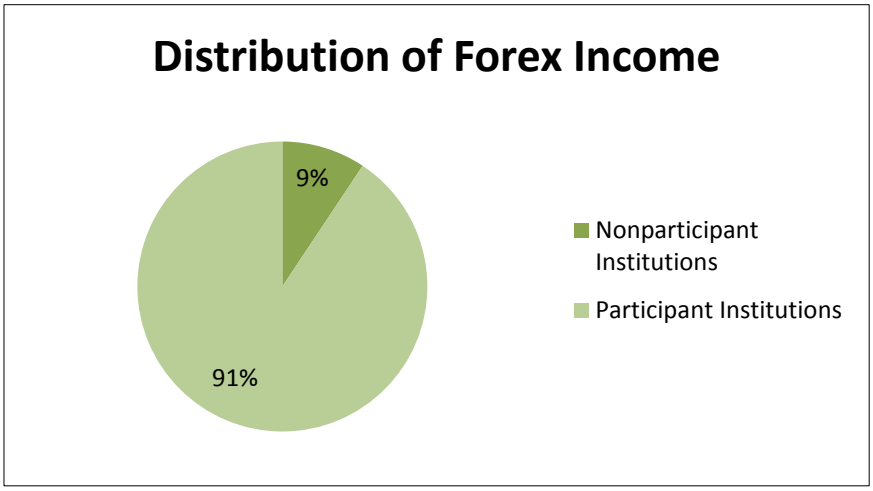
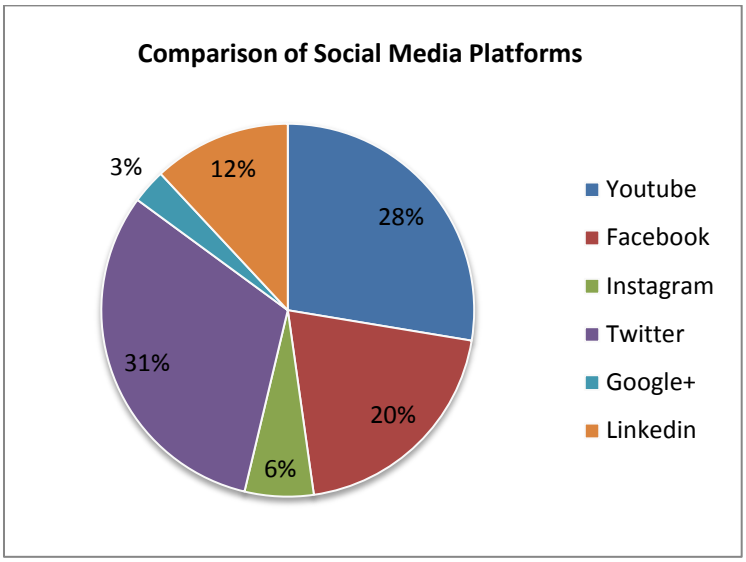


Table 3: Social Media Presence vs. Location

INVESTMENT INSTITUTIONS					
Participant in Social Media	**Location**	**Authorization Certificate**	**Number of Institutions**	**Forex Income**	**Number of Complaints**
NO	1	1	1	0 ₺	0
		2	5	0 ₺	0
		3	6	10.541.164 ₺	1
	2	1	1	0 ₺	0
		2	5	0 ₺	0
		3	4	27.702.412 ₺	9
YES	1	1	0	N/A	N/A
		2	2	1.836.527 ₺	3
		3	28	313.667.326 ₺	100
	2	1	0	N/A	N/A
		2	0	N/A	N/A
		3	14	55.574.759 ₺	43

The majority of forex income is generated due to the intermediary institutions' social media presence making an impact on existing clientele. When effects of location are taken into account, it is possible to see that majority of forex income is generated by companies located in best-known business districts, according to Table 3. Companies located in Location 1 generate 326,045,017₺ Forex income, which equals 75% of total Forex income; while companies located in Location 2 generate 83,277,171₺ Forex income equal to 25% as can be seen from Table 3. However, the majority of client complaints are caused by the firms located in Location 1 as well (104 vs. 52 client complaints). The following chart gives the breakdown of social media platforms in which intermediary institutions are active. Intermediary institutions are mostly active on Twitter (31%) and Youtube (28%) as stated in Graph 3. These results are somewhat compliant with the Hootsuite survey results presented in Part 3. For instance, according to Hootsuite survey, Facebook is the second most popular social media platform in Turkey. However, only 20% of intermediary institutions have joined Facebook. Also, Instagram is the third most popular social media platform with 45% preference, but only 6% of intermediary institutions have opened accounts on Instagram.

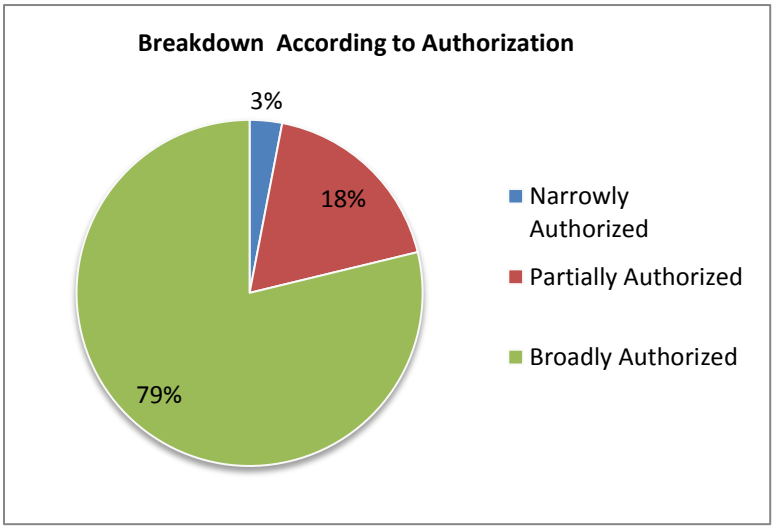
Graph 3: Comparison of Social Media Platforms



Social Media Platform	Number of Institutions
Twitter	42
Youtube	37
Facebook	27
Linkedin	16
Instagram	8
Google+	4

According to descriptive statistics results, data are found to be nonnormal. Mean of 'Social Media Presence' is equal to 0.66 which states that only 2/3 of intermediary institutions are actively engaged in social media. Its standard deviation is equal to 0.47, has medium negative skewness and a platykurtic distribution. 'Authorization Certificate Type' data are found to be nonnormal and mean value is equal to 2.75 with a standard deviation of 0.49, meaning that majority of intermediary institutions are broadly authorized. Breakdown of intermediary institutions according to their authorization type is given below in Graph 4. Data have highly negatively skewed and excessively leptokurtic distribution.

Graph 4: Breakdown of Intermediary Institutions According to Authorization Levels



Authorization Certificate Type	Number of Institutions
Narrowly Authorized	2
Partially Authorized	12
Broadly Authorized	52

'Location of the Firm' data show that the majority of intermediary institutions are located in traditional financial business districts (4 Levent, Levent, Maslak, Esentepe, Mecidiyekoy, and Sisli) with a mean of 1.36 and a standard deviation of 0.48. Data are moderately skewed and highly platykurtic. 'Income from Forex Operations' data state that average forex income per institution is equal to 6,201,851₺ with a highly positively skewed and leptokurtic distribution. 'Number of Client Complaints' data shows that there are at least two complaints per institution, which is not a critically high number. Data are highly positively skewed and have a leptokurtic distribution.

4.2. T-test Results

According to independent t-test results; authorization certificate type, forex income and the number of client complaints are found to be significant. Thus, hypothesis 1, 3 and 4 are not rejected. However, location is found to be insignificant. Thus

hypothesis 2 is rejected. According to the analyses results, there is a significant difference between the authorization certificates of institutions present in social media platforms and those institutions that are not present in social media platforms. Broadly authorized institutions are found to be more active in this venue. They can also generate more forex income. It is possible to generate this finding as 'Investment institutions that are involved in social media can generate greater forex income.' Moreover, the number of complaints is found to be higher for firms that have social media accounts, because clients prefer to work with firms that are present in social media because of increased market popularity. A higher number of client complaints point to a higher number of clients. Also, clients tend to prefer firms that can be reached easily and that provide them with a constant flow of information, which in turn increases market efficiency. The majority of intermediary institutions are closely located; however social media presence does not have any association with location according to analyses results. Apparently, social media preferences of firms do not depend on their being able to afford expensive offices; instead, such decisions depend on the marketing strategy and management philosophy of intermediary institutions.

4.3. Correlation Results

Both parametric and nonparametric correlation analyses are applied to the data set. According to parametric correlation results, authorization certificate type is found to be significant at 0.01 level, and forex income and the number of client complaints are found to be significant at 0.05 level. 'Location' is not found to be significant. Nonparametric correlation results depict the same outcome; all three variables are found to be significant at 0.01 level. These findings confirm the t-test results.

5. CONCLUSION

Today, it is impossible to deny the benefits of social media for firms and consumers alike. For firms, social media platforms provide free mass marketing for businesses that are willing to grow their client portfolio. On the other hand, social media helps people to come together and form communities. When these communities are directed towards firms, social media presence can make companies vulnerable in a way, because any complaints about the institutions' products and services are announced in a publicly open platform. Reputation management requires all complaints to be handled swiftly; therefore clients prefer to convey their complaints via social media platforms. This result indicates the importance of reputation management and how to handle social media accounts carefully for firms and especially intermediary institutions because the content of social media messages has to reflect the truth to ensure market efficiency. The finance sector is built on mutual trust and to preserve a solid relationship with clients, intermediary institutions have to be present in social media, educating and informing their clients about capital markets. This paper tries to fill the gap concerning the lack of studies on Turkish finance sector. With the government putting emphasis on growth of finance sector and Istanbul being the focal point, it seems only a part of financial institutions are making an effort to fulfill this mission. This result is derived from the lack of social media presence of half the intermediary institutions in the sector, which is damaging the promotion of the sector, as well as their financial outlook. Even though management styles and CEOs of intermediary institutions are not covered in this paper due to limitations; it is not irrelevant to think that innovative management is what Turkish intermediary institutions are in need. Also, a content analysis concerning social media accounts of intermediary institutions would provide priceless support to findings of this paper.

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APPENDIX

Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Social Media Presence	66	1,00	,00	1,00	44,00	,6667	,05847	,47502	,226	-,724	,295	-1,523	,582
Authorization Certificate Type	66	2,00	1,00	3,00	182,00	2,7576	,06130	,49801	,248	-1,970	,295	3,225	,582
Location of the firm	66	1,00	1,00	2,00	90,00	1,3636	,05967	,48473	,235	,580	,295	-1,716	,582
Income from forex operations in TL	66	71878112,00	,00	71878112,00	409322188,00	6201851,3333	1597933,68	12981674,66	168523877010555,25	3,527	,295	13,732	,582
Number of client complaints	66	20,00	,00	20,00	156,00	2,3636	,53834	4,37347	19,127	2,559	,295	6,785	,582
Valid N (listwise)	66												

Group Statistics

	Social Media Presence	N	Mean	Std. Deviation	Std. Error Mean
Authorization Certificate Type	No presence	22	2,3636	,65795	,14028
	Presence	44	2,9545	,21071	,03177
Location of the firm	No presence	22	1,4545	,50965	,10866
	Presence	44	1,3182	,47116	,07103
Income from forex operations in TL	No presence	22	1738344,3636	6025581,73950	1284658,34332
	Presence	44	8433604,8182	14890402,83002	2244812,68929
Number of client complaints	No presence	22	,4545	1,92050	,40945
	Presence	44	3,3182	4,93103	,74338

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Authorization Certificate Type	Equal variances assumed	68,659	,000	-5,459	64	,000	-,59091	,10825	-,80717	-,37465
	Equal variances not assumed			-4,108	23,179	,000	-,59091	,14383	-,88831	-,29351
Location of the firm	Equal variances assumed	2,759	,102	1,079	64	,285	,13636	,12641	-,11617	,38890
	Equal variances not assumed			1,050	39,279	,300	,13636	,12981	-,12615	,39888
Income from forex operations in TL	Equal variances assumed	4,768	,033	-2,022	64	,047	-6695260,45455	3312006,25955	-13311753,57454	-78767,33456
	Equal variances not assumed			-2,589	62,132	,012	-6695260,45455	2586412,78010	-11865207,88031	-1525313,02878
Number of client complaints	Equal variances assumed	10,832	,002	-2,618	64	,011	-2,86364	1,09379	-5,04873	-,67854
	Equal variances not assumed			-3,374	61,465	,001	-2,86364	,84868	-4,56043	-1,16685

Correlations						
		Social Media Presence	Authorization Certificate Type	Location of the firm	Income from forex operations in TL	Number of client complaints
Social Media Presence	Pearson Correlation	1	,564**	-,134	,245*	,311*
	Sig. (2-tailed)		,000	,285	,047	,011
	N	66	66	66	66	66
Authorization Certificate Type	Pearson Correlation	,564**	1	-,075	,232	,246*
	Sig. (2-tailed)	,000		,548	,061	,047
	N	66	66	66	66	66
Location of the firm	Pearson Correlation	-,134	-,075	1	-,160	-,034
	Sig. (2-tailed)	,285	,548		,199	,785
	N	66	66	66	66	66
Income from forex operations in TL	Pearson Correlation	,245*	,232	-,160	1	,346**
	Sig. (2-tailed)	,047	,061	,199		,004
	N	66	66	66	66	66
Number of client complaints	Pearson Correlation	,311*	,246*	-,034	,346**	1
	Sig. (2-tailed)	,011	,047	,785	,004	
	N	66	66	66	66	66
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Correlations							
			Social Media Presence	Authorization Certificate Type	Location of the firm	Income from forex operations in TL	Number of client complaints
Kendall's tau_b	Social Media Presence	Correlation Coefficient	1,000	,572**	-,134	,520**	,417**
		Sig. (2-tailed)	.	,000	,281	,000	,000
		N	66	66	66	66	66
	Authorization Certificate Type	Correlation Coefficient	,572**	1,000	-,071	,464**	,326**
		Sig. (2-tailed)	,000	.	,561	,000	,004
		N	66	66	66	66	66
	Location of the firm	Correlation Coefficient	-,134	-,071	1,000	-,178	-,096
		Sig. (2-tailed)	,281	,561	.	,094	,398
		N	66	66	66	66	66
	Income from forex operations in TL	Correlation Coefficient	,520**	,464**	-,178	1,000	,580**
		Sig. (2-tailed)	,000	,000	,094	.	,000
		N	66	66	66	66	66
	Number of client complaints	Correlation Coefficient	,417**	,326**	-,096	,580**	1,000
		Sig. (2-tailed)	,000	,004	,398	,000	.
		N	66	66	66	66	66
Spearman's rho	Social Media Presence	Correlation Coefficient	1,000	,579**	-,134	,607**	,457**
		Sig. (2-tailed)	.	,000	,285	,000	,000
		N	66	66	66	66	66
	Authorization Certificate Type	Correlation Coefficient	,579**	1,000	-,072	,548**	,361**
		Sig. (2-tailed)	,000	.	,565	,000	,003
		N	66	66	66	66	66
	Location of the firm	Correlation Coefficient	-,134	-,072	1,000	-,208	-,105
		Sig. (2-tailed)	,285	,565	.	,094	,402
		N	66	66	66	66	66
	Income from forex operations in TL	Correlation Coefficient	,607**	,548**	-,208	1,000	,716**
		Sig. (2-tailed)	,000	,000	,094	.	,000
		N	66	66	66	66	66
	Number of client complaints	Correlation Coefficient	,457**	,361**	-,105	,716**	1,000
		Sig. (2-tailed)	,000	,003	,402	,000	.
		N	66	66	66	66	66
**. Correlation is significant at the 0.01 level (2-tailed).							

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THE REFLECTIONS OF DIGITALIZATION AT ORGANIZATIONAL LEVEL: INDUSTRY 4.0 IN TURKEY

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ABSTRACT

Purpose - Recent developments on internet and digitalization have emerged the fourth industrial revolution named as Industry 4.0. While some researches have been carried out on Industry 4.0, there has been no detailed investigation on the impacts of Industry 4.0. This paper attempts to show the effects of Industry 4.0 at organizational level.
Methodology - Qualitative method is used in this study. The data were collected through five open ended questions. Questions were asked to ten executives from diverse organizations. Answers were analyzed by researchers by applying content analysis method.
Findings- At the end of analyses, the impacts of Industry 4.0 were categorized by two extensive scopes. First includes organizational level impacts and individual level impacts, second includes positive impacts and negative impacts.
Conclusion- The present study fills a gap in the Industry 4.0 literature by the contributions of its findings. More research is required to do in this field over time depending on its increasing use at organizations.

Keywords: Digitalization, fourth industrial revolution, industry 4.0, Turkey, organizational impacts.
JEL Codes: M15, M19, O30

1. INTRODUCTION

Technological innovations have been inevitably triggering a rapid change in the world. In terms of both development and diffusion, the speed of innovation seems to have increased more than ever (Schwab, 2016: 18). Meanwhile beyond rapidity, technological innovations give rise to the emergence of entirely new industries and types of work. Also technological innovations give rise to a global shift from manufacturing economies to knowledge and service economies. The underlying assumptions about the job design that were true in the 1970s and 1980s have been no longer valid today and organizations have attempt to adapt to a rapidly changing knowledge economy (Langfred, Rockmann, 2016: 630). Many of the large organizations that have emerged worldwide for the last 15 years, have revealed the process of digitization by merging social needs with the new ideas that have built on structural innovation (Bayraktar, 2017: 10). It is clear that the subject of this work, Industry 4.0, has risen above the digital revolution, and even it moved beyond the digitalization process that has emerged. The name of the fourth industrial revolution "Industry 4.0" is comprehensive and it is a very new term. It is observed in the literature that, academic studies on this term began to increase in 2016, but for 2014 we have only seen Germany based studies. For example, in their studies, Gorecky et al. (2014: 289) stated that the development of Industry 4.0 would change tasks and demands for the labour in the organizations and demonstrate solutions for the technological assistance systems of workers, which implement the representation of a cyber physical world. Likewise a paper published on 2014 in Germany, describes that outside of the German-speaking area, the term Industry 4.0 is not common and it is used for defining a future project in the paper (Lasi et al., 2014: 239). Especially in 2016 and the subsequent years, it can be seen that the term Indusrty 4.0 have been used more commonly. However in Turkish literature, the number of academic articles is lower than the publications and reports prepared by some institutions. Among the significant studies on the concept of Industry 4.0 in Turkey, there is an article named "New Industrial Revolution Intelligent Manufacturing Systems Technology Road Map" prepared by TUBITAK in 2016. In this article, 10 technological targets of Turkey are determined for

catching/passing the world level. Also in October 2015, The Aegean Region Chamber of Industry took the issue and prepared a publication namely "Industry 4.0" in order to raise awareness of a new transformation in production Technologies. In march 2016, TUSİAD prepared a report named "Industry 4.0 in Turkey As an Imperative For Global Competitiveness" to support the efforts on industrial transformation in Turkey. The aim of this paper is to define the present and future potential impacts of Industry 4.0 at organizational level, which is a new concept and which will have various implications in each area whose boundaries have not yet been identified. For this purpose, firstly the digitalization and the bringings of the digital age, the concept of Industry 4.0 and the potential impacts of Industry 4.0 will be examined. In the method section, the method of working will be examined and the findings will be tried to be explained in detail.

2. LITERATURE REVIEW

2.1. Digitalization and The Bringings of The Digital Age

In recent years, Industry 4.0 has been introduced as a populer term to describe the trend towards digitalisation and automation of the manufacturing environment (Oesterreich, Teuteberg, 2016: 121). In other words, Industry 4.0 can be defined as the increasing digitalisation and automation of the manufacturing environment from the technical point of view, as well as the creation of a digital value chain to enable the communication between products and their environment (Oesterreich, Teuteberg, 2016: 122). Therefore, before the concept of Industry 4.0, it is necessary to examine the concept of digitalization. According to Schwab, the digitalization simply refers to automation. Besides, the most visible reality of the digital age is "information products" that many new businesses produce by zero storage and transportation costs. For instance, some groundbreaking tech companies like Instagram or WhatsApp produce information products while they need low amount of capital to grow (Schwab, 2016: 18-19). According to another definition, digitalization is, instead of having a non-integrated information technology infrastructure, the process of transforming digitized resources into new revenue, growth and operational results which will add value to the company. Developing new business models, integrating information, company resources and digital technologies by new combinations to create unique customer experiences and applying technology to these resources to enable new products and services also expresses digitalization (Accenture, 2015: 12). Digital processes emerge as a result of increased networking of technical components and also in conjunction with the increase of digitalization of produced goods and services, they lead to entirely digitalized environment. This is in turn led to new technologies to arise such as simulation, digital or virtual protection and augmented reality (Lasi et al., 2014: 240).

As a result of the digital age, innovations have begun to derive from interdependencies among different technologies. Harmonization and integration of a large number of different disciplines, technologies and inventions are one of the requirements of the digital age. For example, today, the biological world and digital manufacturing technologies have mutual interaction (Schwab, 2016: 19). Uninterrupted communication can be provided among more machines and vehicles, thus it facilitates the emergence of more simulation and optimization software towards to operation and control of production systems. Due to improvements in automation and data collection (sensor) technologies, intelligent systems and tools generate and transmit more data (Banger, 2016: 147). If the developments in information technologies that have changed not only the high-tech products, but also the routine tools of our daily life are used in innovative way by industrial firms, it has the potential to completely change production processes (EKOIQ, 2014: 3). By digitalization of every stage of the production chain, ensuring machine-human-infrastructure interaction 'Smart production systems' have been developing. Thus, there has been a paradigm shift in the industry; it is seen that the industries where steam powered mechanical systems have been used for about 300 years, convert to a system in which Cyber-Physical Systems (CPS) take part (TÜBİTAK, 2016: 1).

One of the fundamental forces of Industry 4.0, CPS are the systems that connect the physical world and virtual world (cyber space) and also one of the returns of digitalization. Besides CPS contain smart machines, warehousing systems and production facilities that have been introduced digitally and have end-to-end ICT-based integration feature (Kagermann, Wahlster, Helbig, 2013: 14). By the help of virtual and augmented reality, a mediating interface can be built between user and CPS. Virtual Reality is a system that allows user to interactively explore and simulate the behaviour of a CPS-based production system. However, it needs a realistic mapping of manufacturing processes. The Augmented Reality is the other system that refers to the computer aided enhancement of human perception by use of virtual objects. Augmented Reality facilitates the directly add of needed information to the labour's field of view (Gorecky et al., 2014: 290). Other than these, according to Schwab, it is possible to classify yields of digital age as physical, digital and biological. Physical yields are already showing themselves as autonomous vehicles, 3D prints, advanced robotics and new materials (Schwab, 2016: 24-26). This incrementally growing technologies will play a key role in transition to Industry 4.0. These can also include: Watson an artificial intelligence developed by IBM, Google Glass developed by Google, Slingshot water purifier, sensor technologies, self-driving cars, nano-printing that can be sensitive while producing micro things, drones and robotic surgical systems (Schlaepfer, Koch, 2015: 5).

Digital yield of digital age is the internet of things. The connection between things and people is made possible by connected technologies and various platforms, and this resulted as internet of things (Schwab, 2016: 27). This term can be seen as internet of things and services in some papers as well. Internet of things and services, based on perpetual communication via internet that allows a continuous interaction and exchange of information not only between humans and human and machine but also between machines themselves. Further Internet of Things represents a fundamental concept in the integration of all smart devices that are parts of major smart projects (Roblek, Mesko, Krapez, 2016: 1-3). In the biological sense, especially innovations in the field of genetics, and future productions of synthetic biology will be other yields of the digital age (Schwab, 2016: 30). All these developments, along with enabling innovations that were not possible before also with the factors like Cyber-Physical Systems, internet of things and services was among the elements that triggered the fourth industrial revolution also called Industry 4.0.

2.2. Industry 4.0

Three industrial revolutions have taken place until Fourth Industrial Revolution which is known as Industry 4.0. First Industrial Revolution followed introduction of water and steam powered mechanical manufacturing facilities at the end of 18th century. First mechanical weaving loom produced in 1784 in the UK. Begin with a light industry as textile in the UK, the First Industrial Revolution penetrated to heavy industry with the consecutive technological advancements. Thus, production concept broadly shifted from manpower to machine power. Second Industrial Revolution was emerged through introduction of mass production with the help of electrical energy at the beginning of 20th century. In the same period Henry Ford's automotive mass production system also quickly improved industrialization. In the First Industrial Revolution, industrialization effected UK and Europe. With the Second Industrial Revolution, industrialization spread rapidly in countries like the US and Japan and after this affected many regions of the world. In the 1970s, until today the Third Industrial Revolution has become dominant. Through electronics and IT the further automation of production processes achieved and in 1969, first programmable controller (PLC) Modicon 084 was introduced. First Industrial Revolution, while being defined as mechanization of production, Second Industrial Revolution is serialization of production and the Third Industrial Revolution is defined as automation and digitization of production (Kagermann, Wahlster, Helbig, 2013: 13; Schlaepfer, Koch, 2015: 3; Ekonomik Forum, 2016: 17; Siemens, 2016: 5-6). In recent years, by Cyber-physical systems and dynamic data processing the end-to-end connection of value-chains have been provided, thus the Fourth Industrial Revolution has come true (TÜSİAD, 2016: 19). The main goal of Fourth Industrial Revolution, with other name Industry 4.0, is horizontal and vertical integration of cyber-physical systems into production processes and logistics (Prinz, Kreimeier, Kuhlenkötter, 2017: 160).

The reason of the widespread use of Industry 4.0 term instead of the Fourth Industrial Revolution and also the more presence of Germany based works related Industry 4.0 in the literature is because of the term Industry 4.0 is a name of a project of Germany. To continue to strengthen the development of the country in the future, Germany prepares some projects. Industry 4.0 is one of that projects (Siemens, 2016: 9). The Global Production Competitiveness Index Report which was published in 2013 by Delloite, reveals that the industrial forces of the past 60 years as Germany, US and Japan, quickly lost their production competitive advantage to emerging economies pioneered by China, India and Brazil (EKOIQ, 2014: 2). As confirming the report; the steadily competitive pressure on the manufacturing industry in Germany by Asian and South American, competitors are calling for a commitment by the industry to secure Germany as production area. And also to be able to maintain its position against low-wage countries (Prinz, Kreimeier, Kuhlenkötter, 2017: 160). In 2011, in order to strengthen the development of the country, German Ministry of Education and Research, under the name “High-Technology Strategy 2020's Future Projects”, has announced the “Industrie 4.0” project. This project firstly have been voiced in the Hannover Fair and in 2013 under the leadership of Federal German Academy of Science and Research, “Industry 4.0 Strategy Document” has been prepared. Thus a new industrial revolution was introduced under the name Industry 4.0 to all over the world (Siemens, 2016: 9). Associated with the term Industry 4.0 due to the increased research attention on the internet of things and Cyber-Physical systems, governments and industries worldwide have noticed this trend. Governments and industries have taken action to take advantage of the benefits of the new industrial revolution, governments such as the US, Germany, France, UK, China, Japan, and Singapore have implemented various plans. Industries like AT & T, Cisco, General Electric, IBM and Intel founded the “Industrial Internet Consortium” in 2014. Also other big firms like Siemens and Bosch have already invested heavily. In the meantime growing number of research centres and universities have also taken part and contributed. After all of these contributions, a question appear **“After years of efforts, what is the current status of the Fourth Industrial Revolution?”** (Liao et al., 2017: 3610). In fact, this industrial revolution is still in its early stages, fundamentally changing the way of living, working and communicating. With this revolution, new business models are emerging and the systems of production, consumption and delivery are being reformed as the built-in industries become degraded. From a social perspective, there is a serious paradigm shift in the way people express themselves, inform each other and entertain. In addition to these, governments and organizations, as well as many systems such as education, health and transportation, are being reformed (Schwab, 2016: 9-10). Looking at the industrial production framework, advanced digitalization in factories, combined use of internet technologies and future-oriented technologies in

the field of "smart" objects have caused serious paradigm shifts in the field of production (Lasi et al., 2014: 239) and it is clear that the changes will continue. Therefore, it is understood that Industry 4.0 will have its effects in various forms. It is also important what are these effects in today's situation.

2.3. Current and Potential Effects of Industry 4.0

Industry 4.0 will provide greater flexibility and robustness together with the highest quality standards in engineering, planning, manufacturing, operational and logistics processes (Kagermann, Wahlster, Helbig, 2013: 20). At the same time, it will also help to improve production processes, increase productivity by lowering party size values, and fulfill individual requests and short-term demands. With Industry 4.0, the product development times will decrease and it will be possible to be transparent in the real time to make faster decisions (Basl, 2016: 4).

With the vision, set for Industry 4.0, it becomes clear which level and areas the effects will be in (Kagermann, Wahlster, Helbig, 2013: 20-21):

(i) Industry 4.0 will be characterized by a new level of socio-technical interaction between all actors and resources involved in production. "Smart Factories", an important component of this vision, will be embedded within inter-company value networks and will be characterized by end-to-end engineering.
(ii) With Industry 4.0, smart products can be assigned with a unique identity and thus always be locatable. Even while they are being made, they will know the details of their own manufacturing process.
(iii) In the future under Industry 4.0, it will be possible to combine individual customer and product specific features in the design, form, order, planning, production, operation and recycling stages of products.
(iv) The workforce will be able to get rid of having to perform routine tasks and focus on more creative, value-added activities.

The four core components of Industry 4.0 are **Cyber-Physical systems, the internet of things, the internet of services and smart factories**. Machine communications and smart products are not considered as independent parts. The machine communication is an enabler of the internet of things. Also smart products are subcomponent of the cyber-physical systems (Roblek, Mesko, Krapez, 2016: 3). Some of the studies predict that the new era factories will perform self-inspection, control and the development processes by self-acting robotic production tools which have been detecting processes by sensors instead of human senses (Alçın, 2016: 27). All these components can give an image of the fact that factories work completely without human agency. However a holistic view on the Industry 4.0 as a technology-organization-personnel triangle is a more sensible angle of view. In this context, also referred in the vision set for Industry 4.0, the term “socio-technical system” is further included in almost every future developments of industrial workforce. The socio-technical approach underlines that technological innovations are not the solely defining momentum of Industry 4.0, also the other subsystems organization and personnel are equally important (Reuter et al., 2017: 355). Gorecky et al. (2014: 289) indicate that in the future, the individual worker will undertake more responsibility and a larger operating area. Additionaly, the labour as a last at the Cyber-Physical structure, when confronted with complex problems will take the role of the creative problem solver. According to another study, there are two perspectives on the role of labour in Industry 4.0. The automation perspective gives two roles to the labour: highly qualified experts and depreciated specialists. Conversely, labor-centered perspective proposes an increase in the range of action of specialized experts and high qualified workforce with raised value (Prinz, Kreimeier, Kuhlenkötter, 2017: 160). As future users of new technical devices and systems, qualified workforce and their practical knowledge about their workplaces are crucial for Industry 4.0, in terms of the success of the design and management phases (Reuter et al., 2017: 356).

The Fraunhofer Institute published a study of “Industry 4.0” in 2013. As a result of the study, there are three future-relevant themes were identified: **Complexity, capacity for innovation and flexibility**. In particular, the complexity will emerge rapidly in the future due to the diversity of technologies used and the increasing individualization and personalization of products and services (Rennung, Luminosu, Draghici, 2016: 373). Apart from these, the fact that production equipments are equipped with machines and robots with high automation, they can easily adapt to the slightest changes and have working capacities compatible with the labour are expected effects in the future. It is also expected that with the sustainability of resource saving of production systems, increase in productivity and decrease in costs (Can, Kıymaz, 2016: 110-111). In a workshop, the main benefits of fields caused by Industry 4.0 were presented as follows (Jager et al., 2016: 118):

(i) Digital individualization (Additional benefits to product options can be created and offered digitally)
(ii) Flexibility (Rapid responses to demands can be provided by a production system that can be easily adapted)
(iii) Demand orientation (Products and services can be produced according to usage area)
(iv) Sustainability (The production schedule can be planned for cost and utilization optimization)
(v) Consistent process orientation (Customer will have better connections with business processes)
(vi) Automated knowledge and learning

(vii) Productivity optimization (Economic production and with real-time transformation, small production units can be assembly together)

As well as the effects and benefits of Industry 4.0 mentioned, have been realized in some industries and countries; it is understood that the effects are still unknown in some of the countries. Therefore, this study will also determine the level of awareness of the effects of Industry 4.0 in Turkey.

3. DATA AND METHODOLOGY

3.1.Research Model

This study was carried out by sharing opinions and experiences of experts working in different sectors operating in Turkey in order to demonstrate what the current situation is and its effects are at the organizational level of Industry 4.0, which is thought to cause effects not yet fully foreseeable. Study in this direction, is a phenomenology research from among qualitative research design methods. In phenomenology research, the data source of the research is the one having experienced the phenomenon of research and those who can explain this phenomenon. *The main purpose of phenomenology as a research pattern, to reduce individual experiences of a phenomenon to a universal description. So it is an effort to understand the true nature of the object* (Creswell, 2013: 77). The aim of this study is to understand the effects of the Industry 4.0 which is a new phenomenon in Turkey and world wide at the organizational level.

3.2.Working Group

In order to capture an analytical view in the study, the opinions of the experts of the field were taken, the organizations expected to have a relatively high level of digitalization were selected (criterion sampling) and also their works and web sites were examined. As a result of the investigation, the managers of related organizations of the information processing, information technology, research and development and human resources departments have been determined. Although the main method of collecting data is interview in phenomenology research, the data collection tool of the study was sent electronically due to the thought of it is a convenient method of digitalization. When the time constraints of the participants of the study group are taken into account, it is seen that the use of this technique has been appropriate. The study was conducted with a working group of 13 people determined by criteria sampling and 10 persons composed of employees of banking, education, technology, electronics and furniture sectors operating in Turkey. In addition to 10 persons, in order to provide support to analytical side of the study 3 academic members engaged in academic studies related to the subject are also included in the study (Table 1).

Table 1: Features of The Working Group

Participant*	Job	Gender	Workspace/Workig Unit	Sector
P1	Inspector	Male	Inspection Board	Banking
P2	Human Resources Training and Development Chief	Male	Human Resources Directorate	Furniture
P3	Director of Educational Technologies	Male	Information Technologies	Education
P4	Technical Product Manager	Male	Research and Development, Product Development	Technology
P5	Head of Department	Male	Faculty of Economics and Administrative Sciences	University
P6	Head of Department	Male	Faculty of Economics and Administrative Sciences	University
P7	Head of Department, Dean	Male	Faculty of Economics and Administrative Sciences	University
P8	Project Manager	Female	Information Technologies	Banking
P9	Production Consultant	Male	Electronic Manufacturing Factory	Electronics
P10	Section Manager	Male	Automation and Project Development Department	White goods
P11	Chief Executive Chairman	Female	Executive Board	Machine
P12	Assist. General Manager for Technical Affairs	Male	Management	Machine
P13	Data Manager	Female	Information Processing	Food

* The code given to them is used instead of the names of participants and their businesses.

Participants in the working group are largely the employees participating in the administrative decision-making processes in their organizations. This feature is due to the deliberate selection of the participants appropriate to the nature of the study. Thus, it is assumed that the participants can provide clear and accurate information about the digitalization processes of

organization. Along with this, an important part of the participants is male. Although this feature is not specified on purpose, it may be the subject of a separate work.

3.3.Data Collection Tool

In accordance with the purpose of the study, the basic research question, which is answered by the authorities of different sectors and departments, has been prepared and sent to the participants as follows:

> *"What is your opinion about the current impact of the high technology's use characterised by internet of things and services and named as Industry 4.0 on organizations? And also what do you think about the potential impact of Industry 4.0 on organizations, institutions and firms? And why?"*

In addition to this question, a form consisting of questions about the position of the participants, the unit they work in, the sector and whether they already have knowledge of Industry 4.0 and how they evaluate their organization's current level of digitalization have been prepared. Data collected by the form that has totally 5 questions.

3.4.Data Analysis

Forms that participants thought sincerely answered, were evaluated by researchers based on qualitative data analysis evaluation process. All the responding and received back forms were collected in a single text and content analysis was conducted. Some of the answers in a total of 8 pages of answer text are presented in the findings section under the categories which are based on the nature of the research question. From time to time the participants' expressions were included to enrich the findings section.

4. FINDINGS

Among the questions on the returning forms, the Industry 4.0 and digitalization related three questions were evaluated in this section, and the answers were presented in separate titles.

4.1. "Do you have any previous knowledge about the industry 4.0? If so, where did you get this information?"

Information sources of Industry 4.0 are shown in Table 2.

Table 2: Information Sources of Industry 4.0

Participant	Information Sources of Industry 4.0
P1	Academic Development Process
P2	«Industry 4.0 Platform» information documents
P3	Sectoral meetings
P4	Educational background and widespread IOT applications
P5	Scientific studies
P6	Foreign press, foreign literature, web and social media
P7	Academic meetings
P8	Social media and sectoral events
P9	Online and printed documents: Book, brochure, web
P10	Web with international fair and company visits
P11	Technology development zones
P12	Travel abroad and Industry 4.0 programs
P13	Panels

As seen in table, it is understood that all participants are aware of Industry 4.0, usually by the social media and web. On the other hand, some participants were informed through works of their firms about Industry 4.0. Some of the answers of the participants to this question are as follows:

"*Yes, I have. I have been in a catch –up work about the topic through the site of the Industry 4.0 platform and the education information documents*" (P2)

"*I had knowledge and opinion about Industry 4.0 from the media and various sectoral events.*" (P8)

"*Yes. I participated to the last Industry 4.0 programs of the OAIB with Germany and Poland.*" (P12)

4.2. "How do you evaluate your organization's current level of digitization?"

The perceptions or opinions of participants in the research group on the level of digitalization of their organizations are shown in Table 3.

Table 3: The Level of Digitalization

Participant	The Level of Digitalization
P1	Leader in Mobile Banking
P2	Systematic Digitalization (Industry 4.0 Office Team in the R&D Center)
P3	Digitalization in Financial and Recording Processes
P4	Market Leader in Digitalization
P5	Intermediate "Costly" Digitalization
P6	Software and Hardware Increasing the Efficiency of Student, Library and Personnel Information Systems
P7	Distance Education System, Smart Boards, e-classes Electronic Information Management System, e-signature system
P8	Data Mining, Business Intelligence and Virtualization, Process Automation, Cyber Security
P9	Smart Factory
P10	Automation 3.0
P11	Medium
P12	Good
P13	Digital Integration of Production and Sales Department Software Department

The level of existing digitalization in the institutions was asked to the participants, and it has been seen that in general, digitalization has been completed or investments for digitalization and technology have been continued. In general, it is understood that the institutions have not yet reached the level of Industry 4.0. However for the current level of digitalization of the organization, it has seen only in one of the answers as level of "Smart Factories" which is one of the core components of Industry 4.0. Some answers to this question as well as the "Smart Factory" answer were given below:

"*As competition and technology continue to grow together, our investments on digitalization and technological investment continues at the fastest pace. In our established R & D center, an Industry 4.0 office team was organized and our field investments gained speed in the name of systematic digitalization*" (P2).

"*Since we are one of the developers of Industry 4.0, we are giving lots of importance to the level of digitization. Today we are one of the market leaders*" (P4).

"*I can not say it is exactly Industry 4.0. But the developments lead us there. Nevertheless, I think that our digital technology is above the average in Turkey. I can sign documents from out of office, distance education systems, smart boards, e-classrooms, electronic information management system (ebys), to shift of permission and assignment applicants from paper to digital media, e-signature... These can be given as examples of digitization level*" (P7).

"*Successful. In the level of Smart Factory*" (P9).

The answer of a participant who is actively involved in Industry 4.0 projects is below as exactly the same as it. Because of the opinion that it may reflect realistic facts about factories in Turkey at the moment:

"*At some point, application of Ind. 4.0, although the increased digitalization, there is more to do and more businesses to apply. Firstly the development of infrastructure and detailed automation projects must be carried out. … White Goods simultaneously applying similar processes to its 6 factories and at the same time in some conditions it is progressing by raising the level of automation to 3.0. But in the next 5 years we will progress step by step on our roadmap for systematic working of this processes"* (P10).

4.3. "What is your opinion about the current impact of the high technology's use characterised by internet of things and services and named as Industry 4.0 on the organizations? And also what do you think about the potential impact of Industry 4.0 on organizations, institutions and firms? And why?"

Each participant gave different answers to this basic research question. Especially, the answers given to this question were subjected to content analysis. The answers were categorized according to the relation between them in two broad

categories. The first category is organizational and individual effects of Industry 4.0, and the second category is positive and negative effects. The findings are shown in Table 4 and Table 5.

Table 4: Organizational and Individual Effects of Industry 4.0

Organizational Effects	Individual Effects
Pressure of job and efficiency	Increased pressure on personnel
Faster and better works	Reduced workload on personnel
More work done with less workforce	Provided social benefits to personnel
Internal processes and automations of organization are faster, more accurate and more secure	Increased need for qualified labour
Increasing organizational efficiency and reducing costs	Human relationships leave their place to electronic environment
Provide convenience to the symmetric information flow between stakeholders	Transformation of superior-subordinate relationships from human dimension to digital dimension
Acceleration of organizational processes	
Zero error and minimum loss	
Increasing effectiveness, facilitating control	
Place independent work system	

Table 5: Positive and Negative Effects of Industry 4.0

Positive Effects	Negative Effects
Real-time traceability of production performance	Disappear of businesses that can not catch Industry 4.0
Increased labor quality	Decreased employment of the workforce with operational capability
Ability to manage factories and businesses remotely	Limited effects on countries where public services are not at a certain level
Increased client experience	Difficulties of data storage
The emergence of new technology giants	Disappear of businesses that can not manage the data
Digitalization of all devices and networking between them	Disadvantages in terms of employment
Finding solutions to quality, standard and aesthetic options of products	Weakening of handwriting ability
Provide faster, more efficient and personalized products	

As seen in Table 4 and Table 5, it is understood that there has been an awareness about Industry 4.0 and digitalization issues in Turkey. It has been seen that there are similarities between the opinions of the participants and current and possible effects of Industry 4.0 which has been already available in the literature. Most highlighted topics of the impacts of Industry 4.0 have been quality, flexibility, efficiency and speed, and it has been seen that these views of participants correspond to previous researchs. Indeed, Kagerman et al. (2013: 20) noted that Industry 4.0, together with higher quality standards, will provide much more flexibility and durability in engineering, planning, production, operations and logistics processes. At the same time, with Industry 4.0, product development times will decrease and real time access will be possible to make faster decisions (Basl, 2016).

In parallel with this identified effect, one of the participants' answers is as follows: "*At the companies that we define as Smart Factory and also that production performance can be real time monitored through the sensor and wireless IT Technologies, so the business and productivity pressure on the labour will increase. The impact of this on the organizational structure needs to be investigated first*" (P9). Regarding the potential impact of Industry 4.0 on the labour, Gorecky et al. (2014: 289), argue that in the future, individual labour will take more responsibility and will have a wider management domain; moreover, as a final step in a cyber physical structure, the role of finding creative solutions to complex problems will be on the labour.

Parallel to this view, the answers of some of the participants are as follows:

"*School Operations: The development of digital data collection techniques, the convenience of data processing on collected data, fastening school processes will become possible, making processes more efficient will become possible, so the need for qualified workforce will be increased...*" (P3).

"*…In the future it will be possible to produce by working 1000 people less on any production line and there will be experts operating, analyzing remotely from the firm. However non-measured businesses and the factories can not keep abreast with their devices, disappear off the face of the earth at the shortest notice as we are sure…*" (P10).

One of the most comprehensive answers to this question is the following: "***Jobs that require qualified [able to use robots and automation machines] human power will be the subject***. *Repeatable jobs or very high value-added jobs that can burden cost of prototype production will be done by machines. The work done by ordinary workers and ordinary technicians will decrease. Because, organizations which work in this way will be expensive in terms of unit costs due to high labor cost or low number of production and unable to compete. These organizations will use more* ***automated machines day by day and try to reduce unit costs***. *Therefore, we will see* ***more complex machines*** *in businesses and* ***qualified people (technicians, even engineers) who can use them***, *but fewer ordinary technicians and workers. There will be lots of unemployed people.* (P12).

Some jobs with mastership skills will also become more expensive as skill-based businesses decrease. Businesses will try to avoid processes requiring mastership skills and head towards processes requiring machine. Thus, this negative feedback loop will lead to mastership skill becoming a less competitive production method day by day (P12).

Some technology developing countries have been unable to produce low-priced products based upon expensive labor costs. Now they can sell owing high technology infrastructure and also the ease of use and accessibility promised to user. So countries using low-level technology will have no chance of competing with them. In other word, because they know that they can not compete with the price, they will make users technology addicts and compete with technology. Those who can not produce technology will lag behind (P12). *In summary, today's Turkey will remain in a difficult position if it remains stable in this position. Because, yes we have a crowded young population but their connections with technology are limited by the smartphones in their hands. I do not see a young technician who uses robots in our country. Both our country and we, industrialists still compete with prices. We are using technology, do not produce it. We have to buy technology from producers. I am pessimistic for the future*" (P12). If the issues cited by the participant are mentioned together (the bold fonts in the answer), participant is referring to the qualified employees as future users of new technological devices and systems (Reuter vd., 2017: 356), also to the espectation on sustainability of resource saving of production systems with increase in productivity and reduce in costs as well (Can, Kıymaz, 2016: 110-111). It is seen that the most important issue the participant refer to is by the "*we will see* ***more complex machines*** *in businesses…*" sentence is complexity (Rennung, Luminosu, Draghici, 2016: 373) which is known as one of the themes of Industry 4.0 and will especially emerge with the variety of technologies used.

5. CONCLUSION

As a result of this study which has been carried out in order to reveal the current table of the Industry 4.0 processes in Turkey, it is seen that in Turkey, although a complete transition has not yet been made to the Fourth Industrial Revolution, the Industry 4.0 awareness has occurred. It is observed that, the infrastructure has started to improve; that some sectors and firms have been getting informed and receiving information with regard to Industry 4.0 with meetings and international visits. This is also evidenced by the inclusion of vision documents as well as the adoption of government policy as the date on which the research was carried out. The Ministry of Science, Industry and Technology in Turkey has completed preparations for the production reform package aimed at increasing industrial production in 2017 of April. Along with this production reform package, digital conversion will be widespread in production and the transition to the 4th industrial revolution will be achieved. It is thought that the announcements and studies made by the Ministry of Science, Industry and Technology especially in 2017 are considered to be an increasing factor of awareness of Industry 4.0.

It appears that most of the participants' views on the current and possible impacts of Industry 4.0 overlap with previous researches. However, since Industry 4.0 technologies are not actively used in enterprises, it is thought that the realistic dimensions of their effects may not be detected. This study will make an important contribution to the literature since there is not a previous study on the organizational effects of Industry 4.0 in Turkey. This study provides a source for future studies. It is suggested that in future studies, taking the different functions of the businesses into account, the digitalization levels and the effects on the diversified functions can be examined. Also the question of why some sectors outside the information and technology sector are mostly left behind by digitalization proposed as a new research subject. It is clear that Turkey should capture the Fourth Industrial Revolution and should not lag behind the developments. For this reason, it is proposed to increase the number of academic studies that deal with Industry 4.0, and in the direction of the identified deficiencies, completion and development studies should be taken. Meanwhile to identify new effects that will emerge in the future and to take preventive measures if necessary, it is clear that this work should be repeated at times when factories are being equipped with more cyber physical systems.

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