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## THE MODERATING ROLE OF PERSONALITY TRAITS ON THE RELATIONSHIP BETWEEN DISPOSITIONAL RESISTANCE TO CHANGE AND USER RESISTANCE BEHAVIOUR TO USE HRIS

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### ABSTRACT

*The aim of this paper is to predict the end-users' resistance to using an HRIS application in the healthcare sector. This paper utilized the technology acceptance model (TAM) as well as dispositional resistance to change and the big five of personality traits to predict end-users' resistance behaviour towards a mandatory HRIS. The research population consisted of 373 end-users working in the healthcare sector. This paper employed the partial least squares structural equation modelling (PLS-SEM) statistical technique to simultaneously test the hypotheses. The paper tested the relationship between each dimension of dispositional resistance to change and perceived ease of use and perceived usefulness. The result showed that only routine seeking influences both perceived ease of use and perceived usefulness. It also showed that perceived ease of use affects perceived usefulness and that both of these significantly predict behavioural intention. The result for the moderation effect of conscientiousness on the relationship between behavioural intention and end-users' resistance behaviour was influenced. The findings of this paper suggested that managers and system developers need to engage the end-users in the healthcare sector in developing a convenient and customized HRIS application that addresses their expectations.*

**Keywords:** Routine Seeking, Technology Acceptance Model (TAM), Human Resources Information System (HRIS), and User Resistance Behaviour

## WOMEN MOTIVATIONAL FACTORS TO WORK IN PRIVATE SECTOR: A CASE OF SAUDI ARABIAN WOMEN

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### ABSTRACT

*The desire of women to find a place for themselves in the workforce has been fed by the expansion in women's education in Saudi Arabia. This study explores the underlying dynamics of motivation for women to work in private sector in Saudi Arabia. Current study used Dr. Dr. Kenneth A. Kovach's questionnaire of ten "job reward factor". A total number of 200 participants were allowed as a sample. Drop-off, pick-up and On-line survey methods were used to receive maximum response rate. The descriptive statistics, the T-test and the PLS test were utilized to examine the motivational factors. This research contributes to the literature on gender motivation related to work in private sector in Saudi Arabian society.*

**Keywords:** Private Sector, Work Motivation, Job Reward Factor, PLS Test, Saudi Arabian Women

## INTRODUCTION

Saudi Arabia, in terms of age, is considered a young country. In 1932, King Abdulaziz Al-Saud established the Kingdom of Saudi Arabia (Rawls, 1987). The tribal people living in Saudi Arabia before the official establishment of the country had been struggling to get their basic needs and wants satisfied because of a lack of critical resources such as food and water. However, once oil was discovered in 1932 in Saudi Arabia, the country's outlook changed significantly (Maghrabi, 2007).

Since the establishment of the kingdom to the present day, the country relies heavily on oil revenues, accounting for roughly 80% of the kingdom's income (Al Musehel, 2015). Since 2000, Saudi Arabia has enjoyed budget surpluses as a result of high oil prices as a main income source (Rowies, 2014). However, the high unemployment rate is a serious challenge for the Saudi government. The problem is more complicated since roughly two thirds of the Saudi population is younger than the age of 30 (Murphy, 2011). The youth, especially those who are under the age of 30, and women in Saudi Arabia are concerned about the future and hope the government will solve this unemployment problem while the country still has a budget surplus.

A based on figures provided by the Ministry of Labor and Social Development (MLSD) in March, the number of Saudi women working in the private sector has increased by 130 per cent in the last four years. From 215,000 in 2012, the number of women in the private sector jumped to 496,000 in 2016, an average of 8,500 jobs per month (Saudi Gazette, 2017). Saudi women work in the private sector in many fields with the most prominent being education and medicine, including facilities that are owned by individuals and have different rules regarding salaries and work hours (as compared to government owned facilities).

The desire of women to find a place for themselves in the workforce has been fed by the expansion in women's education. According to the 10th Development Plan, which runs from 2015 to 2019, places renewed emphasis on education and private sector development as the keys to economic diversification (Oxford Business group, 2017). The purpose of this study is find the woman motivation to work in private sector and government reforms for working in private sector.

## SAUDI ARABIAN WOMEN EMPLOYMENT

According to the GAS (n.d.), in 2012, Saudi women represented 32% of the unemployed in Saudi Arabia, compared to 6.1% for men (Jiffry, 2014). Unemployment for women continued to rise in 2013, reaching 34%, compared to 6.1% for men. According to the IMF (2015), in 2014 the unemployment rate for women was 33%, compared with less than 6% for men. Also, women's participation in the workforce was very low at 18%, whereas for men it was 67% AlMunajjed (2010).

Several factors account for the high unemployment numbers of women in Saudi Arabia, including those of a religious, cultural, legal, and social nature (Alotaibi, 2014). Despite that the number of Saudi women graduating from college increases annually, the percentage of female representation in the workforce is increasing only at a snail's pace. To comply with Sharia law and allow women to work, the government has provided women a suitable work environment segregated from men, thus satisfying the religious and cultural traditions of both Sharia law and Saudi culture. However, job opportunities for women remain very limited, which has created a need for the private sector to hire Saudi women.

In the private sector, job opportunities are available for Saudi women to some extent. However, there is a significant number of firms and organizations in the private sector—such as bank headquarters, insurance firms, and hospitals—that do not segregate women from men in the workplace because of the financial costs associated with this segregation.

A based on figures provided by the Ministry of Labor and Social Development (MLSD) in March 2017, the number of Saudi women working in the private sector has increased by 130 percent in the last four years. From 215,000 in 2012, the number of women in the private sector jumped to 496,000 in 2016, an average of 8,500 jobs per month (Saudi Gazette, 2017).

## SAUDIZATION POLICY

In 1975, Saudi Arabia's Ministry of Labor (MOL) implemented a new program called Saudization (Al-Jufry, 1983). As Ewain (1999) indicated, the chief objective for the Saudization system is to nationalize the workforce in Saudi Arabia. The main objective of this program was to maximize efforts in decreasing labor opportunities for foreign workers while increasing the number of



opportunities for Saudis in the private sector. Although the Ministry of Labor implemented the Saudization policy in 1975, Saudis (both those unemployed and in the private sector) did not know much about it until the early 1990s. In fact, the Saudization policy's first enforcement on the private sector to increase Saudi worker employment was not implemented until 1995 (Alotaibi, 2014). The projected plan was to replace non-Saudi workers with qualified Saudi workers by 5% between 1995 and 1999.

From 2000 to 2004, the Saudization policy shifted its focus from replacing foreign workers with Saudi workers to developing human capital by training locals and improving the education system (Alotaibi, 2014). From 2005 to 2009, two methods were added to the Saudization policy to replace foreign workers with Saudi workers. First, private-sector companies were expected to raise the ratio of Saudi workers to foreign workers annually (Fakeeh, 2009). Second, the MOL mandated that only Saudis fill certain jobs and banned the issuance of visas for foreign workers to fill such jobs. Yet, it was not sufficient to reduce significantly the unemployment rate, which created a need for a new policy (Alotaibi, 2014).

## NITAQAT SCHEME

The Nitaqat program was designed by the MOL to decrease the number of unemployed Saudi citizens. The Nitaqat scheme was intended to replace the previous program to nationalize private sector jobs (the Saudization policy). The Nitaqat program was founded as a long-term solution to deal with the challenges of high unemployment among the Saudi citizens (Al-Salloum & Zarah, 2012).

Under the new system of Nitaqat, the MOL is allowed to judge businesses as being compliant or noncompliant with the requirements of the MOL (Balcer, 2014). The MOL segmented private-sector companies into four bands: platinum, green, yellow, and red (Al-Hejailan, 2012).

Companies classified in the yellow and red bands are noncompliant with MOL requirements and can receive a variety of penalties. For instance, such companies may be disallowed to open a new company or new branch in Saudi Arabia for six years, or the foreign workers have the ability to leave the employer without any notification (Al-Hejailan, 2012; Balcer, 2014). Companies that fall in the yellow band are below average in performance in terms of complying with MOL requirements (Hussain, 2014). The MOL gives companies in the yellow band six months to

improve their performance. Companies that fall in the red band have poor nationalization performance and are in the danger zone. The MOL gives companies in this band 6 months to elevate their status; otherwise, these companies are subject to closure (Hussain, 2014).

Companies in the private sector in Saudi Arabia are categorized based on the size and activity of each company, with the Saudization percentage applied based on these two factors (Peck, 2013). The size of each company in the private sector would be determined by the number of employees according to five categories (none of which exempt a company from hiring Saudi workers): very small (fewer than 10 employees), small (10 to 49 employees), medium (50 to 499 employees), large (500 to 2,999 employees), and giant (more than 3,000 employees; Al-Hejailan, 2012). El Badrawy (2014) pointed out that the Nitaqat scheme has helped to reduce the high unemployment in Saudi Arabia, stating that the number of jobs created for Saudi workers is 462,000 since the Nitaqat started in 2011.

## MOTIVATIONAL FACTORS

This study use Dr. Kenneth A. Kovach's questionnaire of ten "job reward factor". Dr. Kenneth A. Kovach, a professor of management at George Mason University in Fairfax Virginia, developed a questionnaire of ten "job reward factors" in 1946 for industrial workers. This questionnaire focuses on the positive, higher level motivational needs and was applied prior to Herzberg's documentation. These factors are listed in no particular order: (Kovach, 1987)

1. Good Wages
2. Interesting Work
3. Job Security
4. Appreciation for Job Well Done
5. Opportunity for Advancement
6. Loyalty to Employees
7. Good Working Conditions

8. Feeling of Being in on Things
9. Tactful Discipline
10. Sympathetic Personal Help

Kovach also hypothesized that the work motivational factors may be different between categories of employees based on sex, age, income, job type and organizational level. The 1986 questionnaire was broken into subgroups to allow for this hypothesis to be tested. There were only minor differences between the gender responses; however, there were significant differences between age groups and the findings were that “good wage” was the top ranked job reward of the younger employees and it descended in rank as the age group matured. The questionnaire also showed significant differences between traditional blue collar and white-collar jobs. The blue-collar worker was more concerned with “appreciation for work done” while the focus of the white-collar worker was “interesting work”. Management needs to understand employees within the context of the job they perform to properly understand what their needs are.

## RESEARCH METHODOLOGY

### Sample

The questionnaire was self-administered, and derives from an adaptation of Dr. Kenneth A. Kovach’s (Kovach, 1987) questionnaire of ten “job reward factor”. The questionnaire required translation into English and back-translation into Arabic. Pre-testing of the questionnaire took place, with a subsequent adjustment process to adapt to local cultural conditions. Data collection took place in 2016.

Two methods were adopted to collect the data. The first one was administering the online survey: An e-mail was sent to about 100 Saudi working women requesting them to participate in the survey. The mailing list was provided by HR department of local private university at Riyadh Saudi Arabia. The second one was the drop-off and pick-up method: questionnaires were handed to private companies in Riyadh, requesting 100 working women to participate.

Of the 200 questionnaires that respondents submitted, 120 are usable, giving a 60% response rate. The respondents range in age from 25 to 60. See demographic profile in table 01.

Table 1: Demographic Profile

Characteristics	Number	Characteristics	Number
<b>Age</b>		<b>Position:</b>	
25 – 30		Supervisor/Management	30
31 – 40	35	Maintenance	20
41 – 50	40	Customer Service	20
51 – 60	30	Clerical	20
61 and above	15	Teaching	30
	00		
<b>Work Status</b>		<b>Work Experience</b>	
Full Time	115	0-5	35
Part Time	05	6-10	70
		11-20	15
		21-30	
		Over 30	

### Data Analysis

Data was analyzed by partial least squares (PLS), a structural equation modeling (SEM) technique. PLS employs a component-based approach for estimation purposes (Lohmoller, 1988). Typically, PLS is better suited for explaining complex relationships. PLS Graph, version 3.0, was used for our analysis.

### Validity and Reliability

A thorough reliability and validity analysis of measurement instruments are a prerequisite for an empirical study for many reasons. First, the researcher can state with full confidence that the findings accurately reflected the proposed constructs. Second, the empirically scale validating the study has been used in other studies in the field for different populations (Mostafa, 2005). To examine if the average variance shared between each construct and its measures is greater than the average variance shared between the construct and other constructs as suggested by Compeau et al, (1999). In this respect, the results of Table 02 show that the squared correlations for each construct is less than the average variance extracted by the indicators measuring that construct. In other words, the measurement model reflects an adequate discriminant validity.

Table 02: Discriminant Validity Result

<b>Variable s</b>	GW	IW	JS	AJWD	OFA	LTE	GWC	FBT	TD	SPH
GW	<b>0.531</b>									
IW	0.024	<b>0.613</b>								
JS	0.078	0.065	<b>0.638</b>							
AJWD	0.026	0.087	0.042	<b>0.589</b>						
OFA	0.074	0.036	0.040	0.081	<b>0.541</b>					
LTE	0.045	0.078	0.067	0.019	0.021	<b>0.566</b>				
GWC	0.054	0.053	0.069	0.087	0.046	0.071	<b>0.61</b>			
FBT	0.023	0.035	0.071	0.052	0.026	0.051	0.085	<b>0.643</b>		
TD	0.045	0.086	0.063	0.061	0.031	0.047	0.071	0.055	<b>0.581</b>	
SPH	0.063	0.071	0.315	0.045	0.013	0.041	0.033	0.082	0.091	<b>0.553</b>

Note: Diagonal bold values represent the average variance extracted and other values represent the squared correlation of latent construct variables

Table 3: Reliability Tests Result

<b>Variables</b>	<b>Cronbach's Alpha</b>
Good Wages	0.90
Interesting Work	0.80
Job Security	0.79
Appreciation for Job well done	0.85
Opportunity for Advancement	0.83
Loyalty to employees	0.85
Good working conditions	0.92
Feeling of Being in on Things	0.89
Tactful Discipline	0.91
Sympathetic Personal Help	0.80

The reliability is an indication of the consistency with which the instruments measures the concepts and helps to access the “goodness” of measure (Sekaran & Bougie, 2010). Therefore, reliability is a measure of how closely the various items that constitutes a scale correlate. There are many different types of reliability estimates. One of the most widely used tests is Cronbach’s Alpha employed in this study as shown in Table 3.

## RESULTS

Overall analysis results are shown in table 4. The standardized PLS path coefficients and values are shown in the table. Results showed that good wages and interesting work) significantly motivates Saudi Arabian women to work in privates sector, accounting for 60% and 50% of the variance. Appreciation for job well done, opportunity for Advancement and good working conditions significantly motivates Saudi Arabian women to work in privates sector, collectively explains 55%, 53% and 50% of variance. Tactful discipline is another motivators for Saudi Arabian women to work in privates sector, accounting for 40% of the variance Overall Saudi Arabian women are not much considering job security, loyalty to employees, and feeling of being in on things as a motivation to work in private sector. Saudi Arabian women do not consider the sympathetic personal help as a motivation to work in private sector.

Table 4: PLS results for causal paths (n=140)

Casual Paths			t-value
Good Wages	Motivation	0.60	0.04*
Interesting Work	Motivation	0.50	0.03*
Job Security	Motivation	0.40	0.06
Appreciation for Job well done	Motivation	0.55	0.04*
Opportunity for Advancement	Motivation	0.53	0.02*
Loyalty to employees	Motivation	0.47	0.07
Good working conditions	Motivation	0.50	0.04*
Feeling of Being in on Things	Motivation	0.39	0.07
Tactful Discipline	Motivation	0.40	0.05*
Sympathetic Personal Help	Motivation	0.43	0.06

## Discussion and Conclusion

This study sought to investigate the motivation factors of women to work in private sector in the KSA. As this study has discussed that Saudi Arabian government and ministry of labor (MOL) has started programs like Saudization and Nitaqat, the main objective of these programs was to maximize efforts in decreasing labor opportunities for foreign workers while increasing the number of opportunities for Saudis in the private sector. Study used Dr. Kenneth A. Kovach's questionnaire of ten "job reward factor" to further find Saudi women motivation to work in private sector.

Current study shows that extrinsic motivator as salaries and allowances in private sector are high as compare to public sector to attract the Saudi women to work in private sector. The current study results are consistent with past applications of Kovach's scale in the industry in the United States with the top two work motivators being "good wages," and "opportunity for advancement" except job security.

The study established that the private sector has a number of incentives in place to encourage the women to perform well namely; provision of good working conditions and thanking a worker for the work that has been well done. This study shows that one of the motivator factor for Saudi women is opportunity for advancement. It implied that private sector is providing clear and attractive career advancement to women. One of the extrinsic motivators is tactful discipline identified to be well expressed in private sector. It gives Saudi women a sense of being organized and a motivation to work with provide sector.

The study has established that women workers motivation in private sector is not low, and it was recognized that motivation is necessary to encourage good performance. The study has realized that private sector is not able to manage the job insecurity in Saudi women workers.

Current study shows that Saudi women feel that in private sector loyalty to employees and feeling of being in on things are not satisfactory. The women feel that they are not getting enough support from their subordinates, which in turn can also hinder good performance in private sector.

This study support Kovach's hypotheses (Kovach, 1987) that the work motivational factors may be different between categories of employees based on sex, age, income, job type and organizational level. The study has shown that there is some success in the use of intrinsic

motivators and extrinsic motivators to attractive Saudi women to work in private sector and improve their performance.

#### Research Limitations

The primary limitation of this study is that the data was collected from Saudi Arabian female working in private sector in only one city in Saudi Arabia, thus limiting the generalizability of the findings.

Motivation is a broad field, the current study used only 10 factors from Kovach's questionnaire "job reward factor". Future study can use the other factors to measure the motivation in private sector.

In future research, researchers can compare the private sector and public sector motivational factors. The exploration of these topics will lead to promoting and developing women's education and work in countries where legitimate female employment is limited.

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## THE TRAINING AND DEVELOPMENT PROGRAMS IN THE UNITED ARAB EMIRATES: A CONCEPTUAL STUDY

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### ABSTRACT

*In this paper, based on the current global and regional changes, a training and development model has been proposed. The UAE economy has always been an important issue for the business analysts and had been discussed extensively in the literature as well as many other national and international forums. The sustainability of UAE economy is certainly based on talented workforce in all the organization whether they are in public sector or in private sector. Based on the literature review a model of training and development as a plan of action has been discussed and believe that an effective administration of these training programs can yield better employees and organizational outcomes.*

**Keywords:** Training and Development, Conceptual Model, Training in UAE

## THE DECISION OF INNOVATION IN TUNISIAN INDUSTRIAL COMPANIES: AN ECONOMETRIC APPROACH

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### ABSTRACT

*The present paper aims to analyse the technological innovation behaviour of Tunisian companies. This study focuses on the internal and external determinants of innovation in the Tunisian manufacturing industry. The main contribution of the current study relates to the econometric aspects permitting to enhance the analysis of innovation process within developing countries in general and in the Tunisian context in particular. First of all, we identify the factors that are likely to influence the decision making with regard to the innovation process in a given firm. Then, we shed light on growth strategies adopted by emerging countries aiming to promote their international integration. Finally, the results that we have reached by using a Probit model show that in a developing country like Tunisia, the capacity to absorb external knowledge determines both the decision and the innovative behaviour of the manufacturing companies. Thus, and in order to better appreciate the diversity of firms' R&D and innovation behaviour, we have determined different dimensions of the development of innovations.*

**Keywords:** Technological innovation, R&D, absorption capacity

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## TCSS, TCIS AND DES EARTHBOUND TOURIST DESTINATIONS CREATING CRISES MANAGEMENT EQUATIONS

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### ABSTRACT

*The phenomenal growth of interest in tourism as an economic, cultural, social and environmental tool of development is evidenced through numerous indications including the overwhelming attention given by tourism stakeholders in different destinations all over the world. This is not surprising considering the UNWTO reports revealing that with 1.1 billion international tourist and 5 to 6 billion domestic tourists, tourism is currently representing 9% of GDP - direct, indirect and induced impact, 6% of the world's exports and creating 1 of every 11 jobs worldwide (UNWTO 2015). Accordingly, tourism has been gaining more ground as a or the major contributor to the economies of several countries (e.g. Spain, Greece, France, Egypt, Dubai, Indonesia). On the other hand, tourism has been commonly attributed in tourism literature as a sensitive industry to different types of crises whether natural or manmade; which could – for instance – be clearly witnessed over the last decade where the world went through a long line of tourism-unrelated crises which aggressively effected the sector.*

*The combination of these two factors (i.e. massive importance and extreme sensitivity) provides a major justification for the need for understanding, measuring and efficiently managing tourism crises. In this regard and nevertheless tourism crisis management is a relatively well established research area, it is believed that several gaps still exist, where questions such as: how can we measure tourism crisis severity? Why it is common to have different impact for a-same-scale incident in different destinations? are still left unanswered. Accordingly, this project aims to cover the following areas:*

1. *Setting a measurable scale and criteria for assessing tourism crisis severity. In other words, creating a tourism Richter scale (Tourism Crisis Severity Scale; or TCSS). This will be critical for describing the volume of a specific tourism crisis and the situation of a destination directly after facing a tourism crisis.*
2. *Setting a measurable scale and criteria for assessing tourism crisis impact or damage happening as a result of a certain tourism crises (Tourism Crisis Impact Scale; or TCIS). This will be critical for measuring the impact of a specific tourism crisis over a certain period of time after facing a tourism crisis.*
3. *Despite that incidents may happen identically in scale (e.g. scale 1 on TCSS) in two different destinations, the volume of damage (TCIS) may differ between them. A part of this research is interested in detecting the reasons underpinning this. It is believed that researching this area will lead to setting a criteria for what could be newly coined as "Earthbound Tourist Destinations"; or destinations which are less effected by the strikes of tourism crises (e.g. what are the features of Paris and tourism in Paris that make it less effected by a terrorist attack of the same scale than Istanbul?) or in other words, what are the features of what could be coined as "Earthbound Tourist Destinations".*
4. *Identifying the features of the "Earthbound Tourist Destinations" will lead to: First, knowing how to create "Earthbound Tourist Destinations" or immunizing tourism destination against crises. Second, creating the "Destinations Earthboundness Scale (DES), which will classify tourist destinations according to their immunity against tourism crisis impacts.*
5. *Merging the previous aims will then help creating a formula for predicting the potential impacts of tourism crises of different scales on different destinations, which can by default help creating more effective plans for managing tourism crisis.*

**Keywords:** Tourism, Crisis Management, Tourist Destination, Earthbound destinations

# ASYMMETRIC VOLATILITY TRANSMISSION BETWEEN THE REAL EXCHANGE RATE AND STOCK RETURNS IN SOUTH AFRICA

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## ABSTRACT

*This paper analyses the asymmetric volatility spillovers between the real exchange rate and stock returns in South Africa. A Multivariate Exponential Generalized Autoregressive*

*Conditionally Heteroskedastic (EGARCH) model is estimated using monthly data from 1996 to 2016 to examine the relationship. The results show that there is a bi-directional volatility spillover effect between the two markets in the short-run. Also these effects are asymmetric. These findings suggest that while information in one market can be used to forecast changes in the other, these financial assets should not be included in the same portfolio when diversifying risk.*

**JEL Classification:** C58, F31, G17

**Keywords:** Volatility, stock market, risk, exchange rates, asymmetry

## ANALYZING THE TIME-VARYING RISK SPILLOVER BETWEEN OIL AND EQUITY MARKETS IN THE USA

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### ABSTRACT

*The purpose of this paper is to analyse the risk spillover between daily oil futures price and the S&P 500 stock index movements. The risk spillover between oil and stock markets are modeled using a rolling vector autoregressive model to allow time-varying parameters so as to reflect changes in risk spillover over time. In the case of time-varying causal relationship between the series, the results show that there is occasional risk transmissions between oil futures price and S&P 500 stock index during various sub-periods.*

*The present study, using VAR model with time-varying parameters to carry out Granger causality analysis in situations where causality is non-permanent, examines the risk spillover between oil prices and the U.S. equity market for the March 30, 1983 - February 7, 2018 period. The results from the linear full-sample VAR estimates indicate that there is no significant predictive power between oil futures returns and S&P 500 series. However, the findings of the rolling VAR estimates show that the causal links between oil futures returns and S&P 500 series have changed over some sub-periods. The evidence from time-varying rolling estimates demonstrates that there is occasional predictive content between oil futures returns and S&P 500 series in the sub-sample periods. Additionally the significant causal links from oil futures returns to S&P 500 series are for different periods compared to the periods where significant causal links from S&P 500 series to oil futures exists. The results of the study point two directions, one of which is that as far as the changes in the oil market and the developments in financial sector are considered, the findings on*



*the time-varying nature of the predictive power of financial variables are not unexpected. Even it happens occasionally; the second one is that the causal relationship between oil futures returns and the stock markets implies predictive power for both markets. The economic implications of causal relationship with predictive content should be put under close investigation for efficient markets.*

**JEL Classification:** Q43; E44; C32

**Keywords:** Oil Price; Equity Markets; Time-varying Granger Causality

# A MODEL OF MARKET-BASED CEO COMPENSATION CONTRACT

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## ABSTRACT

*We investigate the value of stock prices incorporated in executive compensation contract between inside owners and a manager. To do this, we develop a model of linear compensation contract based on liquidation value and stock price of a publicly traded firm where we employ the framework of Grossman and Stiglitzs (1980) for asset market equilibrium. We derive the optimal compensation contract and characterize it. In equilibrium, as in Holmström and Tirole (1993), the stock price provides additional information about managerial performance, which is not extracted from the liquidation value. The additional information contributes to enhancing the inside owners' utility if the manager is risk-averse. However, if the inside owners make contract with a risk-neutral manager, their utility remains unchanged whether the stock price is incorporated into the contract or not. A change in exogenous parameters may affect the equilibrium contract directly or indirectly via information market since the change can have effect on the traders' purchasing of information. In particular, an increase in market liquidity increases the importance of the liquidation value relative to the stock price in the contract since the direct effect dominates the indirect one when they have different signs. Finally, we find that incorporating the stock price into the contract contributes to increase social welfare since the inside owners utility increases due to the market-based contract while the other agents' utilities are independent of contract schemes.*

**JEL Classification:** G30, D86

**Keywords:** principal-agent problem; CEO compensation

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## THE IMPACT OF PSYCHOLOGICAL CONTRACT ON JOB ENGAGEMENT IN THE JORDANIAN TELECOMMUNICATION COMPANIES

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### ABSTRACT

*The aim of the study is to examine the impact of psychological contract on job engagement in the Jordanian telecommunication companies. The study sample consisted of 255 respondents working in different Jordanian telecommunication companies. The study results showed that there are statistical significant differences at the level of ( $\alpha \leq 0.05$ ) in the views of study sample members about the psychological contract and level of job engagement due to demographic and functional variables (gender, age, marital status, educational level, years of experience, and managerial level). Also result showed that there is a positive impact of the psychological contract fulfillment on job engagement in the Jordanian telecommunication companies, And a negative impact of psychological contract breach on job engagement in the Jordanian telecommunication companies. The study recommended the following based on the results: work to develop a common and clear understanding of the psychological contract between the company and employee includes both obligations and expectations towards the other party, involving the employees in training programs that will enhance the psychological side in the company (emotional intelligence, psychology and sociology programs, performance management and crisis solutions), preparing training programs to increase the employees' job engagement, work to establish a specialized department in job engagement and its activities and in psychological affairs of employees, and finally Future and further studied is recommended in those domains.*

**Keywords:** Psychological Contract, psychological Contract Fulfillment, Psychological Contract Breach, Job Engagement, Jordanian Telecommunication Companies

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## AIRLINE CODE-SHARING AND CAPACITY UTILIZATION

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### ABSTRACT

*This study builds on the existing literature linking airline alliance and air travel demand, but is the first to empirically link airline codeshare alliance to capacity utilization.*

*Airline alliances vary from limited cooperation, such as reciprocal frequent flyer programs, to more enhanced agreements, such as code sharing.*

*To examine whether and how codeshare partners' capacity utilization changes in response to a codeshare agreement, we focus on the Delta Air Lines (DL), Northwest Airlines (NW) and Continental Airlines (CO) Codeshare Alliance. We choose this codeshare alliance for the following reasons: (i) it involves three major carriers in the U.S. domestic airline industry; (ii) the alliance was the largest ever approved in the history of the U.S. commercial aviation; and (iii) the alliance turned out to be the most contentious alliance in the U.S. domestic airline industry.*

*The contribution of this study is to assess how Delta Air Lines (DL), Northwest Airlines (NW) and Continental Airlines' (CO) capacity utilization changes in response to their codeshare agreement of August 23, 2003. Airline carriers typically coordinate to seamlessly integrate their route networks which potentially result in more travel-convenient route network connections across partner carriers. While not attempting to study the incentives to form an alliance, the question that this research intends to shed light on is whether the route network integration that comes with the alliance provides higher load factor and therefore more efficient capacity utilization for partner carriers.*

*We intend to collect data on capacity utilization to examine the above relationship. To isolate the capacity utilization effects of the Delta/Northwest/Continental codeshare alliance, data will be collected on carrier, airport and market structure characteristics.*

*Further exploration of capacity utilization effects of code-sharing would be based on the existence of pre-alliance competition between the alliance firms. This will allow us to measure differences in capacity utilization in both markets where the partners competed prior to the alliance, and markets where they did not compete prior.*

*The findings of this study may have potential policy implications given that policy makers had expressed a great deal of skepticism when appraising the Delta/Northwest/*

*Continental alliance proposal, which they believed did not adhere to certain antitrust laws and regulations because of its potential to yield anti-competitive effects. However, a key policy implication of the results in this study is that policy makers should consider the impact of cooperative agreements such as code-sharing on capacity utilization (among other things) during appraisals.*

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## PROSPECTIVE CHANGES IN INTERNATIONAL TRADE OF SOLAR PV MODULES -FOCUSING ON JAPANESE MARKET -

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### ABSTRACT

*In the 21st century, the production of photovoltaic (PV) modules has rapidly increased in Japan following the development of roof-type PV technologies and the introduction of various subsidy systems to encourage the spread of PV systems. Especially after the introduction of feed-in tariff (FIT) policy, solar energy has been one of the leading renewable energy resources in Japan, being the third country in the world at the end of 2015 in terms of the amount of solar PV installed. The FIT policy has opened a door for utility-scale solar PV projects on a positive side, but simultaneously Japan has become net-importer of solar PV modules, 65% of solar PV modules being imported modules.*

*The authors have investigated the factors affecting international trade of solar PV modules in Japanese market through both expert interviews and close inspection of quantitative data. Based on the identified factors, the authors have developed a system dynamics model that simulates international trade of solar PV modules in Japanese market until 2050.*

*The results show how the use of domestic PV modules and foreign PV modules in Japan will change in the coming years midst the prospective change in the types of demand (i.e. roof-top PV and utility-scale PV) of solar PV in Japan.*

**Keywords:** Solar Energy, International Trade, Feed-in Tariff, System Dynamics

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## SUPPLY CHAIN MANAGEMENT PRACTICES AND THEIR IMPACT ON ORGANIZATIONAL PERFORMANCE: MODERATING ROLE OF INFORMATION TECHNOLOGY. (APPLIED STUDY ON THE FACTORIES IN IRBID)

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### ABSTRACT

*This study aimed to analyze the elements of the supply chain and stating the effect of the practices of supply chain management as well as the impact of information technology on organizational performance of industrial organizations operating in Irbid, and to achieve the goals of the study, the researcher designed study tool (questionnaire), which included 40 items, for the purposes of collecting preliminary data from the study population. The researcher used the comprehensive survey technique of the study population, (300) questionnaires were distributed upon population which consisted of all employees who are in the upper and middle-level. Number of valid questionnaires for analysis were (253) were collected, with response rate of (84.3 %).*

*The Researcher used the descriptive approach in the presenting data and the analytical approach for the analysis of the study results. The study found several results, most notably:*

*First: That there is statistically significant effect at ( $P \leq 0.05$ ) to the practices of the supply chain management practices (strategic integration with suppliers, integration with customers and purchasing strategies) on organizational performance (operational performance and marketing performance) in industrial organizations operating in Irbid.*

*Secondly: There is a statistically significant effect ( $P \leq 0.05$ ) for information technology in improving the impact of supply chain management practices on organizational performance in industrial organizations operating in Irbid.*

**Keywords:** Supply Chain Management Practices(SCMPs), Organizational Performance(OP), Information Technology(IT)



## OIL PRICE SHOCKS AND MACROECONOMIC ACTIVITY

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### ABSTRACT

*When the theories of investment and preferences under uncertainty are examined, it can be stated that uncertainty in energy prices, especially in oil prices, will lead to the postponement of investment decisions and tend to reduce current investments. Sudden changes and uncertainty in oil prices has a significant effect on market structure. One of the major sources of inflation is the changes occurring in oil price in Turkey as a crude oil importer. An empirical study investigating the influences of oil price shocks on Turkish economy will be informative because the impact of the changes in crude oil prices varies according to country classification. This study uses identification properties of a structural vector autoregressive with multivariate generalized autoregressive conditional heteroscedasticity in mean (SVAR-MGARCH-M) to model the dynamics of oil price shocks that affects economic activities at industry level. After estimators are obtained, the impact of shocks that occur on macroeconomic variables have been determined by using impulse-response analysis.*

**Keywords:** Oil price shock, Structural VAR, Multivariate GARCH-in-Mean Model

## EMPIRICAL INVESTIGATION OF CONSUMER RIGHTS: MEASURING FUNDAMENTAL CONCEPTS

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### ABSTRACT

*The Purpose of this study is to determine fundamental consumer rights through an intensive empirical investigation and establish a measuring scale for investigating public attitudes toward protection of these rights, and examine if these attitudes vary by consumer demographic variables.*

*The study uses a methodology that both develops a conceptual theory of perceived consumer rights and consequently tests it empirically. The study relies on a Mall-Intercept sample of 590 consumers. The empirical investigation was carried out in Jordan as a developing country. Several statistical tools were employed for data analysis, including Descriptive statistics, Analysis of Variance, and a Structural Equation Modeling.*

*The main findings of the study revealed six fundamental consumer rights from consumers' perspective, as follows: right to safety; right to be heard, right to choose; right to be informed; right to redress; and right to privacy. The study shows that perceived quality of consumer rights was around the average, with aspirations for future improvement. Consumerism, therefore, was at stake. Further, the study did not observe significant differences in consumers' attitudes due to their demographics. Finally, the study made several recommendations to marketers and public policy makers focusing on the need to improve status of consumer rights in Jordan. Possible avenues for possible future research were also addressed.*

**Keywords:** Consumer Rights, consumerism, consumer redress

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## THE CHALLENGES AND OPPORTUNITIES OF HEALTH INFORMATION SYSTEMS: AN APPLIED STUDY ON MILITARY HOSPITALS IN JORDAN

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### ABSTRACT

*The study aimed to identify the challenges and opportunities that health information systems caused in military hospitals in Jordan. The study based on quantitative method using questionnaire, which were distributed to employees in four military hospitals in Jordan. 430 questionnaires were distributed, 410 questionnaires data were completed and been analyzed.*

*The results showed that Health Information systems applied efficiently in the studied hospitals and increasing challenges and opportunities in the military hospitals. The results show that there is a statistically significant relationship between health information systems application and increasing opportunities to develop and improve the quality of health services as well as there is a statistically significant relationship between Health information systems application and challenges facing military hospitals in Jordan.*

*The results shows that there is significant challenges facing military hospitals in Jordan refers to age and experience of the health employees. Age group (Less than 30 years) and experience group (5-10 years) thinks that there are challenges facing military hospitals in Jordan comparing with other groups. The results show also that there is significant deference at the significance level (0.05) of opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to age, educational level and experience. Age group (Less than 30 years) and educational level group (High school), experience group (5-10 years) thinks that there are*

*Opportunities to develop and improve the quality of health services in military hospitals in Jordan more significantly than other groups.*

*In the light of the results, the researchers recommend increase focusing on the development of health information systems and emphasizes on the need to seize the opportunities offered by the health information systems in development of health services and enable these hospitals to face any challenges that may face.*

## 1. Introduction

Health care, similar to other social activities, experiences strong and continuous changes in the information age. Whereas information and data are an important element in the administrative process, and these information and data, need a system to manage them. Thus information systems because of the importance of information, the health sector needs to manage information in order to provide accurate and sufficient information to the decision maker and planning to improve health policies that can promote global health development (Eivazzadeh, 2015).

Medical decisions facing many challenges and difficulties due to the volume of information and knowledge that should the physicians and decision makers in hospitals and health care centers to deal with on an ongoing basis. However, health information system (HIS) require to enclose information on determinants of health, infrastructure of services, and cost/effectiveness of health interventions and health care procedures (Panerai, 2014).

Thus indicates that Health Information Systems are refer to such systems that are used to process data, information and knowledge in healthcare environments. Therefore, the benefit of complete and accurate (HIS) is to increase legibility, decrease medical errors, reduce costs and after all improve the quality of healthcare provided to the patients (Ngafeeson, 2014).

Moreover, the importance of (HIS) provide the decision-makers with proper data and information in different levels of management in health care organizations for proper identification of problems and obstacles facing the managers/leaders and enable him or her, make evidence-based decisions ,allocate resources, as well as improvement of health quality (Higgins et al, 2015).

On the other hand, despite the importance and benefits that provided by (HIS), but it faces some challenges that obstruct its implementation in hospitals. According to Ahmed et al (2016) the most common challenges that face implementing of Health Information Systems are delivering on time and on budget with required features and functions.

### 1.1 Problem of the study

Information flow process is significant importance for health care institution's activity .We can liken it as the blood for a human being's life and due to the large hospitals size and multiplicity of

tasks The problem of the study is that, despite the importance of medical information systems in offering opportunities to improve health service and the ability to develop administrative work in health organizations, they pose problems and challenges for health organizations as they raised the level of the need for qualified human resources to deal with the health information system. The need for high-cost training and rehabilitation.

In addition, health information system is in a state of rapid and continuous development requires constant updating, which drains additional costs to health organizations. The cost of medical care has increased dramatically in recent years. The problem of the study also lies that many management acts are taken without relying on an efficient information system to reach an efficiency management acts.

The problem of the study determined in answering the following questions:

What are the opportunities that health information system offers to health organizations in Jordan?

What are the challenges that information system create in health organizations in Jordan?

## 1.2 The Importance of the Study

### 1.2.1 Practical importance:

The importance of this study represented by addressing new and important concepts that other studies did not dealt with adequately; which is health information systems challenges and opportunities in Jordanian military hospitals. It is noted that the health information systems is largely applied in Jordanian military hospitals, which requires the efficiency, abilities and skills to utilize such systems to improve the quality of provided health service.

The current study would benefit military hospital officials to clarify the opportunities provided by health information systems, and clarify the most important challenges that may accompany the application of health information systems in military hospitals to overcome these challenges.

### 1.2.2 Academic importance:

The academic importance of study stems from the fact that it is one of the few studies on the subject of health information systems challenges and opportunities, most studies focused on health information systems and its benefits. The first study applied on military hospitals in Jordan. Therefore, the present study seeks to enrich the scientific library with an important material in the field of challenges and opportunities of health information systems.

### 1.3 Aims of the study

Clear-out the extent of health information systems application in military hospitals in Jordan.

Identify the challenges that health information systems caused in military hospitals in Jordan.

Identify the opportunities that health information systems provided to military hospitals in Jordan.

### 1.4 Study Hypotheses

There is no statistically significant relationship between health information systems application and increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan.

There is no statistically significant relationship between health information systems application and increasing the challenges facing military hospitals in Jordan.

There is no statistically significant differences in Opinions of participants about Health information Systems Challenges and Opportunities due to demographic characteristics (Age, Gender, educational level, experience).

## 2. Literature review

The function of information technology in health practice witnessed several changes in the last 40 years, starting from administrative roles with similarity to other types of organization, paying more attention to quality with minimal cost (Berner et al., 2005). However, (HIS) focus and give more importance to information and data related to health, infrastructure of health services, cost and quality of health care services (Panerai, 2014).

Health Information System consists as any system of inputs, processes, outputs and boundary; a system receives data or information - inputs that are simply processed in a number of ways before producing different types of outputs (Beaumont, 2011).

On the other hand, despite the importance and benefits that provided by (HIS), but it faces some challenges that obstruct its implementation in hospitals. According to Ahmed et al (2016), the most common challenges that face implementing of Health Information Systems are delivering on time and on budget with required features and functions.

### 2.1 Definitions of Health Information System

Health information systems have many definitions according to different researchers. Almunawar and Anshari (2012), defined (HIS) as "the intersection of between healthcare's business process, and information systems to deliver better healthcare services".

In addition, two different ways World Health Organization (WHO) defined Health Information System. The first definition was in 2004 by (WHO), stated that Health Information System as "a system that integrates data collection, processing, reporting, and the use of the information which is necessary for improving health service effectiveness and efficiency through better management at all levels of health services".

In 2008 (WHO) defined Health Information System as "a system which provides the underpinnings for decision-making and has four key functions: data generation, compilation, analysis and synthesis, and communication and use. The health information system collects data from the health sector and other relevant sectors, analyses the data and ensures their overall quality, relevance and timeliness, and converts data into information for health-related decision-making".



As a researchers, (HIS) is an element of health informatics in which it uses and processes information to improve health service effectiveness and efficiency. Health Information System should gather the relevant partners to make sure that the users of (HIS) have access to reliable, useable, and authoritative data.

## 2. 2. Health Information System in Jordan “Hakim”

Hakim program was launched in 2009 in Jordan, which is one of the largest programs in the health sector. This program enhancing the efficiency of medical management and the development of health care for people, and make these apply to the best international standards. It also improves the work procedures which will give positive to the patient experience in the health centers, through the work of an electronic medical file for every citizen, the program is provided by any medical organization using the national ID, through the process of linking the Civil Status Database and the program database. The file contains comprehensive surgical reports, current medications, degree of response or sensitivity, medical history, surgery, and notes recorded at the hospital. (Electronic health solution in Jordan, 2017)

The program is based on software called Vista Developer (a software program in the retired military hospitals in America). The program was brought to Jordan, but the program it brought was a primitive program of Vista software rather than the latest. (Al-madina News, 2011)

The program includes further scientific and technological development, which contributes to the transfer of technology, stop wasting the accumulation of medical and nursing skills. The program also represents a turning point in the health sector and contributes to its development, as it includes indicators to measure performance and follow-up achievement, so as to increase the level of services. The program is a great scientific progress, its importance in the inventory of the possibilities with integrated accuracy, which helps the planner and the port to take the correct steps and procedures. (Peppers, 2015).

## 2.3 Previous studies

A qualitative study performed by Rahimi, et al, (2009) to find out how knowledge gained obtained in association to HIS implementations and how to use this knowledge in performing and implementing plans. The study reveal that the implementing a HIS without human intervention will not raise the organizational efficiency. The results found out that many of the

main and significant failures come from absence of feedback from end-users to developers during the development stage process (Rahimi, et al, 2009).

Almunawar, and Anshari, (2013) performed a research, aimed to clear-out (HIS): Concept and Technology, the study, (HIS) is the intersection between healthcare's business process, and information systems to deliver better healthcare services. The study reveal that healthcare organizations are greatly influenced by economic, social, politic, and technological factors. This study focuses on some essential concepts of healthcare industries and related terminologies to understand fully health information system (Almunawar, and Anshari, 2013).

Another study done in Uganda by Namakula and Kituyi (2014), in order to find out the success factors of health information systems in different levels of Healthcare organizations in developing country. The population of the study consists of healthcare workers in small and medium healthcare organization including doctors, nurses, administrators and laboratory attendants. The results reveals that management support, user involvement, resource supply, and education and training are the main essential factors for the success of (HIS) in addition, the study results helped to understand problems and challenging facing health information Systems in different contexts (Namakula and Kituyi, 2014).

Al-Gharbi et al (2014), performed a research under the supervision of Ministry of Health (MOH) in Oman, in order to evaluate the performance and implementation of Al-Shifa (A Healthcare Information System in Oman). The research explore the development of a project management of Al-Shifa, a healthcare information system, and it describes the evolution of the implementation of a healthcare information system to meet the needs of the healthcare departments. The result shows that there was no formal project management approach adopted by the (MOH) for the development and implementation of Healthcare Information System Project. In addition to, the result reveals that the project suffered a scope creep in terms of features, cost and time-schedule.

Another Study done by Ahmed et al (2016), aimed to identify, refine and group Critical success factors for healthcare information system (HISCSFs) in the last twenty years related literature (1996-2015). The main results obtained from the study included: total number of (HISCSFs) derived from related literature is (80), most discussed (HISCSFs) dimensions in the studies are: firstly Human factors (15) out of (40), which represented 37.5%. Secondly, Technical factors (14) out of (40), which represented 35% and thirdly is the Management/ Organizational Factors (6)

out of (40), which represented 15%. Most of (HISCsFs) were process-award factors, which reflect the significant role of processes in (HIS) success.

The results of the HISCsFs dimensions analysis indicates that (HIS) planners and executives must take into account specific influential main factors in addition to processes focusing, even though it is understood that the all (CSFs) identified are important for (HIS) to succeed to achieve (HIS) success.

### 3. Research Method

The research based on quantitative method, using self-completion questionnaire to collect data, descriptive and analytical approach to describe Health Information Systems Challenges and Opportunities.

#### 3.1 Study population and sample

Military hospitals consist of 10 hospitals (Princess Aisha Bent Al Hussein. Medical Complex/ Amman. Prince Rashid Military Hospital/ Irbid. Princess Haya Military Hospital/ Jerash+ Ajloun. Prince Zeid Al-Hussein Military Hospital/ Tafleh. Queen Alia Military Hospital/ Amman. King Talal Hospital/ Mafraq. Prince Ali Bin Al-Hussein Hospital / Karak, Prince Hashem bin. Abdullah II military Hospital / Aqaba. Prince Hashem Bin Al-Hussein Hospital / Zarqa).

The researcher chose four hospitals to implement the study. The reason for their selection is that they include all geographical regions in Jordan and density of population.

The total population of the research includes all employees in (Al-Hussein hospital/Amman, Queen Rania Al Abdullah Hospital/Amman, Prince Hashem Bin Al-Hussein Hospital / Zarqa. Prince Rashid Bin Al-Hussein/Irbid) military hospitals, which has total of (10962) employees as follow:

**Table No. (1) Study population**

Al-Hussein hospital	Queen Rania Al Abdullah Hospital	Prince Rashid Bin Al-Hussein	Prince Hashem Bin Al-Hussein Hospital / Zarqa	Al-Hussein hospital
Doctors	662	128	143	141
Dentists	107	****	31	29
Nursing officers	898	327	500	449
Nursing individuals	519	144	400	346
Support medical professions Officers	1389	5	92	91
Support medical professions individuals	1118	150	303	277
Administrative occupations officers	25	252	25	26
Administrative occupations individuals	138	378	330	325
Self-management	422	****	408	402
Total	5278	1384	2232	2086
<b>Total population</b>	<b>10980</b>			

Table No. (1) Shows that sample size total population were more than (5000) for this study sample size will be not less than (384), in order to assure this the researcher Select a sample size of (430) samples selected randomly.

### 3.2 Data Sources:

According to Proctor (1997), there are two main methods used to gather data, primary and secondary data. Each method consists of different ways of collecting data. for the purpose of this research objects the two methods been performed.

3.2.1 Secondary data: Reviewing related theoretical and preceding studies, books and articles to have complete picture and understanding of the research under study and to be able to formulate

a theoretical framework and facilitate measuring dimensions of study variables of Health information Systems Challenges and Opportunities in military hospitals in Jordan.

3.2.2 Primary data: Represented by the development of a survey questionnaire to measure the variables and dimensions and study hypotheses.

3.2.2.1 Questionnaire Design: Survey questionnaire with five-point likert scale used as a tool to measure the dimensions of study variables which is based on the following values:

Strongly Agree: (5) points

Agree: (4) points

Neutral: (3) points

Disagree: (2) points.

Strongly Disagree: (1) point.

Study questionnaire contains three parts:

Part 1 contains general information about the Study Sample.

Part 2 contains statements of the study variables of Health information Systems Opportunities in military hospitals in Jordan.

Part 3 contains statements of the study variables of Health information Systems Challenges in military hospitals in Jordan.

3.3 Reliability:

3.3.1 Pilot study Correlations: Study tool distributed at exploratory sample of ordinary individuals, also distributed on sample-included specialists' members on the subject of study. 25 questionnaire distributed for each of these categories, and re-distributed after a period of 20 days from the first procedure, Pearson correlation test conducted between the two periods and the results were as follows:

**Table (2) Pilot study Correlations**

Retrieval of health information	Pearson Correlation	.791
	Sig. (2-tailed)	.000
	N	25
Acquire health information	Pearson Correlation	.815
	Sig. (2-tailed)	.000
	N	25
Working staff efficiency	Pearson Correlation	.671
	Sig. (2-tailed)	.000
	N	25
Challenges	Pearson Correlation	.659
	Sig. (2-tailed)	.000
	N	25
Opportunities	Pearson Correlation	.822
	Sig. (2-tailed)	.000
	N	25

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table (2) The result of correlation between the first and second test.

3.3.2 Internal consistency: To insure that the survey questionnaire has suitable reliability for analysis of the research data, Cronbach's Alpha was calculated, the result of Cronbach's Alpha values were (0.817), this result indicates that the survey questionnaire has suitable Reliability value for data analysis (Sekaran and Bougie, 2013).

**Table (3) - Internal coherence consistency coefficients (Alpha Cronbach) for each variable of the study tool and for the instrument as a whole**

Variables	Number of paragraphs	Coefficient of consistency Internal consistency (alpha cronbach)
Retrieval of health information	6	0.906
Acquire health information	5	0.891
Working staff efficiency	4	0.890
Challenges	6	0.852
Opportunities	6	0.888
<b>All factors</b>	<b>26</b>	<b>0.938</b>

The table shows that the stability coefficients for all the study axes were greater than (60%), indicating that there is an internal consistency between the paragraphs of each field, Which confirms the validity and significance of the questionnaire in the measurement.

#### 3.4 Statistical Methods

After completion of the data collection phase, quantitative data entry was inputting using the SPSS Program. Descriptive statistics were used to provide information on Frequency and percentage for the demographic variables, multi Regression analysis to test the Hypotheses of the study.

#### 4. Results

This section presents survey results of the study in terms of study sample characteristics, the participants' opinions about the study variables and hypotheses test. A total of 430 survey questionnaires were randomly distributed, out of returned surveys, 20 uncompleted survey questionnaires been ignored, 410 survey questionnaires data were appropriate to be analyzed.

##### 4.1 Descriptive Analysis

**Table (4) - Hospitals**

Hospital	Frequency	Percent
Hashim	126	30.7
Rania	81	19.8
Rashed	100	24.4
Husain	103	25.1
Total	400	%100.0

Table (5) shows distribution of samples according to Hospital.



**Table (5) - Demographic variables**

Age		Frequency	Percent
	Less than 30years	213	52.0
	30-40 years	146	35.6
	41-50 years	38	9.3
	more than 50 years	5	1.2
	Total	402	98.0
Missing	System	8	2.0
<b>Total</b>		<b>410</b>	<b>100.0</b>
Gender		Frequency	Percent
Valid	MALE	178	43.4
	FEMALE	223	54.4
	Total	401	97.8
Missing	System	9	2.2
<b>Total</b>		<b>410</b>	<b>100.0</b>
Marital Status		Frequency	Percent
Valid	Single	103	25.1
	Married	267	65.1
	Divorced	19	4.6
	Widowed	10	2.4
	Total	399	97.3
Missing	System	11	2.7
<b>Total</b>		<b>410</b>	<b>100.0</b>
Education level		Frequency	Percent
Valid	High school	38	9.3
	Diploma	147	35.9
	Bachelors	187	45.6
	Higher Education	30	7.3
	Total	402	98.0
Missing	System	8	2.0
<b>Total</b>		<b>410</b>	<b>100.0</b>
Experience		Frequency	Percent
Valid	Less than 5 years	81	19.8
	5-10 years	188	45.9
	11-15 years	66	16.1
	more than 15 years	66	16.1
	Total	401	97.8
Missing	System	9	2.2
<b>Total</b>		<b>410</b>	<b>100.0</b>
Profession		Frequency	Percent
Valid	Doctor	41	10.0
	Nursing	247	60.2
	Administrative	42	10.2
	Support medical professions	70	17.1
	Other Profession	2	.5
	Total	402	98.0
Missing	System	8	2.0
<b>Total</b>		<b>410</b>	<b>100.0</b>

Table (5) shows distribution of samples according to Demographic characteristics.

The table presents that %52.0 of the samples were Less than 30years of age, % 54.4 were females, %65.1 of the samples were married, %45.6 of the samples hold Bachelor's degree. %45.9 have 5-10 years of experience, %60.2 of the samples were Administrative.

#### 4.2 Study Variables:

##### 4.2.1 Retrieval of health information

To identify Retrieval of health information Means and Std. Deviation were computed, table (8) shows the results:

**Table (6) - Means and Std. Deviation of Retrieval of health information**

No .	Statement	Mean	Std. Deviation
1	Information system always provides all the necessary information for beneficiaries	4.095	1.013
2	The information provided by the current information system has details required to meet all needs of all departments	4.015	1.016
3	Used information system provides the importance and usefulness information needed for decision making	3.951	1.099
4	Information's equipment provides the data necessary to achieve hospital objectives	4.005	0.988
5	Information system provides statistical reports requested by the various departments and sections of the hospital upon request.	4.010	1.047
<b>Average</b>		<b>4.015</b>	<b>1.032</b>

Table No. (6) shows that the attitudes of the sample towards survey questionnaire statements of Retrieval of health information level; Average mean (4.015), S.t (1.032) (high appreciation).

It is noted that Retrieval of health information mean ranged [3.951- 4.095] high degree of appreciation .Paragraph (1), has the highest level of appreciation, which stated that: “Information system always provides all the necessary information for beneficiaries”, mean was (4.095) Std. Deviation (1.013).

#### 4.2.2 Acquire health information:

To identify acquire of health information Means and Std. Deviation were performed, table (7) shows the results:

**Table (7) - Means and Std. Deviation of Acquire health information**

No	Statement	Mean	Std. Deviation
6	Information system characterized with high accuracy	4.073	0.976
7	Information system characterized with trust and reliability	4.089	0.939
8	Information system characterized with high efficient	3.998	1.034
9	Information provided by the information systems fit with all circumstances.	3.993	1.043
10	Information provided by the information systems is useful for all departments.	3.950	1.086
<b>Average</b>		<b>4.020</b>	<b>1.015</b>

Table No. (7) present the attitudes of the sample towards survey questionnaire statements of Acquire health information level; Average mean (4.020), S.t (1.015) (high appreciation).

It is noted that Acquire health information mean ranged [3.950-4.089] high degree of appreciation .Paragraph (7), has the highest level of appreciation, which stated that: “Information system characterized with trust and reliability”, mean was (4.089) Std. Deviation (0.939).

#### 4.2.3 Working staff efficiency:

The result of Means and Std. Deviation to identify Working staff efficiency as shown in table (8) :

**Table (8) - Means and Std. Deviation of Working staff efficiency**

No .	Statement	Mean	Std. Deviation
11	Individuals working in information systems have high efficiency in dealing with the computer hardware.	3.780	1.170
12	The employees provided with the basic skills necessary to deal with the modern systems.	3.766	1.153
13	Employees subjecting to training sessions on a regular and periodic basis	3.765	1.185
14	The administration provides individuals with high experience to deal with information system.	3.845	1.174
<b>Average</b>		<b>3.789</b>	<b>1.170</b>

Table No. (8) presents the attitudes of the sample towards questionnaire statements of Working staff efficiency level; Average mean (3.789), S.t (1.170) (high appreciation).

It is noted that Acquire health information mean ranged [3.765-3.845] high degree of appreciation .Paragraph (13), has the highest level of appreciation, which stated that: “Employees subjecting to training sessions on a regular and periodic basis”, mean was (3.765) Std. Deviation (1.185).

#### 4.2.4 Challenges:

To identify Challenges Means and Std. Deviation were executed, table (9) shows the results:

**Table (9) - Means and Std. Deviation of Challenges**

No .	Statement	Mean	Std. Deviation
17	Lack of efficient staff capable of dealing with information systems	3.970	1.078
16	Weakness in necessary funding to keep pace with constant updating	3.973	1.080
15	Increased services' costs	3.990	1.115
19	Increasing the demand for local and international accreditations for international competitiveness.	4.121	0.983
18	The need for continuous training programs to keep pace with development.	4.150	0.900
20	The need for constant modernization of hospital infrastructure to keep pace with development.	4.181	0.999
<b>Average</b>		<b>4.064</b>	<b>1.026</b>

Table No. (9) presents the attitudes of the sample towards survey questionnaire statements of Working staff efficiency level; Average mean (4.064), S.t (1.026) (high appreciation).

It is noted that Challenges mean ranged [3.970-4.181] high degree of appreciation .Paragraph (20), has the highest level of appreciation, which stated that: “The need for constant

modernization of hospital infrastructure to keep pace with development”, mean was (4.181) Std. Deviation (0.999).

#### 4.2.5 Opportunities:

To identify Opportunities Means and Std. Deviation were carried out, table (10) shows the results:

**Table (10) - Means and Std. Deviation of Opportunities**

No .	Statement	Mean	Std. Deviation
21	Improving quality of health service	4.088	1.040
22	Receiving more patients	3.938	1.070
23	Reduce medical errors	3.875	1.120
24	Improve health conditions and healing rates	3.865	1.117
25	Increasing patient satisfaction of provided services	3.828	1.136
26	Reduce waiting times in clinics and entries for health service in health institutions	3.731	1.242
<b>Average</b>		<b>3.887</b>	<b>1.121</b>

Table No. (10) shows that the attitudes of the sample towards questionnaire statements of Opportunities level; Average mean (3.887), S.t (1.121) (high appreciation).

It is noted that Opportunities mean ranged [3.731-4.088] high degree of appreciation .Paragraph (21), has the highest level of appreciation, which stated that: “Opportunities Improving quality of health service”, mean was (4.181) Std. Deviation (0.999).

#### 4.3 Health Information system Challenges, Opportunities:

The table (II) present means, standard deviations for the study variable:

**Table (II) - Means and Std. Deviation of Identify variable**

Variables	Level of importance	Mean	Std. Deviation
Retrieval of health information	High	4.015	1.032
Acquire health information	High	4.020	1.015
Working staff efficiency	High	3.789	1.170
<b>Health Information system</b>	High	<b>3.941</b>	<b>1.072</b>
Challenges	High	4.064	1.026
Opportunities	High	3.887	1.121

Table No. (II) shows that Acquire health information was the most important factor in Health Information system mean (4.020), Retrieval of health information was at the second place mean (4.015). Working staff efficiency was at the third place in Health Information system mean (3.789) all variables were at high appreciation, Health Information system mean (3.941), that indicates that Health Information system applied efficiently in the studies hospitals.

The table shows that Challenges mean (4.064) high appreciation that indicates that the sample of the study thinks that health information systems increasing challenges that face hospitals.

Opportunities mean (3.887) high appreciation that indicates that the sample of the study thinks that health information systems increasing opportunities of the hospitals.

#### 4.4 Hypothesis Analysis:

##### 4.4.1 First Hypothesis:

There is no statistically significant relationship between health information systems application and increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan. Regression Analysis used to find out if there is a statistically significant relationship between health information systems application and increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan at significance level ( $\alpha \leq 0.05$ ).

**Table (12) - Model Summary first hypothesis**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.554a	.307	.302	.74933

a. Predictors: (Constant), staff, Retrieval, Acquire

Table No. (12) The results of the analysis found that the value of the Regression coefficient between independent and dependent variable, reaches (0.554), the value of the coefficient of determination ( $R^2$ ) reaches value of (0.307). That's indicates that 55.4% of changes in dependent variable caused by independent variables.

Table (13) represents the results of analysis of independent variables health information systems (Retrieval of health information, Acquire health information, and working staff efficiency) on increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan.

**Table (13) - ANOVAa independent variables on opportunities**

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	100.167	3	33.389	59.465	.000
	Residual	226.281	403	.561		
	Total	326.448	406			

a. Dependent Variable: Opportunities

b. Predictors: (Constant), staff, Retrieval, Acquire

Table (13) presents the analysis of variance, in order to identify the explanatory model of independent health information systems (Retrieval of health information, Acquire health information, and working staff efficiency) on increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan, through statistical through (F) value.



The result of (F) value was equal to (59.465) with possibility value (0.00) which is lower than the specific value (0.05), indicate that there is a significant impact exists at significance level ( $\alpha \leq 0.05$ ).

Therefore, we reject the null hypothesis and accept the alternative:

There is a statistically significant relationship between health information systems application and increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan.

Thus, it can be said that at least one independent variables the factors (Retrieval of health information, Acquire health information, and working staff efficiency) could has significant, impact on dependent variable and this is determined by a significant multiple regression test equation coefficients.

Table (14) shows the values of the regression coefficients for the capabilities and the statistical tests.

**Table (14) - Coefficients Multivariate Regression**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.443	.194		7.428	.000
1 Retrieval	.174	.059	.172	2.956	.003
Acquire	.205	.061	.195	3.336	.001
Staff	.243	.048	.276	5.062	.000

a. Dependent Variable: Opportunities

The table indicates that the independent variables (Retrieval of health information, Acquire health information, and working staff efficiency) have a statistically significant effect on the dependent variable increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan.

The calculated value of T is higher than its tabular value (1.984) at significance level lower than ( $\alpha \leq 0.05$ ) for all three variables. Unstandardized Coefficients (B) indicates that working staff efficiency has highest relationship with opportunities to develop and improve the quality of health services in military hospitals in Jordan.

#### 4.4.2 The second hypothesis

There is no statistically significant relationship between health information systems application and increasing the challenges facing military hospitals in Jordan.

To Analysis this hypothesis, Regression used to find out if there is a statistically significant relationship between health information systems application and challenges facing military hospitals in Jordan at significance level ( $\alpha \leq 0.05$ ).

**Table (15) - Model Summary first hypothesis**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.543a	.295	.289	.67357

a. Predictors: (Constant), staff, Retrieval, Acquire

Table No. (15) shows that the result of Regression coefficient between the independent and dependent variable reaches (0.543) as shown, the value of the coefficient of determination ( $R^2$ ) reaches value of (0.295). That's indicates that 29.5% of changes in dependent variable caused by independent variables.

Table (16) represents the results of analysis of independent variables health information systems (Retrieval of health information, Acquire health information, and working staff efficiency) and challenges facing military hospitals in Jordan.

**Table (16) - ANOVAa independent variables on challenges facing military hospitals in Jordan**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	100.167	3	33.389	59.465	.000
	Residual	226.281	403	.561		
	Total	326.448	406			

a. Dependent Variable: challenges facing military hospitals in Jordan

b. Predictors: (Constant), staff, Retrieval, Acquire

Table (16) shows that the result of the analysis of variance to identify the explanatory model of independent health information systems (Retrieval of health information, Acquire health information, and working staff efficiency) on challenges facing military hospitals in Jordan, through statistical through (F).

The tested (F) value was equal to (59.465) with possibility value (0.00) which is lower than the specific value (0.05), and that shows that there is a significant impact exists at significance level ( $\alpha \leq 0.05$ ).

Therefore, we reject the null hypothesis and accept the alternative:

There is a statistically significant relationship between health information systems application and challenges facing military hospitals in Jordan. Thus, it can be said that at least one independent variables the factors (Retrieval of health information, Acquire health information, and working staff efficiency) could has significant, impact on dependent variable and this is determined by a significant multiple regression test equation coefficients.

Table (17) shows the values of the regression coefficients for the capabilities and the statistical tests.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.925	.174		11.041	.000
1 Retrieval	.265	.053	.293	4.963	.000
Acquire	.104	.056	.110	1.867	.063
Staff	.174	.043	.220	4.018	.000

a. Dependent Variable: Challenges

**Table (17) - Coefficients Multivariate Regression**

The table indicates that the independent variables (Retrieval of health information, and working staff efficiency) have a statistically significant effect on the dependent variable increasing challenges facing military hospitals in Jordan.

The calculated value of T is higher than its tabular value (1.984) at significance level lower than ( $\alpha \leq 0.05$ ) for all three variables. Unstandardized Coefficients (B) indicates that working staff efficiency has highest relationship with challenges facing military hospitals in Jordan. The table indicates that the independent variable Acquire health information have no statistically significant effect on the dependent variable challenges facing military hospitals in Jordan.

#### 4.4.3 Third hypothesis:

There is no statistically significant differences in Opinions of participants about Health information Systems Challenges and Opportunities due to personal or demographic characteristics like (Age, Gender, educational level and experience). ONE WAY ANOVA was performed to test this hypothesis in order to find out if there is a significant deference at significant level ( $\alpha \leq 0.05$ ).

challenges facing military hospitals in Jordan:

There is no statistically significant differences in Opinions of participants about Health information Systems Challenges due to personal characteristics (Age, Gender, educational level, experience). Table No. (18) shows the results:

**Table (18) - ANOVA factors differences refers to personal characteristics**

		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig .</b>
Age	Between Groups	30.127	31	.972	2.073	.001
	Within Groups	172.980	369	.469		
	Total	203.107	400			
Gender	Between Groups	8.242	31	.266	1.082	.354
	Within Groups	90.435	368	.246		
	Total	98.678	399			
Education al	Between Groups	24.982	31	.806	1.409	.076
	Within Groups	211.088	369	.572		
	Total	236.070	400			
experience	Between Groups	58.634	31	1.891	2.208	.000
	Within Groups	315.304	368	.857		
	Total	373.938	399			

Table No. (18) shows that there is significant deference at the significance level (0.05) of challenges facing military hospitals in Jordan refers to age  $f(2.073)$  at significance level (0.001).

The table shows that there is significant deference at the significance level (0.05) of

challenges facing military hospitals in Jordan refers to experience  $f(2.208)$  at significance level (0.000).

The table shows that there is no significant deference at the significance level (0.05) of challenges facing military hospitals in Jordan refers to Gender  $f(1.082)$  at significance level (0.354). The table shows that there is no significant deference at the significance level (0.05) of challenges facing military hospitals in Jordan refers to Educational level  $f(1.409)$  at significance level (0.076).

Table No. (19) clear-out the directions of trends of the differences of challenges facing military hospitals in Jordan refers to age

**Table (19) - The directions of trends of the differences of challenges facing military hospitals in Jordan refers to age**

Age		Mean	Std. Deviation
Less than 30years	Challenges	4.2669	.72503
	Valid N (listwise)		
30-40 years	Challenges	3.8660	.81371
	Valid N (listwise)		
41-50 years	Challenges	3.6798	.92199
	Valid N (listwise)		
more than 50 years	Challenges	3.9667	.32059
	Valid N (listwise)		

Table No. (19) shows that differences of the directions of challenges facing military hospitals are for age group (Less than 30 years) mean reached (4.2669).

Table No. (20) clear-out the directions of trends of the differences of challenges facing military hospitals in Jordan refers to experience

**Table (20) - The directions of trends of the differences of challenges facing military hospitals in Jordan refers to experience**

Scheffe<sup>a,b</sup>

Experience	N	Subset for alpha = 0.05	
		1	2
more than 15 years	65	3.6256	
11-15 years	66	3.8167	
Less than 5 years	81		4.1689
5-10 years	188		4.2491
Sig.		.465	.929

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 82.986.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table No. (20) shows that differences of the directions of challenges facing military hospitals are for experience group (5-10 years).

2) Opportunities to develop and improve the quality of health services in military hospitals in Jordan.

There is no statistically significant differences in Opinions of participants about Health information Systems Opportunities due to personal characteristics (Age, Gender, educational level, experience).

Table No. (21) shows the results:

**Table (21) - ANOVA factors differences in Opportunities due to personal characteristics**

		Sum of Squares	df	Mean Square	F	Sig
Age	Between Groups	32.529	35	.929	1.986	.001
	Within Groups	169.882	363	.468		
	Total	202.411	398			
Gender	Between Groups	11.314	35	.323	1.346	.097
	Within Groups	86.970	362	.240		
	Total	98.284	397			
Educationa l	Between Groups	35.784	35	1.022	1.858	.003
	Within Groups	199.784	363	.550		
	Total	235.569	398			
experience	Between Groups	67.062	35	1.916	2.241	.000
	Within Groups	309.544	362	.855		
	Total	376.606	397			

Table No. (21) shows that there is significant deference at the significance level (0.05) of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to age  $f(1.986)$  at significance level (0.001).

Table No. (21) shows that there is significant deference at the significance level (0.05) of opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to Educational level  $f(1.858)$  at significance level (0.003). The table shows that there is significant deference at the significance level (0.05) of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to experience  $f(2.241)$  at significance level (0.000).



Table No. (21) shows that there is no significant deference at the significance level (0.05) of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to Gender  $f(1,346)$  at significance level (0.097).

Table No. (22) clear-out the directions of trends of the differences of challenges facing military hospitals in Jordan refers to age.

**Table (22) - The directions of trends of the differences of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to age**

Scheffe <sup>a,b</sup>		
Age	N	Subset for alpha = 0.05
		1
more than 50 years	5	3.2333
41-50 years	38	3.4781
30-40 years	145	3.7632
Less than 30years	211	4.0776
Sig.		.051

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 16.810.

Table No. (22) shows that differences of the directions of Opportunities to develop and improve the quality of health services in military hospitals in Jordan are for age group (Less than 30 years).

Table No. (23) clear-out the directions of trends of the differences of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to educational level.

**Table (23) - The directions of trends of the differences of Opportunities refers to educational level**

Scheffe<sup>a,b</sup>

Educational	N	Subset for alpha = 0.05	
		1	2
Higher Education	30	3.4333	
Bachelors	186	3.8353	3.8353
Diploma	145		4.0134
High school	38		4.1070
Sig.		.128	.456

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 55.616.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table No. (23) shows that differences of the directions of Opportunities to develop and improve the quality of health services in military hospitals in Jordan for educational level group (High school).

Table No. (24) clear-out the directions of trends of the differences of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to experience.

**Table (24) - The directions of trends of the differences of Opportunities refers to experience**

Scheffe<sup>a,b</sup>

Experience	N	Subset for alpha = 0.05		
		1	2	3
more than 15 years	66	3.5328		
11-15 years	66	3.6419	3.6419	
Less than 5 years	81		3.9623	3.9623
5-10 years	185			4.0805
Sig.		.885	.134	.858

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 83.239.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table No. (24) shows that differences of the directions of Opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to educational level are for experience group (5-10 years)

## 5. Discussion and recommendations

The results show that Health Information system applied efficiently in the studies hospitals. Acquire health information was the most important factor in Health Information system in military hospitals in Jordan, Retrieval of health information was at the second place. Working staff efficiency was at the third place in Health Information system in military hospitals in Jordan all variables were at high appreciation,

Challenges facing military hospitals in Jordan has high appreciation that indicates that the sample of the study thinks that health information systems increasing challenges that face hospitals.

Opportunities to develop and improve the quality of health services in military hospitals in Jordan high appreciation that indicates that the sample of the study thinks that health information systems increasing opportunities of the hospitals.

The results found out that there is a statistically significant relationship between health information systems application and increasing opportunities to develop and improve the quality of health services in military hospitals in Jordan.

There is a statistically significant relationship between health information systems application and challenges facing military hospitals in Jordan.

That indicates that In the event that health information systems are routed in an efficient manner, this represents important opportunities for the development of performance in military hospitals in Jordan, which may give them a competitive advantage in upgrading the health service provided.

However, the spread and continuous development of health information systems have posed a challenge to military hospitals in Jordan. They seek to keep pace with global developments in this rapidly evolving field.

The interpretation of the results obtained show that there is significant deference at the significance level (0.05) of challenges facing military hospitals in Jordan refers to age and experience. Age group (Less than 30 years) and experience group (5-10 years) thinks that there are challenges facing military hospitals in Jordan refers more significantly than other groups.

The results reveal also that there is significant deference at the significance level (0.05) of opportunities to develop and improve the quality of health services in military hospitals in Jordan refers to age, Educational level and experience. Age group (Less than 30 years) and educational level group (High school), experience group (5-10 years) thinks that there are Opportunities to develop and improve the quality of health services in military hospitals in Jordan more significant than other groups.

In the light of the results, the researcher recommends increase focusing on the progress and updating of health information systems in Jordanian military hospitals and emphasizes on the need to seize the opportunities offered by the health system in the development of health services and enable these hospitals to face any challenges that may face in the future.

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## AUTHENTICITY AND QUALITY CONSIDERATIONS IN FOOD CONSUMPTION

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### ABSTRACT

*Although product claims of authenticity, many of them false, engulf consumers, they still seek authenticity in personal possessions (Grayson and Shulman, 2000), brands (Holt, 2002), consumer goods (Goldman and Papsen, 1996), and retail settings (Wallendorf, Lindsey-Mullikin, and Pimentel, 1998); moreover, consumers demand authenticity from brand marketers (Beverland, 2005; Gilmore and Pine, 2007). This goal is heightened as consumers must sift through the claims of authenticity associated with numerous products; in today's marketing setting, a central theme is this tension between the authentic and inauthentic (Brown, 2001). Due to these claims, consumers must constantly evaluate marketing messages in their quest for a truly authentic product, service, or experience.*

*Restaurants and ethnic foods are another area where consumers seek authenticity in experiential products (Lu and Fine, 1995). Consumers look for food that is made from an original recipe, relies on traditional cooking methods, or incorporates key ingredients local to certain parts of the world to fulfill their need for authenticity. Entrepreneurs opening new restaurants, especially serving ethnic foods, are often face with a struggle between focusing on quality or authenticity. Though consumers desire authentic food products, one can not neglect consumers' desire for quality. Quality is "consumers' global judgement of a product's overall excellence or superiority" (Calvo-Porrá and Lévy-Mangin 2017). It is a notion that exists in consumers' minds (Calvo-Porrá and Lévy-Mangin 2017; Zeithaml 1988) and helps them make consumption decisions. For "culture-bound" products such as food (Dawar and Parker 1994) quality considerations play a major role in consumers' demand for these products (Calvo-Porrá and Lévy-Mangin 2017). This is true*

*whether or not consumers have the expertise to make quality assessments (Giacalone, Fosgaard, Steen and Münchow 2016).*

*Across three studies, authenticity demonstrated its ability to overcome a quality deficiency. In each study, consumers were divided on choosing the high authentic, low quality food option versus the low authentic, high quality food option. Previously, it was believed that quality was a major driver in food choice. These results suggest that authenticity must also be considered. Consumers appear to be evenly split on their preference for either a highly authentic food item or a high-quality food item.*

*If their brand is perceived to be authentic, it's critical for them to communicate these authentic characteristics, especially if they are lower in quality. If the brand is lower in quality compared to their competitors, creating an authentic narrative in their marketing communications could lessen the gap between them and their high-quality competitors. In their marketing strategy, brands can focus on being a pioneer in the industry, being faithful to their core values and refusing to compromise their product; the three main factors of brand authenticity. Alternatively, if a brand is high in quality but has low perceptions of authenticity, it's important to protect itself from its authentic competitors. For example, a high-quality sports hydration drink could focus on the scientific reasons why their high quality is more important than another brand's authenticity. Here the goal is to discount authenticity as there may be an objective reason for why quality is crucial and not subjective to taste..*

**Keywords:** authenticity, quality, entrepreneurship, tourism, food, consumption



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## LABOR AND EMPLOYMENT IN REFUGEE CAMPS: THE CASE OF ZAATARI

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### ABSTRACT

*Jordan hosts of the largest Syrian refugee populations, for which it has attempted to provide safe homes and provisions in refugee camps. To provide for the needs of the refugee population, many businesses have established in these refugee camps. However, there has been concern that many businesses employing refugees do not abide by Jordanian labor laws that govern working conditions and wages. The primary objective of this study was to examine the extent to which Syrian operated businesses in Zaatari camp, the largest refugee camp in Jordan, abide by Jordanian labor laws. A questionnaire was distributed among adults and children working in the camp. The questionnaire had two parts, one on the demographic variables and one on the employment information.*

*A total of 363 questionnaires were administered. The majority of participants were working in the informal sector primarily in sales, and were earning on average JD 130.66±70.41 which is below the stipulated minimum wage in Jordan. The youngest workers were aged 6 and 7 years old, and in addition, the majority of the participants did not hold a work permit (87.6%) nor did they have an employment contract (84.6%) which is against Jordanian labor laws.*

*The businesses operating in Zaatari refugee camp were found to be in violation of several Jordanian labor law, particularly those related to minimum wage, minimum working age, and lack of compliance to the laws regarding employment contract and permits.*

**Keywords:** Zaatari camp, Jordanian labor law, Syrian refugees, minimum wage

## Introduction

The ongoing crisis in Syria has lasted for nearly six years, and the effects have been far reaching not only for Syrians, but also other neighboring countries. The major recipients of these effects are Lebanon, Jordan, Turkey and European countries (PRDU, 2012). In Jordan, where the second largest population of Syrian refugees is found (Balsari et al., 2015; Fakin and Ibrahim, 2016), the country has had to make efforts to host and provide for their most pressing and future needs (Ledwith, 2015). According to UNHCR (2011), the Syrian population in Jordan has swelled nearly fivefold, from 110,000 in 2011 to over 600,000 as of October in 2014. In effect, the Syrian refugees comprise a significant proportion of the total Jordanian population, especially considering that Jordan has approximately six million people (Fakin and Ibrahim, 2016). For a small economy such as Jordan, this has had negative implications both at the national level, and on individual Jordanian communities. For instance, Jordan's financial and economic situation is fragile; there is rampant unemployment and surging population growth amid slow economic growth (Fakin and Ibrahim, 2016). It is noteworthy that the entirety of Jordan has been affected, even though the refugee populations tend to be concentrated in the northern governates (Ledwith, 2015). The refugee crisis serves to complicate Jordan's already difficult financial and socio-economic situation. Due to Jordan's neoliberal policy, the country has had to work with local and international partners and stakeholders to manage the refugee crisis. This requires the government to invest in resolving the financial and economic issues that were exacerbated by the arrival of the Syrian refugees. Aside from security and related implications, the problem of employment has been a prominent one, as the refugees and their host communities compete for limited economic opportunities (Akram, 2015).

The refugee problem is a global issue affecting many host countries who struggle to provide and protect the increasing population numbers (UNHR, 2014). Moreover, refugees once in host country have to make a living, and considering the lack of protection and supported, many end up being exploited (Gugatt, 2015). The common issues reported are largely that refugees tend to work for below minimum wage pay, and are often forced to work under strenuous conditions where they work very long hours and including holidays, and for very little pay (Parkinson and Behrouzan, 2015). These issues are a significant challenge for many host countries as this issue lies in the regulation of working permits that enable the refugees to work legally within their host countries (Tamkeem fields of Aid, 2015). The regulation of the work permits for refugees can result in a large conflict within host countries as these may reduce the access to jobs by the native

people of the host country. Therefore, the issue remains unsolved and may refugees will continue to work informally without access to the right support and protection that would be provided if they have work permits. This issue is currently being developed and implemented in Jordan (Kelberer, 2017).

Zaatari is the largest refugee camp in Jordan, also described as the “instant city”, hosts more than 350,000 registered refugees (UNHCR, 2014), and the number is increasing. The governmental and non-governmental stakeholders have been working collaboratively to uplift the refugees in the camp by providing social infrastructure and services, such as food aid, medical services, shelter, as well as encouraging empowerment to help move the refugees from dependence to independence. However, a lot remains to be done, as the refugees’ dynamic needs are not fully met. The Syrians resort to a wide range of activities, including seeking informal employment, in an effort to supplement the aid they get from aid agencies and other organizations. The camp has developed over the years since its inception, and the number of shops and other facilities continue to grow as business people set up shops within the camp to meet the needs of the refugees. As the number of shops in Zaatari camp have continued to grow, there have been reports of violation of the Jordanian employment law, which notably prohibits the engagement of non-Jordanian people in employment, unless there is due authorization from the minister. There have been reports of employment malpractices in the Zaatari refugee camp, as well as other camps (PRDU, 2012). Some of the violations of the standard labor law provisions include employment of legally impermissible individuals, or exploitation of vulnerable workers such as children and women, as the employers seek higher profits (Open Source Foundation, 2015). The present study is based on the assumption that reports of the refugee child labor may be an indication of the employees’ violation of the Jordanian Labor for the year 1996, which provides regulations on the employment dynamics for Jordanians and non-Jordanians (Heisbourg, 2015). For example, there have been reports that child labor and exploitations has taken root in the camp, as otherwise school-going children are forced to work under debilitating conditions, with meager pay. This is against Chapter Seven of the Jordanian Labor law for the year 1996, Article 45, which provides that bona fide employees are entitled to commensurate pay for the work that they do. In addition, adults are also forced to work under unfavorable conditions, including lower remuneration than the minimum wages stated by the Jordanian Labor Law (PRDU, 2012). The foregoing underscores the essence of the present study, which sets out to investigate

whether or not the shops and other businesses in the camp follow the Jordanian Labor law for the year 1996.

The investigation of the extent to which the shops in Zaatari follow the employment law is essential in understanding the real problem within the Zaatari camp and other refugee residences. The fact that Zaatari is the largest refugee camp in the country suggests that it has a major significance in the country's economic, security and socio-economic paradigm. When employment laws are violated, a lot of people inevitably suffer (Akram, 2015). For instance, it may turn out that businesses within the camp employ more non-Jordanians than local Jordanian workers, since the refugees may be willing to take lower wages as they try to survive. The current Jordanian Labor for the year 1996 prohibits employment of non-Jordanian workers, except under specific provisions, such as when there is shortage of Jordanian labor within the particular profession, or with the permission of the minister in charge of the labor ministry (Jordanian Labor Law No. 8, 1996). Hiring cheap labor from non-Jordanians is in violation of the Jordanian Labor for the year 1996, and can be detrimental to the economy. It is imperative to study the employment law situation in the Zaatari camp, since employment practices there may reflect those in other refugee camps as well. If the findings reveal that the labor laws are violated, further research may need to be done in other camps in Jordan and other countries experiencing the refugee crisis.

The majority of Syrian refugees entering Jordan become integrated into host communities, as opposed to living in refugee camps. Most refugees live in the urban centers of Jordan such as Zarqa (17%) and Amman (27%) (UNCHR, 2016). As they live within the host counties, refugees have to find housing, and look for money to pay for rent, utilities, and other bills. According to the Open Society Foundations (2015), paying rent or securing shelter is possibly the biggest concern for the refugees who opt to live among the host communities. The rest of the refugee population lives in refugee camps (Akram, 2015).

### Employment and Jordanian Labor Law in Zaatari

Employment in Jordan is governed by a variety of national laws, most notably Jordanian Labor Law number 8. The unique conditions of refugee camps give rise to employment situations that may not be in compliance with these laws, and that affect the broader Jordanian economy.

Jordanian Labor Law number 8 (1996). Jordanian Labor law number (8) was issued in 1996 to regulate the relationship between employers and employees. This law outlines specific employment provisions that all businesses in Jordan must adhere to. For instance, provisions in chapter four of the law prohibits employers from arbitrarily terminating work contracts. Article 58 of chapter seven of the law regulates official working hours, while Article 45 provides guidelines for setting fixed wages for employees. Under Jordanian law, any contract or any term in any contract between both parties that contradicts the labor law is considered invalid (Hamarneh, 2010).

Labor and employment in refugee camps. The camps in Jordan are administered and operated by the UNHCR and the Syrian Refuge Affairs Directorate. The Zaatari refugee camp is the largest refugee camp in Jordan, followed by Azraq. Even though the NGO fraternity has been working hard to provide comprehensive services to the refugees, the efforts have not been enough, and the aid provided does not meet the needs and requirements of the refugees. The result has been that the refugees continue to voice dissatisfaction. In order to supplement their needs, they are forced to work (Jabbar & Zaza, 2014). According to a report by Ledmith (2014), there is minimal formal employment within the Zaatari refugee camp. Rather, informal employment is rampant, most of which opens opportunities for the contravention of the Jordanian Labor Law for the year 1996; for instance, employing non-Jordanians, who provide cheaper labor (PRDU, 2012; Open Source Foundation, 2015). The refugees, in an effort to secure better lives for their families, resort to monetizing whatever they can find, including their own bodies, labor, possessions, and even the aid supplied by the NGO and governmental stakeholders. Perhaps more notably, refugees monetize their children; a situation which has caused widespread child labor and exploitation. Parents prefer to send their children to work so that they may bring in the much-needed money to pay for daily needs, rather than going to school (Harris, 2016). This opens the children to the risk of exploitation. For instance, the growing competition for jobs has seen some business people take advantage of the situation to increase their profits by hiring the cheaper labor from the refugee children, vulnerable women, and even adults (Open Society Foundation, 2015).

Focusing on the Zaatari refugee camp, research suggests that the poverty and poor living conditions that the refugees and the local communities are subjected to force them to seek work opportunities. The employers within the camps and the localities where the vulnerable communities live take advantage of the situation, and engage the refugees in poor working conditions and under unfriendly terms (The United Nations, 2013). Since the refugee population is not legally able to work in Jordan, they have to work in the informal sectors. Research estimates indicate that over 200,000 Syrians refugees work illegally in Jordan (Open Society Foundation, 2015). The experienced professionals or technicians often start successful businesses within the camp, but most of these business activities are classified illegal by virtue of the status of the refugees, and the Jordanian Labor Law for the year 1996.

Impact on the Jordanian economy. As noted above, as refugees seek a better life, many of them pursue informal employment within the refugee camps. However, it is noteworthy that the current Syrian conflict, which has been the reason for the swelling refugee camps in Jordan, broke out at a time when Jordan was itself facing fiscal crises (Harris, 2016). The Jordan government is struggling to meet the needs of its growing population. As it stands currently, the rate of employment is growing. When the Syrian refugees seek employment, they are increasing the competition for the limited employment opportunities. The employment situation in Jordan is bleak, as the economically active population continues to outgrow the economy (Harris, 2016; Ledwith, 2014). The crowding of the job market by the Syrian refugees only serves to complicate the situation, with researchers estimating that it is only a matter of time before the Syrians can penetrate into the labor market in most of the small and informal, yet highly vital services and sectors that drive the Jordanian economy, including: restaurants, hotels, retail trade, construction, and agriculture (The United Nations, 2013). It may be argued that as businesses pursue higher profits by exploiting the vulnerable refugee workers, the Jordanian host communities face higher competition, or are forced to work under lower wages to keep up.

Compliance with labor laws in refugee camps.

According to the Article 12, section (a) and (b) of the Jordanian Labor Law, it is illegal for Jordanian employers to engage non-Jordanian employees in any capacity, except with the permission of the relevant ministry. The only exception for engagement of non-Jordanians is when there is shortage of the required labor resources from the Jordanian citizenry. As it stands, there is indeed a surplus of the labor, meaning that any formal engagement of the non-Jordanians

is illegal. In any case, non-Jordanians require a work permit, which must be renewed yearly. As the refugee crisis continues to unfold, cases of violation of the Jordanian Labor Law for the year 1996 have increased.

### The Present Investigation

Research on employment labor issues among refugee communities is lacking. This study will add significantly to the body of research, in particular the understanding of how refugees are integrated into the host economy and the extent to which labor laws of host countries are followed. It is general knowledge that refugees often work in the informal economy and often under harsh conditions as a result of poor adherence to labor laws and human rights.

The present study aims to investigate the extent to which businesses in the Zaatari refugee camp abide by the Jordanian Labor for the year 1996. Based on the findings, recommendations are given on what may be done to start addressing the crisis. The study aims to address the following question: To what extent do businesses at Zaatari follow the Jordanian Labor law for the year 1996? And in particular, which specific articles, if any, of the Jordanian Labor law for the year 1996 is being violated at Zaatari refugee camp?. We hypothesize that Jordanian Labor law is highly violated within the informal economy in Zaatari refugee camp, and evaluated the following sub-hypotheses as per the requirement of Jordanian Labor law No(8) of 1996:

Ho1: Article 73 of the Jordanian Labor Law No.(8) of 1996, which says that children under 16 shall not be employed under any circumstances, is being violated at Zaatari refugee camp

Ho2: The labor tripartite commission order of 2011 update of the Jordanian Labor Law 8 No.(8) of 1996 , which sets the minimum monthly salary to 220JD for Jordanians and to 150JD for foreign workers is being violated at Zaatari refugee camp.

Ho3: Article 56 of the Jordanian Labor Law No. (8) of 1996, that employees must not work for longer than 8 hours a day and must not work more than 48 hours in a week in total, is being violated at Zaatari refugee camp.

Ho4: Article 59 of the Jordanian Labor Law No. (8) of 1996, which states that it is permissible for an employee to work beyond the 48 hours only if he is paid overtime. This must be 125% of his

normal wage and must reach 150% of his normal wage if he is asked to work on a religious or other holiday, is being violated at Zaatari refugee camp.

Ho5: Articles 56 and 60 of the Jordanian Labor Law No. (8) of 1996, that declare Friday as a weekly holiday, is being violated at Zaatari refugee camp.

Ho6: Article 65 of the Jordanian Labor Law No. (8) of 1996, which says that each employee is entitled to 14 days of sick leave per year, is being violated at Zaatari refugee camp.

Ho7: Article 15 of the Jordanian Labor Law No. (8) of 1996, that states that work contracts have to be written so each party has a copy, is being violated at Zaatari refugee camp.

Ho8: Article 12 of the Jordanian Labor Law No. (8) of 1996, that says that non-Jordanian Employee must obtain a work permit from the Minister or from whomever he delegates prior to his recruitment or engagement, is being violated at Zaatari refugee camp.

## Methods

### Participants

Syrian refugees who were working in Zaatari camp were invited to participate in the study. Both adults and children were recruited, as long as they were currently employed within the camp. Out of all 700 questionnaires received back, 635 questionnaires were found complete, but only 363 participants' questionnaires were considered because (42.8%) indicated that they were not employed.

### Procedure

Data were collected by the author with the help of research assistants. Prior to data collection, all assistants were trained based on the Field Training Guide for Human Subjects Research Ethics (Merritt et al., 2010). The author and research assistants visited a variety of businesses operating within the Zaatari camp that were operated by Syrian refugees. Employees in these businesses who were also Syrian refugees were invited to participate in the study. Participants were invited to complete questionnaires in the presence of the research team and to immediately return them. If participants required assistance in completing the questionnaires (e.g., with reading or writing), research assistants were available to assist them. Participants were assured of



confidentiality and anonymity and that their responses will not be shared with authorities or used to prosecute them for lack of compliance with labor laws.

### Measures

A questionnaire was designed specifically for this study by the author and included two parts, demographic information and employment information. The demographic part of the questionnaire included questions about participants' age, gender and employment status; while employment part included questions about the participants job type, monthly wage earned, the number of hours worked, the existence and contents of a labor contract governing the employment, the arrangements governing time off from work for illness, holidays, or other reasons, and whether employees signed a work contract or not. Prior to beginning data collection, the questionnaire was reviewed and approved by a group of professors at the department of public administration at Yarmouk University, Irbid -Jordan in order to confirm its validity. The questionnaire was presented in Arabic.

Cronbach's alphas for the items of working more than 48 hours a week, being paid when working overtime, being asked to work Fridays, the possibility to get paid sick leaves, being forced to work holidays, not being paid overtime in case he/she works in holidays, have signed a contract and having work permit were .80 which indicates a good reliability of the questionnaire.

### Analysis

Employees responses to the questionnaires were examined for concordance with the provisions of Jordanian Labor Law number 8 (1996). In order to facilitate comparison of survey data with the labor law, all participants reported number of hours worked (e.g, hours per day, per month) was converted to hours per week. Similarly, all wage information that was not reported on a monthly basis (e.g., hourly, weekly, etc) was converted to Jordan Dinar per month, using the reported number of weekly hours worked to convert from hourly wage rates when necessary.

Descriptive statistics were used explore the data and the Shapiro-Wilks test was used to assess normality of distribution for the Age and Salary. A simple bivariate correlation was used to test the relationship between age and salary. A Kruskal-Wallis H test was used to compare salaries

among the different job types reported by the employees in the study, and to compare age among the different job types. The differences in salary by gender, holding a permit, having a contract or not, were compared using a Mann-Whitney U test. The relationships between working overtime and getting paid for working overtime, working holidays and getting paid to work over holidays, holding a work permit and having a contract, were tested with a Chi-Square test of independence to determine how strongly associated these variables are. Similarly, the ability to take sick leave when sick and whether the employee has a contract or not, and between job types, was also tested using a Chi-Square test for independence. The data were analyzed in IBM SPSS version 24.

## Results

The total number of participants in this study was 635, with a 90.71% response rate on the questionnaires. A large number (42.8%) indicated that they are not employed, it was important to remove them from further analysis in order to observe more meaningful results in relation to the hypotheses being tested.

The total sample of participants who are employed was 363. This sample was used for further inferential analysis (Table 1). The majority of the participants considered for this study were males (75.8%), with a mean age of 24 (SD=14.11), and earning an average salary of 130.66 (SD = 74.01) Jordanian Dinar. With regard to job type,

The majority of the participants indicated that they do not work over 48 hours (66.7%), are not paid overtime (53.2%), do not work on Fridays (67.8%), they get sick leave (75.2%), they do not work holidays (60.3%) and do not get paid for holiday overtime (86.5%), Table 1. Interestingly, the majority of the participants do not have a contract (84.6%) and do not hold a work permit (87.6%), Table 1. The majority of the participants were under 16 years of age which is violation of the labor law. In fact, the largest number of workers was at age 13, with 21 individuals, making up 5.8% of the sample.

**Table 1 Descriptive statistics of the sample participants who indicated that they were employed**

Variables	%(n)	Minimum	Maximum	Mean	SD
Age		6	61	24	14.11
Salary		0	260	130.66	74.01
Gender					
Male	75.8(275)				
Female	24.2(88)				
Job type					
Sales	25.1(91)				
Education	24.2(88)				
Food	16.5(60)				
Clothing	9.4(34)				
Other	24.8(90)				
Work 48+					
No	66.7(242)				
Yes	33.3(121)				
Paid overtime					
No	53.2(193)				
Yes	46.8(170)				
Work Fridays					
No	67.8(246)				
Yes	32.2(117)				
Sick leave					
No	24.8(90)				
Yes	75.2(273)				
Work holidays					
No	60.3(219)				
Yes	39.7(144)				
Paid holiday overtime					
No	314(86.5)				
Yes	13.5(49)				
Signed contract					
No	84.6(307)				
Yes	15.4(56)				
Have work permit					
No	87.6(318)				
Yes	12.4(45)				

No significant association was found between age and salary (Spearman  $r = -0.02$ ,  $n = 363$ ,  $p > 0.05$ ). There was no significant difference in the age profile of employees across the different job types (Kruskal Wallis  $H = 4.50$ ,  $df = 4$ ,  $n = 363$ ,  $p > 0.05$ ), and the salary did not differ significantly among the different job types (Kruskal Wallis  $H = 3.68$ ,  $df = 4$ ,  $n = 363$ ,  $p > 0.05$ ). Salary did not differ by gender ( $U = 11499.5$ ,  $Z = -0.704$ ,  $p > 0.05$ ), holding a work permit ( $U = 7709.5$ ,  $Z = -1.233$ ,  $p > 0.05$ ) and whether an employee has a contract ( $U = 6879$ ,  $Z = -0.421$ ,  $p > 0.05$ ).

There was a statistically significant association between an employee having a work permit and holding a contract ( $\chi^2(1) = 4.75$ ,  $n = 363$ ,  $p = 0.03$ , Cramer's  $V = 0.114$ ), Figure 2. 84.6 % (307) of the employed participants indicated that they have no contract, and of these 72.7 % (264) indicated that they do not have a work permit while 11.8% (43). Of those who have a contract (15% (56)), only 0.6% (2) of the participants have a work permit and 14.9% (54) do not have a work permit.

The majority of the participants indicated that they did not work overtime, on Fridays and on holidays. Therefore, no association was found between working overtime and being paid for working overtime ( $\chi^2(1) = 0.935$ ,  $n = 363$ ,  $p > 0.05$ , Cramer's  $V = 0.05$ ), working holidays and getting paid for working on holidays ( $\chi^2(1) = 0.031$ ,  $n = 363$ ,  $p > 0.05$ , Cramer's  $V = 0.01$ ). Having a work permit ( $\chi^2(1) = 0.141$ ,  $n = 363$ ,  $p > 0.05$ , Cramer's  $V = 0.02$ ) and having a contract ( $\chi^2(1) = 0.097$ ,  $n = 363$ ,  $p > 0.05$ , Cramer's  $V = 0.02$ ), was not found to be related with whether an employee gets sick leave or not. However, access to sick leave was significantly associated with the or type in which the employee is employed in ( $\chi^2(4) = 11.65$ ,  $n = 363$ ,  $p = 0.02$ , Cramer's  $V = 0.179$ ). Only the participants in the food sector had a high number of employees reporting no access to sick leave. In addition, the food sector also had the oldest and youngest workers aged 6.

## Discussion

The study revealed that there is a significantly high extent of labor law violations in the Zaatari refugee camp. The participant of this study largely worked in the informal economy in sales, and other sectors, earning an average salary of JD 130.66 which is below the minimum stipulated and legal wage of JD 150 for foreign workers. Although the majority of participants reported that they

did not work more than 48 hours, nor did they work overtime, Fridays and holidays, a small percentage indicated that these activities were happening to them. In their different job types that they reported, 75.2 of the participants did not have access to sick leave especially in the food sector. In addition, 87.6 of the participant did not have work permits or contracts, and as such were under violation of article 12 and 15 of the Jordanian Labor Law 8 of 1996. A shocking revelation of this study is that at Zaatari camp, the majority of workers are below the age of 16, with the youngest workers at the age of six. This is a significant violation of the children's right and in violation of Jordanian labor law article 73 which states that children shall not be employed under any circumstances.

The informal sector is rapidly increasing as many economies are struggling across the globe. In economies where there are many refugees, such as in Jordan, this problem is significantly increasing as competition for employment is high among Jordanian people and refugees. Jordanian people also work in the informal sector (International Labor Organization, 2014a). Currently, it is estimated that the Syrian refugee population is well in excess of 1.3 million even though only just over 700000 have been officially recognized (International Labor Organization, 2014a). Many work in the urban cities of Jordan, while the majority who are in the refugee camps are employed within them (Tamkeem Fields of Aid, 2015). As mentioned above, and as recognized in other countries hosting refugees, the informal sector where refugee work is characterized by low wages, long working hours and lack of regulations with regards to contracts, official working hours and sick leave (UNICEF and Save the Children, 2014). As a consequence, there is a high exploitation of the refugees. In Zaatari, many of the employees are found working in the food sector and sales, and within this environment, the majority reported that they do not have access to sick leave. Therefore, the hypothesis that article 65 of the Jordanian Labor Law No. (8) of 1996, which says that each employee is entitled to 14 days of sick leave per year, is being violated at Zaatari refugee camp is supported, and this is especially true among refugees working in the food sector. Lack of proper permits and contracts further exacerbates these effects and is in direct violation of article 15 of the Jordanian Labor Law No. (8) of 1996, that states that work contracts have to be written so each party has a copy; and article 12 of the Jordanian Labor Law No. (8) of 1996, that says that non-Jordanian Employee must obtain a work permit from the Minister or from whomever he delegates prior to his recruitment or engagement.

The desperation of Syrian refugees for work, drives them to accept these poor working conditions and below average salaries. However, by consequence, the Syrians become more

employable in the informal sector than Jordanians, which leads to the increasing trends in unemployment among Jordanians (Fakih and Ibrahim, 2016). Moreover, since the Syrian refugees comprise a significant portion of the Jordanian population, it is not surprising to see these trends in the increase in unemployment among Jordanians. In a recent report, it was shown that Jordanian in the informal sector also work under similar conditions, but refugees tend to work more than 60 hours a week and even more in some cases and do not have contracts, and even if they do, these tend to be less satisfactory (Fakih and Ibrahim, 2016). The participants in this study did not report these conditions, instead the majority of them indicated that they do not work holidays or Fridays. Therefore, for the participants in this study, their working conditions at Zaatari refugee camp were not in high violation of article 56 of the Jordanian Labor Law No. (8) of 1996, that employees must not work for longer than 8 hours a day and must not work more than 48 hours in a week in total.

The violation of the article 73 of the Jordanian Labor Law No.(8) of 1996, which says that children under 16 shall not be employed under any circumstances, is in contravention of global human rights, especially children rights. Many of the parents prefer to send young children to work in order to maximize the income to the family, however, the children miss out on education opportunities (UNHCR, 2013). This perpetuates the cycle of poverty. The fact that children under the age of 10 are active in the economy is quite a challenge that faces the Jordanian government in terms of regulations that must be put in place to minimize this. Moreover, the high number of child workers in Jordan, an unregulated activity, is in contravention with the UN Convention on the rights of children as was ratified by Jordan in 1991 (UNICEF and Save the Children, 2014). Children are working under harmful conditions and are unprotected. The UNCHR (2013 and 2014) reports indicated that the largest numbers of child workers are in Jordan's refugee camp, especially Zaatari, and many of the children are working under poor and hazardous conditions. Many of the children report health problems and no access to education (UNICEF and Save the Children, 2014). The problem of child workers is a deep societal problems stemming from the high levels of poverty and destituteness experienced by the Syrian people in the refugee camps. Families are forced to send children to work due to high levels of poverty, and Jordanian employers may employ them due to empathy or exploit them due to their desperation. Therefore, it is imperative that the government establishes mechanisms to better control the exploitation of the children.

## Conclusion

The study found that there is a high prevalence of child labor among the different sectors of the informal economy in Zaatari Refugee camp. Many of the employees do not have a contract or work permit, likely because many of the workers are underage workers as shown by the profile of the participants in this study, and are working for a salary far below the stipulated minimum wage. Although many reported that they do not work over time, it is clear that there is a trend towards that on the sample participants and it is likely that all the articles within the Jordanian Law 8 of 1996 are violated. It is important that the Jordanian government establishes mechanisms to regulate the labor activities more effectively. These activities also negatively affect the Jordanian labor force in that the number of Syrian workers in the informal economy outside the camp is likely to be affected by less access to job opportunities. The country is more likely to make headway with the new work permit initiative for Syrian refugees. It is likely that more regulation will be needed in the practice implementation of this initiative.

### Recommendations

This study found that there are significant violation of Jordanian Labor Laws within Zaatari refugee camp. Although refugees within the camps are registered, it is clear that their economic activities are highly unregulated, particularly the businesses run within the camp. Integration into the host society is important to ensure refugees contribute to the host economy while they receive asylum. However, this should not conflict with the growth and needs of the people within the host nation, so that all resources are more available to the people of the host nation. With regards to Zaatari, the low wages may lead businesses to employ more Syrian people than Jordanian's, which may negatively affect the employment rate of Jordanians. Currently, it is estimated that Syrian refugees comprise nearly 10% of the Jordanian population, signaling that the competition for jobs is a likelihood. The government should improve regulation of businesses and ensure that laws are being complied with by setting high fines and potential arrest for employers providing unlawful jobs. The informal sector is very hard to regulate, and it would be important to assess how much it contributes to the Jordanian economy and who benefits between Jordanians and Syrian refugees within the country. Further research should look into the drivers of employment of underage children from the family and business owner point of view, as well as to understand the level by which business owners understand the Jordanian labor laws. A lack of knowledge and understanding may be driving the lack of compliance.

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# HOW JOB CRAFTING ENHANCE WORK ENGAGEMENT? ROLES OF ROLE AMBIGUITY AND ICT PRESENTEEISM

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## Introduction

In a rapidly changing business environment, companies are paying a great deal of attention to the implementation of organizational systems that enable employees to define and perform their jobs voluntarily without managerial supervision (Grant and Ashford, 2008). Also, such industrial trend is in line with high uncertainty levels of the work environment and complex work tasks, calling for a new type of employee displaying new types of behaviors. In so, many companies become interested in employing job crafting, a type of proactive behavior, defined as “the physical and cognitive changes individuals make in the task or relational boundaries of their work” (Wrzesniewski and Dutton 2001, p. 180). Wrzesniewski and Dutton (2001) categorized job crafting as task, cognitive, and relational crafting. Task crafting involves modifying or extending tasks; cognitive crafting deals with altering one’s view of their job; and relational crafting changes the quality or quantity of interactions with other employees.

Many studies have explored effects of job crafting on individual employees (Berg et al., 2013; Tims et al., 2013). Work engagement is considered as a typical consequence of job crafting (Tims et al., 2013). Job crafting has been empirically proven to positively affect work engagement (Bakker et al., 2012), a point beneficial for teams and organizations. However, the very few existing studies have investigated how job crafting affects work engagement. In this study, we try to explore the mediating effect of role ambiguity and the moderating effect of ICT presenteeism on the relationship between job crafting and work engagement.

## Research Model

### 2.1 Job crafting and work engagement

Work engagement can be defined as “a positive work-related state of fulfillment that is characterized by vigor, dedication, and absorption (Schaufeli et al. 2006, p. 74).” Many previous studies have examined the relationship between job crafting and work engagement, with most studies proposing that job crafting activities positively affects individual work engagement (Chen et al., 2014). Bakker et al. (2012), in an empirical study, found that employees align their work environments to their own needs and abilities via job crafting, eventually being more committed to their work comparative to those who do not engage in job crafting activities.

### 2.2 Job crafting and role ambiguity

Role ambiguity occurs when employees are not certain about the accomplishments that the team or organization expects. Dubinsky and Skinner (1984) investigated factors which reduce role ambiguity, and found that, if employees have more opportunities to determine their own roles (task crafting) and/or to get social supports in clarifying their roles (relational crafting), they can reduce role ambiguity. When employees feel a sense of meaningfulness about their jobs (cognitive crafting), they can lower their role ambiguity more actively by collecting information and knowledge about their work more actively (Wrzesniewski & Dutton, 2001).

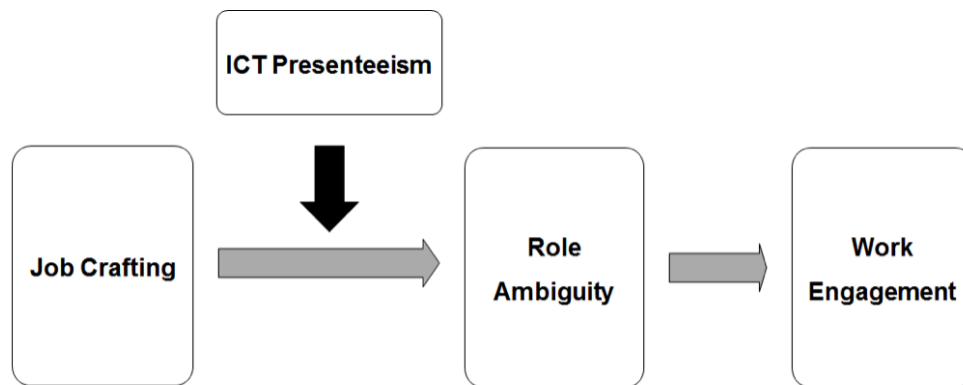
### 2.3 Mediation effect of role ambiguity

In our study, we explore a mediating effect between job crafting activities and work engagement. Chen et al. (2014) found a mediating effect of person-job fit by studying the process of job crafting on work engagement. In our study, we posit that role ambiguity will act as a mediation mechanism between job crafting and work engagement. Although job crafting will positively affect work engagement, this will most probably be attained by reducing the ambiguity of one's roles, which in turn also affects affective and cognitive components in a positive manner.

### 2.4 Moderating effects of ICT presenteeism

ICT presenteeism, defined by Ayyagari and his colleagues (2011), is “the degree to which the technology enables users to be reachable.” A work environment in which ICT is widely used to enhance work productivity, is named smart work environment (Cha and Cha, 2014). The environment permits employees to consistently collaborate with others during work regardless of

time and space. Although initially this concept was introduced as pertaining intrusive characteristics, the researchers did acknowledge that ICTs enable an increased flow of communication. Taking these points in our research, effects from implementing a smart work environment may include higher task concentration leading to an increase in organizational performance and an effective use of time besides work hours which spurs work motivation to develop independent competence, ultimately leading to an increase of task and life quality. In so, we postulate that ICT presenteeism strengthens the effect of job crafting on role ambiguity.



### Preliminary Results

To test our research model, survey questionnaire method was employed, targeting employees working in diverse organizations. Upon distribution of our surveys, all participants were informed of the goals and specific details of the study and were assured confidentiality and encouraged to join the study on a voluntary manner. Distributed to 250 individuals working in organizations in Korea, a total of 172 samples were collected (68% response rate). The analysis results are as follows:

Hypothesis 1a: Task crafting is positively related to work engagement. (Supported)

Hypothesis 1b: Cognitive crafting is positively related to work engagement. (Supported)

Hypothesis 1c: Relational crafting is positively related to work engagement. (Supported)

Hypothesis 2a: Task crafting is negatively related to role ambiguity. (Not Supported)

Hypothesis 2b: Cognitive crafting is negatively related to role ambiguity. (Supported)

Hypothesis 2c: Relational crafting is negatively related to role ambiguity. (Supported)

Hypothesis 3a: Role ambiguity mediates the relationship between task crafting and work engagement. (Not Supported)

Hypothesis 3b: Role ambiguity mediates the relationship between cognitive crafting and work engagement. (Supported)

Hypothesis 3c: Role ambiguity mediates the relationship between relational crafting and work engagement. (Supported)

Hypothesis 4a: ICT presenteeism moderates the relationship between task crafting and role ambiguity such that relationship is stronger when IT use is high (vs. low) than when it is low (vs. high). (Not Supported)

Hypothesis 4b: ICT presenteeism moderates the relationship between cognitive crafting and role ambiguity such that relationship is stronger when IT use is high (vs. low) than when it is low (vs. high). (Supported)

Hypothesis 4c: ICT presenteeism moderates the relationship between relational crafting and role ambiguity such that relationship is stronger when IT use is high (vs. low) than when it is low (vs. high). (Not Supported)

In this study, the effects of three job crafting activities on work engagement were examined empirically. We looked specifically at the process in which job crafting activities affect work engagements. The results of the study showed that all three types of job crafting activities were directly influenced positively on work engagement. In this process, the mediating effect of role ambiguity was also observed in the effects of cognitive and relational crafting on work engagement. Through cognitive and relational crafting activities, employees were found to have a clearer role in the work they were responsible for and a positive impact on work engagements. Regarding to the moderating effect of IT, this study was found that the more employees use IT, the greater the negative influence of cognitive crafting activities on role ambiguity. By adding new meanings to their work through cognitive crafting activities, employees try to define their ambiguous roles more actively.

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## A GREEN SUPPLY CHAIN CASE ON ENVIRONMENTAL SENSITIVITY FROM TURKEY

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### ABSTRACT

*Environmental sensitivity has increased according to the disruption of the ecological balance. As individuals' - consumers' concerns about the environment sensitivity have been increasing day by day. And individuals- consumers act environmentally-friendly especially in developed societies. Environmental sensitivity- environmental awareness is important both for individuals- consumers and businesses. Depletion of natural resources has forced businesses to develop environmental strategies in order to minimize the harm they give to the environment. The objective of the Green Supply Chain Management is to manage the social, economic and environmental sensitivity of material cycle.*

*The purpose of the current study is to investigate the role of Barilla's employees in GSCM system and practices in addition to individual awareness. And to make suggestions both to businesses, to potential organizations and to law makers on the basis of sample.*

*The research was conducted with a complete count sampling face-to-face survey on Barilla employees in Turkey during 06-30 December 2016. Environmental Sensitivity Scale (Çabuk & Karacaoğlu, 2003) was used to assess participants' environmental sensitivity levels. And the hypotheses have been developed to reveal the differences of environmental sensitivity according to the educational level, age, gender and marital status of Barilla employees. T-test analysis and*

*ANOVA have been used to determine whether these factors differ in terms of demographic variables. As there has been a difference between the groups post-hoc has been used. Current research has been determined that there is a positive relationship between education level variable and environmental sensitivity; significant difference in the environmental dimension of the age factor in favour of the 26-35 age group; and in the marital status variable the single ones have higher value on environmental practices. In gender variable, no significant result has been found in any of the environmental sensitivity dimensions.*

*Environment is a vital issue not to be left to the initiative of businesses nor any organization. Every part has to connect each other. The dissemination of GSCM practices that take part in Barilla case in Turkey in all businesses at both local, national and international level, the establishment of laws and standards related to the subject and supporting the co-operations and educational programs for individuals at schools ad trainings on businesses are thought to be in urgent decisions should be taken immediately.*

**Keywords:** Green Supply Chain Management, Environmental Sensitivity, Turkey, Quantitative Research, t-Test, ANOVA



## I. Introduction

For a livable and sustainable world beside individual efforts, the sensitivity of the businesses to the issues also very important. As a result of the increases in environmental problems and the depletion of natural resources, the number of conscious individuals and legal regulations worldwide has begun to rise. And this situation has provided businesses to incline carefully into environmental issues. Business activities' environmental impacts have become an important issue in recent years due to growing public awareness-sensitivity on conservation of environment, increasing need for sustainable development, and regulations of environmental legislations (Lau, 2011).

The Barilla G.e.R Fratelli S.p.A. (Barilla) -operates internationally and has one of the largest production facilities located in Turkey- is an exemplary business on sustainability and environment sensitivity subject with its green supply chain management (GSCM) practices that has been awarded with many prizes.

The starting point of the study is to elicit the sensitivity of employees of Barilla which is considered as one of the exemplary business in GSCM scope. The purpose of the study is to make suggestions both to case business-Barilla, to potential organizations and to lawmakers by putting forward the role of employees in the business integrity beside individual awareness about the environmental sensitivity.

### Environmental Sensitivity and Green Supply Chain Management

The businesses have faced with many issues-difficulties due to environmental problems in the world. Especially the manufacturers, whom are held to be most responsible from environmental problems, try to create new strategies in production, supply and management processes that will provide less energy and raw material usage and will compose less waste during their operations.

GSCM concept has been developed by the acceptance of the harm given to the environment by businesses' activities (Adriana, 2009). The businesses' responsible behaviours towards the present and the future with GSCM practices positively affect the world at macro level and affect their own profitability at micro. Wisner, Tan and Leong. (2012) emphasize that businesses' GSCM practises benefitted from cost savings (conserving materials, reduced energy and water use), better public image and decreased environmental liability. Flammer (2013) and Chin, Tat and Sulaiman (2015) point out the positive relation between share values and environmental performances of businesses.

With green practices, environment responsible activities, businesses seek to provide a sustainable balance between environmental, economic and social goals (Stolka, 2014). And many of them develop environment focused business models, management strategies especially in the use of natural resources (Jedliński, 2014) to minimize the harm on environment.

GSCM is a broad-based innovation that enables businesses to develop win-win strategies and enables to achieve the profit and market share goals with the rising on ecological efficiency and with the reduction on environmental risks and adverse impacts (Harrison, Christopher & Hoek, 1999; Zhu, Sarkis & Geng, 2005). GSCM cares for not harming the environment in product design, manufacturing, distribution and recycling stages (Zsidisin & Sifer, 2001). Supply chain's key features are reducing the source and energy consumption in the chain, adding the recovery process and having a great care about integration of environmental protection process through all business system (Shuwang & Zhang, 2005) to be "green". Srivastava (2007) defines GSCM as a combination of environmental idea and supply chain management that integrates the environmental idea with the stages of manufacturing, serving and after sales serving process.

The aim of GSCM is to manage the material cycle with sensitivity in socially, economically and environmentally through the chain. And it aims to prevent various pollutions that may arise from product production both in production and post-production stages.

## 2. Researches on Environmental Sensitivity and Green Supply Chain Management

Today, in order to maintain the business' sustainable competitive advantage, businesses should develop environment sensitive strategies and environmentally friendly products and production systems. Since the concept of sustainability was come into businesses' agenda, both sustainable supply chain management and being green in all business processes have become key topics of academic researches and managerial practices.

The main decision makers on sustainability and environmental sensitivity are the individuals. And various studies reveal that individual sensitivity to environmental issues is closely related to their demographic variables as education, gender and age. For example Özdemir's (1988) and Pearce's (2009) researches point out that as the level of education higher, sensitivity to environmental problems higher. Özmen, Çetinkaya and Nehir (2005); Erol and Gezer (2006) have revealed that environmental attitudes differ positively in older ages. Ek et al., (2009) have determined in their study, which was conducted on the first and last class students from different academic disciplines, that the students at the age of 21 and over's average values on environmental attitudes are higher than the ones at 20 years and lower.

However, contrast to these results Arcury and Christianson (1993) have found significant outcomes in favour of younger groups in their study. Oğuz, Çakıcı and Kavas (2011) have revealed that there is no significant difference in the attitudes of the student, studying in Landscape Architecture, Environmental Engineering and City and Regional Planning various undergraduate programs in Ankara, towards the environment.

Çabuk and Karacaoğlu (2003) have determined in their study, which was conducted on the Faculty of Educational Sciences' students, that the female students' average values on environmental attitudes are higher than the males'. Besides Ankara, Aslan and Tahta (2017) have been found out in their study, which targets the determination of environmental awareness of individuals in İzmir - third largest city in Turkey- that women are more environmentally aware than men. Karahan (2017) has determined that the female managers' environmental sensitivity and awareness levels are higher than male managers. However, Erbaş (2017) could not determine any significant difference between participant employees' green organizational

behavioural tendencies according to their genders, marital status, ages, educational backgrounds, income and experiences at the research which was conducted on 5 star hotel companies' employees (12 hotels) in Antalya province in Turkey.

As the main decision makers on sustainability and environmental sensitivity, environmental awareness individuals-employees-managers have great importance also at professional businesses. Various organizations need to be established in businesses to create, develop and sustain environmental performances of business employees. The human resources department is generally referred as the first department that will plan, implement and supervise such activities. Jabbour and Santos (2008) have determined the importance of human resources management on environmental performances of employees in businesses. Young et al., (2015) also have emphasized that sustainability or corporate social responsibility projects need to be integrated with human resources and organizational management structures.

The human resources department can be the prior but researchers and the professionals have stated that the integration of sustainability strategies with all activities of the organizations is a vital issue. Liu, Kasturiratne and Moizer (2012) have proposed an integration model in businesses to integrate green marketing and sustainable supply change management in 6 dimensions; product, promotion, planning, process, project and people. Besides Hoejmoose, Brammer and Millington (2012) have taken attention to the importance of managers' supports and participations on green process. They have conducted their research in different businesses from different sectors, and determined that top managers' supports on green process affect GSCM practices positively and the organizational learning has a great effect on green supply chain applications.

Moreover, many researchers have stated that environmental education and awareness training have a positive impact on environmental performance of businesses (Renwick, Redman & Maguire, 2013; Opatha & Arulrajah, 2014; Ahmad, 2015; Liao, 2017; Law, Hills & Hang Hau, 2017). Shen et al., (2013) have stated the importance of training personnel to increase environmental awareness beside other key factors as, participation of managers in green supply

chain studies-workshops, use of environmentally friendly technologies and materials, resource consumption, waste water, emission of pollutants on the selection and evaluation of green suppliers. Karahan (2017) has determined that the managers attendance to any educational programme related with environment increase their sensitivity and awareness to the environment. Birkin, Cashman, Koh and Liu (2009) have revealed with a mix research with the sample of 20 Chinese small and medium sized manufacturing companies which are lack of significant sustainable development practices but beside they appeared to show interest in sustainable development and environmental awareness. And these companies are concerned about the need to use renewable energy, alternative sustainable materials, closing the gap of supply chain, improve the quality of manufactured products rather than reduce costs, export to Europe and treat employees as an important asset.

The researches highlight the size of firm's importance on GSCM and environmental sensitivity subjects beside the importance of demographic features, managers' attitudes, educations, integrations of environment awareness with all activities. Many researchers have argued that larger firms are more capable to invest on GSCM and environmental activities both in finance and awareness (Murray, 2000; Olson, 2008, Lau, 2011). The large companies have defined GSCM strategies as part of their corporate strategies and this perspective support them to gain sustainable competitive advantage. In contrast, investment in environmental sensitivity programs may be a heavy economic burden to smaller firms as Lau (2011) has stated.

Ceyhan and Ada (2017) examined in their research, which was conducted on the businesses from textile, food and metal kitchenware industries in Kahramanmaraş province in Turkey, that the large sized companies have more awareness and consciousness than small sized ones on environmental sensitivity. Birkin, Cashman, Koh and Liu (2009) have argued the perspective of environmental awareness in small sized firms and examined generally no action but only wishes with the result of no significant sustainable development practices but beside have appeared to show interest in sustainable development and environmental awareness.

It is thought that the small sized firms around the world, usually start to take consider on environmental issues and integrate their operations with GSCM practices as they serve for developed markets and/ or having negotiations with large sized firms. As seen the cases from literature (Yücel, Yıldız & Yazgan, 2015; Kalburan & Haşiloğlu, 2013) larger firms are more capable to invest in the area. And the small sized ones have to modify their activities with environment friendly strategies, “environment sensitivity” is not a romantic poem it is an inalienable and non-negligible competitive advantage strategy.

For a livable and sustainable world besides individual efforts, the sensitivity of the businesses to the issue is also very important. The starting point of the current study is to determine the sensitivity of Barilla employees to environmental problems as a model multinational business.

In the light of previous findings and discussions on environmental sensitivity and GSCM, the purpose of the current study is to find out the role of Barilla’s employees in GSCM system and practices in addition to individual awareness. And to make suggestions both to businesses, to potential organizations and to law makers on the basis of sample.

According to purpose of the study research questions are;

Do the environmental sensitivities of employees in the framework of GSCM change according to their education level?

Do the environmental sensitivities of employees in the framework of GSCM change according to their ages?

Do the environmental sensitivities of employees in the framework of GSCM change according to their genders?

Do the environmental sensitivities of employees in the framework of GSCM change according to their marital statuses?

Environmental sensitivity and awareness have increased as a result of disruption of the ecological balance. As individuals’ concerns about the natural environment have been increasing with each passing day, individuals act environmentally-friendly in developed societies. Environmental

sensitivity- awareness is both important for individuals and businesses. As a multinational company Barilla should require to meet individualistic needs and expectations for a sustainable competitive advantage. As many environmental sensitive companies also Barilla implements environmental sensitivity within the framework of GSCM practices. The employees have great effects on achieving businesses' goals and sustainable competitive strategies. And in the current study, Barilla's employees are considered as the essential part that implement, manage, audit and develop the environment-friendly GSCM practices.

In the literature, demographic characteristics such as education level, age, gender, marital status of individuals-employees are stated to be effective on environmental sensitivity. The hypotheses of the current study developed based on the literature are:

H1: Employees' environmental sensitivities differ according to the education level.

H1.1: Employees' sensitivity to air pollution differs according to the education level.

H1.2: Employees' sensitivity to water pollution differs according to the education level.

H1.3: Employees' sensitivity to soil pollution differs according to the education level.

H1.4: Employees' sensitivity to ecological balance practices differs according to the education level.

H1.5: Employees' sensitivity to participation to environmental activities differs according to the education level.

H1.6: Employees' sensitivity to participation to environmental trainings differs according to the education level.

H2: Employees' environmental sensitivities differ according to their ages.

H2.1: Employees' sensitivity to air pollution differs according to their ages.

H2.2: Employees' sensitivity to water pollution differs according to their ages.

H2.3: Employees' sensitivity to soil pollution differs according to their ages.

H2.4: Employees' sensitivity to ecological balance practices differs according to their ages.

H2.5: Employees' sensitivity to participation to environmental activities differs according to their ages.

H2.6: Employees' sensitivity to participation to environmental trainings differs according to their ages.

H3: Employees' environmental sensitivities differ according to their genders.

H3.1: Employees' sensitivity to air pollution differs according to their genders.

H3.2: Employees' sensitivity to water pollution differs according to their genders.

H3.3: Employees' sensitivity to soil pollution differs according to their genders.

H3.4: Employees' sensitivity to ecological balance practices differs according to their genders.

H3.5: Employees' sensitivity to participation to environmental activities differs according to their genders.

H3.6: Employees' sensitivity to participation to environmental trainings differs according to their genders.

H4: Employees' environmental sensitivities differ according to marital status.

H4.1: Employees' sensitivity to air pollution differs according to marital status.

H4.2: Employees' sensitivity to water pollution differs according to marital status.

H4.3: Employees' sensitivity to soil pollution differs according to marital status.

H4.4: Employees' sensitivity to ecological balance practises differs according to marital status.

H4.5: Employees' sensitivity to participation to environmental activities differs according to marital status.

H4.6: Employees' sensitivity to participation to environmental trainings differs according to marital status.



## Method

### Scope of the study case company

Doğuş Group established The Filiz Pasta company in 1974 in Turkey and in 1994 Barilla did an acquisition with Filiz Pasta Co. Barilla is a multinational pasta producer, its Turkey facility has ability to grow own durum wheat by co-operations Southeast and Central Anatolia regions' suppliers in Turkey. Turkey branch is capable to produce approximately 150 kinds of products and exports to 52 countries all over the world.

“Good for you good for planet- 2016” perspective is an multinational acceptance in Barilla; 140 years of its history, Barilla committed to bring people the best experiences, high quality, tasty moments, preserving our planet – 2017 and “Give people food that you would give your own children” is the vision and strategy of Barilla-2018

(BarillaG.e.RFratelli S.p.A,<https://www.barillagroup.com/en/vision-and-strategy>, 15.01.2018) .

Every year Barilla performs social responsible projects and also incorporates its employees into these projects in cooperation with United Nations Educational, Scientific and Cultural Organization (UNESCO).

Barilla was awarded on 11th Industrial Plant Award for Energy Efficiency, following a competition organized by the Republic of Turkey Ministry of Energy and Natural Resources Ministry and became the first energy efficient facility in Turkey in 2011. Electricity and natural gas energies have been emphasized in saving projects. With 11 different projects, were performed during 2004-2010, energy consumption was decreased 12.96% (YıldızÇankaya & Özbakır Umut, 2012).

## Sample

Cause of taking part in production sector –pasta producer-, having national and international co-operations in environmental sensitive projects and being the first awarded company as a producer in food sector Barilla's employees in Turkey has been identified as the universe-main mass. Barilla has 202 employees in Turkey and on the basis of the current study face-to-face survey was done with all of them. It is a complete count sampling.

## Measures

Environmental Sensitivity Scale: Environmental sensitivity scale (ESS) which was developed by Çabuk and Karacaoğlu (2003) has been used to assess participants' environmental sensitivity levels in the study. ESS, has 6 sub-dimensions as air pollution, water pollution, soil pollution, ecological balance, participation to environmental activities, and participation to environmental trainings. Air pollution has 3 items, water pollution has 4 items, soil pollution has 7 items, ecological balance has 2 items, participation to environmental activities has 2 items, and participation to environmental trainings has 4 items. The scale is made up of 22 items totally. And the current research's Cronbach alpha coefficient is 0,80. The scale is in the form of 3 Likert type scale (always, occasionally, never).

Beside ESS, demographic information (gender, marital status, age, educational level) of the participants have been asked in the survey as multiple choices -in closed-ended form. The survey was conducted in 06-30 December 2016 as face-to-face survey method.

## 4. Findings

### 4.1. Demographic Variables

The demographic informations of participants are given in Table 1 as frequency and percentage.

**Table 1: Demographic Variables**

	%	f
<b>Gender</b>		
Female	35,6	72
Male	64,4	130
<b>Marital status</b>		
Married	74,8	151
Single	25,2	51
<b>Age</b>		
18-25	11,4	23
26-35	25,7	52
36-45	49,5	100
46 and upper	13,4	27
<b>Education</b>		
Primary school	6,4	13
Secondary school	3,5	7
High school	37,6	76
College	24,8	50
University and upper	27,7	56

#### 4.2. Data Analysis

The SPSS 15.00 program has been used to test the hypotheses which were developed to reveal the differences of environmental sensitivity according to the educational level, age, gender and marital status of Barilla employees. In the analysis of the data, first the descriptive statistics have been submitted. Within the scope of the current study environmental sensitivity dimensions have been determined with factor analysis. T-test analysis and ANOVA have been used to determine whether these factors differ in terms of demographic variables. As there has been a difference

between the groups post-hoc has been used. The analyses of the current study are given below with the tables 2, 3, 4 and 5.

Table 2 exhibits, whether the environmental sensitivities of Barilla employees toward air- water- soil pollution, ecological balance practices, participation to environmental activities, participation to trainings about environment differ according to their education level.

**Table 2: Education level - Environmental sensitivity dimensions of the participants**

	n	SD	df	F	P
<b>Air pollution</b>					
Primary school	13	1,5641	,28495		
Secondary school	7	1,6667	0,00000		
High school	76	1,6360	,31822	4	<b>6,351</b> ,000
College	50	1,7467	,29784	197	
University and upper	56	<b>1,8988</b>	,37562		
<b>TOTAL</b>	202	1,7327	,34078	201	
<b>Water pollution</b>					
Primary school	13	1,4103	,27735		
Secondary school	7	1,3929	,31810		
High school	76	1,3388	,34328	4	,247 ,911
College	50	1,3250	,25380	197	
University and upper	56	1,3408	,30661		
<b>TOTAL</b>	202	1,3424	,30574	201	
<b>Soil pollution</b>					
Primary school	13	1,3846	,22120		
Secondary school	7	<b>1,6327</b>	,11240		
High school	76	1,3383	,23772	4	<b>2,654</b> ,034
College	50	1,3543	,31383	197	
University and upper	56	1,4413	,31567		
<b>TOTAL</b>	202	1,3840	,28238	201	
<b>Ecological balance practises</b>					
Primary school	13	2,0385	,43116		
Secondary school	7	2,0000	0,00000		
High school	76	1,9013	,51653	4	1,984 ,098
College	50	2,1200	,42330	197	
University and upper	56	1,9286	,42027		
<b>TOTAL</b>	202	1,9752	,45916	201	
<b>Participation to environmental activities</b>					
Primary school	13	2,0000	,57735		
Secondary school	7	<b>2,7857</b>	,39340		
High school	76	2,0329	,51209	4	<b>4,342</b> ,002
College	50	2,0200	,39071	197	
University and upper	56	2,0536	,46396		
<b>TOTAL</b>	202	2,0594	,48759	201	
<b>Participation to trainings about environ.</b>					
Primary school	13	2,0000	,57735		
Secondary school	7	<b>2,7857</b>	,39340		
High school	76	2,0329	,51209	4	<b>4,342</b> ,002
College	50	2,0200	,39071	197	
University and upper	56	2,0536	,46396		
<b>TOTAL</b>	202	2,0594	,48759	201	

One-way analysis of variance (ANOVA) has been conducted to determine the differences between the average values of the participants towards air- water-soil pollution, ecological balance practices, participation to practices about environment, participation to trainings about environment according to the educational level variable.

As the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards air pollution dimension according to the educational level variable, it has been detected that values are significant statistically ( $F=6,351$ ;  $p < 0.05$ ). Scheffe post-hoc test has been used to determine the direction of the difference. And it has been found out that, those whom are graduated from university ( ) have higher sensitivity to air pollution than those of primary school graduates ( ) and high school graduates ( ).

It has been indicated that values are not significant statistically ( $F=0,247$ ;  $p > 0.05$ ) as the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards water pollution dimension according to the educational level variable.

To determine the differences of the average values of participants towards soil pollution dimension according to education level variable statistically, it has been indicated with ANOVA that the values are significant statistically ( $F=2,654$ ;  $p < 0.05$ ). And those whom are graduated from secondary school ( ) have been found to have higher sensitivity to soil pollution than those of high school graduates ( ) with Scheffe post-hoc test.

It has been detected that values are not significant statistically ( $F=1,984$ ;  $p > 0.05$ ) as the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards ecological balance practises dimension according to the educational level variable.

As the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards participation to environmental activities dimension according to the educational level variable, it has been indicated that values are significant statistically ( $F=4,342$ ;  $p<.0.05$ ). Scheffe post-hoc test has been exhibited that, those whom are graduated from secondary school ( ) have higher sensitivity to participation to environmental activities than those of primary school graduates ( ), high school graduates ( ), college graduates ( ) and university graduates ( ).

It has been detected that values are significant statistically ( $F=2,991$ ;  $p>.0.05$ ) as the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards participation to trainings about environment dimension according to the educational level variable. Post-hoc test results have been exhibited, those whom are graduated from secondary school ( ) have higher sensitivity to participation to trainings about environment than those of high school graduates ( ) and college graduates ( ).

For  $H_1$ ; it has been accepted that Barilla employees' environmental sensitivities on air and soil pollution, participation to environmental activities, and participation to trainings about environment differ according to their education levels. But no significant differences on water pollution and ecological balance practises about environment dimensions have been found out.  $H_{1.1}$ ,  $H_{1.3}$ ,  $H_{1.5}$ ,  $H_{1.6}$  are accepted.  $H_{1.2}$  and  $H_{1.4}$  are rejected.

Table 3 exhibits, whether the environmental sensitivities of Barilla employees toward air- water- soil pollution, ecological balance practises, participation to environmental activities, participation to trainings about environment differ according to their ages.

**Table 3: Age - Environmental sensitivity dimensions of the participants**

	n	SD	df	F	P
<b>Air pollution</b>					
17-25	23	1,5652			
26-35	52	<b>1,8782</b>			
36-45	100	1,7267	3	<b>6,557</b>	<b>,000</b>
46 and over	27	1,6173	198		
<b>TOTAL</b>	202	1,7327	201		
<b>Water pollution</b>					
17-25	23	1,3080			
26-35	52	<b>1,5096</b>			
36-45	100	1,2950	3	<b>4,946</b>	<b>,002</b>
46 and over	27	1,2253	198		
<b>TOTAL</b>	202	1,3424	201		
<b>Soil pollution</b>					
17-25	23	1,3106			
26-35	52	<b>1,5082</b>			
36-45	100	1,3514	3	<b>4,946</b>	<b>,002</b>
46 and over	27	1,3280	198		
<b>TOTAL</b>	202	1,3840	201		
<b>Ecological balance practises</b>					
17-25	23	1,6739			
26-35	52	<b>2,0481</b>			
36-45	100	2,0150	3	<b>4,222</b>	<b>,006</b>
46 and over	27	1,9444	198		
<b>TOTAL</b>	202	1,9752	201		
<b>Participation to environmental activities</b>					
17-25	23	1,8696			
26-35	52	<b>2,2404</b>			
36-45	100	2,0550	3	<b>4,926</b>	<b>,003</b>
46 and over	27	1,8889	198		
<b>TOTAL</b>	202	2,0594	201		
<b>Participation to trainingsabout environ.</b>					
<b>17-25</b>	23	2,0217			
<b>26-35</b>	52	<b>2,2500</b>			
<b>36-45</b>	100	1,9550	3	<b>4,435</b>	<b>,005</b>
<b>46 and over</b>	27	1,7500	198		
<b>TOTAL</b>	202	2,0111	201		

ANOVA has been conducted to determine the differences between the average values of the participants towards air- water-soil pollution, ecological balance practices, participation to practices about environment, participation to trainings about environment according to the age variable.

As the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards air pollution dimension according to the age variable, it has been detected that values are significant statistically ( $F=6,557$ ;  $p<.0.05$ ). Scheffe post-hoc test results have been exhibited that, those whom are at 26-35 ages range () have higher sensitivity to air pollution than those of 17-25 ages range (), 36-45 ages range () and 46 years and over () .

ANOVA the results obtained that the values are significant statistically ( $F=4,946$ ,  $p<.0.05$ ) in determining the differences between the average values of the participants towards water pollution dimension according to the age variable. Those whom are at 26-35 ages range () have been determined to have higher sensitivity to water pollution than those of 17-25 ages range (), 36-45 ages range () and 46 years and over () according to Scheffe post-hoc test results.

As the result of ANOVA, which has been conducted to determine the differences between the average values of the participants towards soil pollution dimension according to the age variable, it has been indicated that values are significant statistically ( $F=4,946$ ;  $p<.0.05$ ). Scheffe post-hoc test has been exhibited that, those whom are at 26-35 ages range () have higher sensitivity to soil pollution than those of 17-25 ages range (), 36-45 ages range () and 46 years and over).

ANOVA the results obtained that the values are significant statistically ( $F=4,222$ ,  $p<.0.05$ ) in determining the differences between the average values of the participants towards ecological balance practises dimension according to the age variable. Those at 26-35 ages range () have higher sensitivity to ecological balance practices than those of 17-25 ages range (), and 36-45 ages range () according to Scheffe post-hoc test results.



As the result of ANOVA it has been detected that values are significant statistically ( $F=4,926$ ;  $p<.0.05$ ) in determination of differences between the average values of the participants towards participation to environmental activities dimension according to the age variable. Scheffe post-hoc test has been exhibited that, those whom are at 26-35 ages range ( ) have higher sensitivity to participation to practices about environment than those of 17-25 ages range ( ), and 46 years and over ages ( ).

In determining the differences between the average values of the participants towards participation to trainings about environment dimension according to the age variable ANOVA was used and the results obtained in this context, has been indicated that the values are significant statistically ( $F=4,435$ ,  $p<.0.05$ ). Post-hoc test results exhibited that the participants at 26-35 ages range ( ) have higher sensitivity to participation to trainings about environment dimension than those of 36-45 ages range ( ), and 46 years and over ages ( ).

All hypotheses are accepted for H<sub>2</sub>; Barilla employees' environmental sensitivities on all dimensions (air-water-soil pollution, ecological balance practises, participation to environmental activities, participation to trainings about environment differ according to their ages.

Table 4 exhibits, whether the environmental sensitivities of Barilla employees toward air- water-soil pollution, ecological balance practices, participation to environmental activities, participation to trainings about environment differ according to their genders.

**Table 4: Gender - Environmental sensitivity dimensions of the participants**

	n	SD	F	T	df	P
<b>Air pollution</b>						
Female	72	1,6852	,26174	16,064	-1,478	200 ,141
Male	130	1,7590	,37588			
<b>Water pollution</b>						
Female	72	1,3414	,26945	1,139	-,034	200 ,973
Male	130	1,3429	,32510			
<b>Soil pollution</b>						
Female	72	1,3591	,23369	2,490	-,932	200 ,352
Male	130	1,3978	,30602			
<b>Ecological balance practises</b>						
Female	72	1,9306	,46197	2,490	-,932	200 ,352
Male	130	2,0000	,45750			
<b>Participation to environmental activities</b>						
Female	72	2,0417	,44996	1,028	-,384	200 ,701
Male	130	2,0692	,50866			
<b>Participation to trainings about environ.</b>						
Female	72	2,0938	,56518	3,078	1,376	200 ,170
Male	130	1,9654	,67035			

T-test has been conducted to determine the difference between the average values of the participants toward air- water-soil pollution, ecological balance practices, participation to environmental activities, and participation to trainings about environment according to the gender variable.

It has been detected that values are not significant statistically ( $t_{200} = -1,478$ ;  $p > 0,05$ ) according to t-test which has been conducted to determine the differences between the average values of the participants towards air pollution dimension according to the gender variable.

According to t-test, the results obtained in determination of the differences between the average values of the participants towards water pollution dimension according to the gender variable, that the values are not significant statistically ( $t_{200} = -0,034$ ;  $p > 0,05$ ).

The values are not significant statistically ( $t_{200} = -0,932$ ;  $p > 0,05$ ) in determination of the differences between the average values of the participants towards soil pollution according to the gender variable.

The values are not significant statistically ( $t_{200} = -0,932$ ;  $p > 0,05$ ) either in determination of the differences between the average values of the participants towards ecological balance practises dimension according to the gender variable.

It has been detected that values are not significant statistically ( $t_{200} = -0,384$ ;  $p > 0,05$ ) according to t-test which has been conducted to determine the differences between the average values of the participants towards participation to environmental activities dimension according to the gender variable.

The values are not significant statistically ( $t_{200} = 1,376$ ;  $p > 0,05$ ) in determination of the differences between the average values of the participants towards participation to trainings about environment according to the gender variable.

All hypotheses have been rejected for  $H_3$ .

**Table 5: Marital status variable- Environmental sensitivity dimensions of the participants**

	n	SD	F	T	df	P
<b>Air pollution</b>						
Single	51	1,7124	,05364	,130	-,490	200 ,625
Married	151	1,7395	,02656		-,	
<b>Water pollution</b>						
Single	51	1,3791	,04038	,009	,991	200 ,323
Married	151	1,3300	,02534			
<b>Soil pollution</b>						
Single	51	1,4286	,03961	,084	1,306	200 ,193
Married	151	1,3690	,02291			
<b>Ecological balance practises</b>						
Single	51	1,9510	,07828	8,123	-,436	200 ,664
Married	151	1,9834	,03434			
<b>Participation to environmental activities</b>						
Single	51	2,0686	,07004	,037	,156	200 ,876
Married	151	2,0563	,03946			
<b>Participation to trainings about environ.</b>						
Single	51	<b>2,2059</b>	,08931	,110	<b>2,562</b>	200 ,011
Married	151	1,9454	,05082			

Table 5 exhibits, whether the environmental sensitivities of Barilla employees toward air- water-soil pollution, ecological balance practices, participation to environmental activities, participation to trainings about environment differ according to marital status.

According to t-test, the results obtained in determination of the differences between the average values of the participants towards air pollution dimension according to the marital status variable, that the values are not significant statistically ( $t_{200} = -0,490$ ,  $p > 0,05$ ). Either, differences between the average values of the participants towards water pollution dimension according to the marital status variable values are not significant statistically ( $t_{200} = 0,991$ ,  $p > 0,05$ ). Values are not significant statistically ( $t_{200} = 1,306$ ,  $p > 0,05$ ) according to t-test results in determination of the differences between the average values of the participants towards soil pollution dimension according to the marital status variable. Values are not significant statistically ( $t_{200} = -0,436$ ,  $p > 0,05$ ) according to the t-test results for determining the differences between the average values of the participants towards ecological balance practises dimension according to marital status variable. Either, differences between the average values of the participants towards participation to environmental activities about environment dimension according to the marital status variable, values are not significant statistically ( $t_{200} = 0,156$ ,  $p > 0,05$ ).

According to t-test, the results obtained in determination of the differences between the average values of the participants towards participation to trainings about environment dimension according to the marital status variable, the values are significant statistically ( $t_{200} = 2,562$ ,  $p < 0,05$ ). t- Test results exhibited that those whom are single ( ) have higher sensitivity to participation to educations about environment than those of married ( ) ones.

For H<sub>4</sub>; it has been accepted that Barilla employees' environmental sensitivities on participation to trainings about environment differ according to marital status. However, no significant differences have been found on air-water-soil pollution, ecological balance practises, and participation to environmental activities dimensions.

H<sub>4.1</sub>, H<sub>4.2</sub>, H<sub>4.3</sub>, H<sub>4.4</sub>, H<sub>4.5</sub> are rejected; H<sub>4.6</sub> is accepted.

## 5. Conclusion and suggestions

There are limited numbers of studies in literature in the world and Turkey that examine the environmental sensitivity of business employees. It is thought that current study will contribute literature to this direction.

A positive relation between environmental sensitivity and the education level variable has been found out in the study conducted on Barilla employees. It has been identified that the university graduates have higher sensitivity to air pollution and the secondary school graduates have higher sensitivity to soil pollution, participation to environmental activities and participation to trainings about environment than the others.

As the findings examine on age variable, a positive relationship between the age variable and environmental sensitivity is identified and all hypotheses in this context have been accepted. Significant differences have been found in favor of the 26-35 age groups. Those who are at 26-35 ages range have higher sensitivity to air-water-soil pollution; have higher sensitivity to ecological balance practices, participation to practices about environment and participation to trainings about environment. Ozmen, Çetinkaya and Nehir (2005) and Erol and Gezer (2006) studies also support these findings that the environmental attitudes significantly differ positively in favor of older ages.

According to the gender variable of employees, the mean values of the sensitivity to air, water and soil pollution, ecological balance practices, participation to environmental activities and participation to trainings about environment have not been identified significant statistically.

According to the marital status variable of employees, the average values of the sensitivity to air, water and soil pollution, ecological balance practices, participation to environmental activities have not been identified significant statistically. But only the participation to trainings about environment dimension has been identified as significant statistically.

Introducing the employees with non-governmental organizations related to environmental awareness- sensitivity, providing employees to take part in environmental activities and training programs and following publications on environmental awareness- sensitivity issues will not only take attention on the subject they will also be important for the rapid expansion of application-oriented studies.

Employees should attend environmental studies such as conferences, panels, seminars. The harmful chemicals to environment, environmental benefits of public transportations, classification of garbage and recycling bins subjects should be included in these programs. It is necessary to focus on the necessity of providing environmental trainings in all process throughout the life (Özdemir, Yıldız, Ocaktan & Sarışen, 2004; Ek et.al., 2009; Oğuz, Çakıcı & Kavas, 2011; Liao, 2017; Law, Hills & Hang Hau, 2017).

At workplaces planned afforestation activities should be organized and should have a contact with voluntary and environmentally friendly institutions and organizations in this regard. Moreover environmental trainings, which do not exist in the educational curriculum in Turkey, should be included in the formal education programs starting from the primary education level to university level.

In public and private sector, the employees' and managers' awareness on air, water, soil pollution and ecological balance issues should be provided. The businesses' environmental sensitivity project based studies should be supported. Especially supporting the environmental awareness-environmental sensitivity studies in social responsibility projects are vital. The modern

marketing approach that takes the consumer center, gives responsibility to everyone to provide sustainability and the continuity of world resources.

As in the case of Barilla, although the responsibility of businesses achieving modern marketing and consumer perspective are evolving within the framework of the business vision, environment is a vital issue not to be left to the initiative of businesses. Many researchers have argued that larger firms are more capable to invest on GSCM and environmental activities both in finance and awareness (Murray, 2000; Olson, 2008, Lau, 2011). At this point, government incentives and rewards should be presented to create opportunities for small sized businesses. The large companies have defined GSCM strategies as part of their corporate strategies and this perspective support them to gain sustainable competitive advantage. Also the small sized businesses should adopt this as a competitive advantage too. Although small sized businesses are conscious to environmental sensitivity, lack of financial resources to adopt environmental strategies is supported by the literature too. The dissemination of GSCM practises that take part in Barilla case in Turkey in all businesses at both local, national and international level, the establishment of laws and standards related to the subject and supporting the co-operations are thought to be in urgent decisions should be taken immediately.

Sustainability is a vital reality for the continuity of life.

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## THE IMPACT ON PROFITS BY SUSTAINING SUPPLEMENTARY COMPLEMENTARY ASSETS FOR ADAPTATION TO RADICAL TECHNOLOGICAL CHANGE IN FIRMS

YOSHINARI

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### ABSTRACT

Teece (1986) proposed that firms may adapt to and profit from radical technological change when the firms have complementary assets such as manufacturing and marketing to commercialize new technology. However, few studies have focused on whether they should sustain or not those complementary assets after the adaptation to radical technological change. Even after adaptation to radical technical changes, firms are likely to sustain complementary assets on a permanent basis if they can profit by having their supplementary assets. After adaptation to radical technical changes, firms are likely to reduce complementary assets if they are unable to profit by having their supplementary assets.

This study is to demonstrate the impact on profits by sustaining supplementary complementary assets for adaptation to radical technological change in firms. I study the top ten sales firms of pharmaceutical firms headquartered in Japan. As a result of this study, the following was found out. First, most firms continue to sustain complementary assets to adapt the radical technological change that will occur next. Secondly, most firms profit from those complementary assets. Thirdly, the more firms that have a longer period to adapt to a radical technological change that will occur next, the firms divert the complementary assets to a purpose other than adapting to the radical technological change, they profited. More specifically, this means that they acquire some licenses from another firms and manufacture and promote the products. I found that firms that have a long period to adapt to radical technological changes, in particular, are unable to profit from adaptation to the next radical technological change.

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