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The Path Extended from Organizational Culture to Innovative Work Behavior: A Research on a Defense Company

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Abstract

The Defense Industry field has characteristics that make for a unique working environment. This paper presents a study conducted among the Software Engineering (SWE) employees working at a software development company in defense industry, which examined the relationship between the constructs; organizational culture, job satisfaction, innovative work behavior and the employees' valuation of the external recognition. One hundred and forty one employees filled out the questionnaire. It was determined that there were positive relations between organizational culture and job satisfaction, whereas positive correlations were determined between job satisfaction and innovative work behavior as well as external recognition. The Structural Equation Modeling (SEM) employed to study the relationship grids among the observed variables. Limitations of the study are also presented along with future research recommendations. SWE managers can use this information to increase employee job satisfaction and innovative work behavior.

Key words: Organizational culture, job satisfaction, innovative work behavior, external recognition, SWE professionals.

1. Introduction

The world's balance of power is fluctuating as new centers of gravity are emerging. In this situation, Turkey has to assume greater responsibilities for its security at home and abroad. Turkey has supported the development of a European Security and Defense Identity (ESDI), as well as the European Security and Defense Policy (ESDP) of the EU. Turkey also supports the strategic cooperation between NATO and the EU. The strategic and geopolitical environment is constantly changing. Therefore, Turkey is trying to establish a trustworthy Common Security and Defense Policy (CSDP), reinforced by a competitive defense industry which requires highly skilled effective SWE (Software Engineering) employees. Software Engineering is an engineering discipline that is concerned with all aspects of software production. There are certain conditions for SWE professionals as characteristics of the work environment in defense companies. The deadlines are on the aggressive side. Besides, the work cannot be disclosed since it is classified. In commercial industry, you also cannot disclose your

work because it is competition sensitive. Defense companies are unfavorably known for being fast-paced work spaces that produce stress-induced employees. The work is a place where deadlines, time management, and multitasking thrive. The defense work can be more fulfilling for some people. You can take a certain amount of pride in knowing that you are working in a high-tech organizations and your software is saving lives. On the contrary, there is also the case that you will be asked to work on a lethal system which could be a problem for the people.

Defense companies consider taking full advantage of government support for the projects they develop with tax and other advantages and gain an essential capability in order to face in a period of instability. Building a robust workforce in the face of instability is required for the foreseeable future. Defense companies, particularly those in the Turkey, have a few extremely important things going for them. The first is the main support that they have from their core customer, Turkish government.The second is their history of technology innovation and engineering competence. The third is the reliability of their cash flows. But there is still a risk for defense companies in becoming self-satisfied, and more importantly, there is an opportunity cost. Therefore, they will be in a competitive edge only if they have demonstrated the clear ability to innovate amid uncertainty and provide a systematic growth. Therefore, they demand for highly knowledge-based resources and employee retention is a very important challenge for these organizations due to the need for talented employees who seek to satisfy their own individual demands. Retaining highly skilled effective employees is important for an organization to create a competitive advantage (Niederman et al., 2007; Joshi and Agarwal, 2011) and long term organizational success irrespective of the sector in which an organization operates (Groves, 2011; McDonnell, 2011). The software employees' field is a critical one in terms of refraining from an employees' intent to leave (Hsu et al., 2003). In order to save these intellectual assets, SWE professionals should be in work environments that positively affect their organizational attitudes and behaviors. Hence, Organizational Culture (OC) has important consequences for the retention of employees because it may be the most important factor in determining how well an individual fits with an organization (O'Reilly et al. 1991; Shadur, Kienzle, and Rodwel 1999). Nowadays, the companies are facing difficult times, where in order to survive they have to adapt their processes to the volatile environment. It is even more critical for the companies which deal in defense sector. Therefore, such organizations have to innovate wherever is possible to achieve a sustainable competitive advantage. Motivated employees are crucial to an organization's sustainable competitiveness, and therefore understanding the SWE professionals in their jobs and what encourages them could be a motivating force in strengthening innovative work behavior.

The purpose of the present study is to determine the impact of organizational culture on the organizational performance for SWE employees working in the Turkish defense industry. Thus, the dimensions of an organizational culture that supports innovative work behavior through job satisfaction will be studied.The influence of job satisfaction into the innovative work behavior of SWE employees and their perceptiveness for the external recognition will be analyzed. For this purpose, a successful software company was investigated in this study. It is expected that the results of the study will have implications for how managers should treat or look after the staff in a defense industry run on relatively 'conservative' lines. Finally, this study

will examine the optimal ways in which we can increase innovation practice in organizations through job satisfaction.

2. Literature Review

The concepts of organizational culture, job satisfaction and innovative work behavior that are related to the attitude and behaviors of the employees are among the significant topics of the management discipline in general and of the organizational behavior discipline in particular. Even though said concepts have long been established in the literature, the interest of the researchers in the same has always remained straight and they are still the subject of various researches with regard to their new aspects, because of their significance from the perspective of the organizations and the employees. The fit of the employees with their organization's culture, their job satisfaction and innovative work behavior along with the external recognition can *positively or negatively* influence the individual and the organizational performance (Silverthorne 2004).

2.1. Organizational Culture

Culture can be broadly understood as 'a set of basic assumptions about how the world is and ought to be that a group of people share and that determines their perceptions, thoughts, feelings, and, to some degree, their overt behavior' (Schein, 1996). Organizational culture reflects individuals' interpretations of events and situations in organizations (Peterson and Smith, 2000). The most leading researcher, Schein (1992) offered a comprehensive but precise definition for organizational culture while aiming on its two important elements. First, the organizational members' basic understanding of experienced responses while dealing with problems related with external adaptation and internal integration; second, sharing such learned responses to newcomers as correct perceptions. These two elements propose that organizational culture originates its meaning through a set of shared dispositions of organizational members in responses to external and internal forces of change. However, Cartwright, Andrews, and Webley (1999) opposed that the organization founder's beliefs, national culture and industry pressures are the likely origins of prevalent and consistent with the organizational practices. Every organization has its own way of resolving internal and external problems and is guided by the dispositions (mainly, beliefs, values, norms and philosophies) shared by its members. This has been clearly highlighted by Wallach (1983) and also by Schein (1992). Consequently, following Wallach's (1983, p.29) definition the present study defined organizational culture as 'the shared understanding of an organization's employees - how we do things around here.' Wallach's definition of organizational culture is simple but precise and also encapsulates the broader understanding of organizational culture.

The above review of various definitions of organizational culture suggests that there exists a lack of consensus between conceptual and operational definitions of organizational culture. Moreover, it reveals that the principal issue is whether culture is shared "organizational members' characters" or "organizational work practices" or both. In view of these definitions, different organizations can be viewed are having their own cultures and the significance of organizational culture comes from its influence on business and a company's business results. Innovation or bureaucracy is a result of actions of leaders and employees in response to external and internal complications faced by their organizations. Understanding the issue of the impact of organizational

culture on the ability of a company to react will have an enormous significance in realizing its influence on boosting innovations in a company.

2.2. Job satisfaction

Job satisfaction is an essential factor that affects employees' initiative and enthusiasm. Job satisfaction represents a determining factor in the overall performance of a company as the employees are the most important asset. The job satisfaction is maybe the most studied topic in the behavioral sciences (Judge and Church, 2000). It is in the foundation of several theories and models that explain the individual attitudes and behaviors (Judge and Klinger, 2007). The studies validated with the findings that the job satisfaction could be predicted by pre-employment expectations, perceived job characteristics, leadership consideration and age (Williams and Hazer, 1986).

The current studies in job satisfaction mainly concern with its impact on commitment, absenteeism and turnover. It is known that job satisfaction is a major aspect in personal satisfaction (Locke, 1976), self-respect, self-esteem, and self-development. It increases the degree of happiness and self-confidence in the workplace which leads to a positive work approach. A satisfied employee is creative, flexible, innovative, and loyal ("Enotes", 2010). Job satisfaction is a key element that contributes directly to the success (Tella, 2007) or failure of an organization. Satisfied workers influence positively the work outcomes, which lead to the success and growth of the organization (Silverthrone, 1996). Job satisfaction ensures economic stability, provide social interaction and offer reinforcement contingencies that enhance self-efficacy (De Witte, 1999).

2.3. Innovative Work Behavior

Innovation has been universally considered as one of the strategic means for advancing efficiency and performance in an organization (Damanpour and Evan, 1984). Innovative work behavior is found to increase individual job performance and ensure effective organizational processes (Janssen, 2000; Yuan and Woodman, 2010). Organizational performance is positively affected by the innovative work behavior of employees (Baer et al., 2003; Janssen, 2001). Scholars agree that innovative work behavior concerns a voluntary willingness by employees to perform on-the-job innovation (Dorenbosch et al., 2005). Innovative work behavior literature addresses two points of views: efficiency-oriented and social- political. The efficiency-oriented perspective is based on a rational view on innovation decisions where organizational enhancements result from employees' practices. The efficiency-oriented perspective assumes that innovative behavior of employees is positive for the organization (Yuan and Woodman, 2010). Employees engaged in innovative work behavior deliver pioneering messages within the organization to peers and to management and take their attention on the innovative process. These employees take on the role of active innovators in the organization (Janssen, 2000; Zhang and Bartol 2010a). The key to successful innovative work behavior is whether the internal climate created by the management motivates the employees to engage in innovation (Alpkan et al., 2010; Dorenbosch et al., 2005). Innovative Work Behavior comprises both creativity and innovation (Scott and Bruce, 1994), and is defined by Janssen (2000:288) as 'the intentional creation, introduction and application of new ideas within a work role, group or organization, in order to benefit role performance, the group, or the organization'.

This article assumes the viewpoint that the management can promote, stimulate, and support employees' innovative work behavior (Burroughs et al. 2011; Dorenbosch et al., 2005; Scott and Bruce, 1994; Tuominen and Toivonen, 2011; Zhang and Bartol, 2010a). In order to motivate innovative work behavior among employees, management uses a variety of participative, decentralization, and traditional financial mechanisms (Alpkan et al., 2010; Burroughs et al., 2011; Scott and Bruce, 1994; Zhang and Bartol, 2010a, 2010b). Furthermore, an entrepreneurial climate is subject to factors such as support, incentives, structures, resources, and risk-taking (Alpkan et al., 2010). These factors shape the framework in which management and employees may perform innovative work behavior. In this regard, private and public organizations approaches to the innovation are somewhat different. The public organizations innovate in a political environment where competitive advantages or performance enhancements are not permitted by pure market pursuit of objectives (Oliver and Holzinger, 2008). Goals are defined through political processes, often resulting in being misaligned with individual work performance (Georgellis et al., 2011). In regards to private organizations, in contrast, they aim to innovate in dynamic environments where the competitive advantage is retained and developed only through continuous adaptation to external changes (Fauchart and Keilbach, 2009; Ren and Guo, 2011). In this study more interestingly is about a company operates as a private sector organization in the defense industry under the shadows of government climate.

2.4. External Recognition

In order to create an organizational culture that develops innovative work behavior among the employees, we need to focus on the appropriate leadership style, reward but recognition as well. In job satisfaction literature, job satisfaction is considered to be both intrinsic and extrinsic, indicating that employees' sources of job satisfaction may originate from within them (intrinsic) or from their environment (extrinsic) (Faragher, Cass and Cooper, 2005). As a result of this concept, Janssen and Van Yperen (2004) posit that intrinsic sources of job satisfaction incorporate the pleasure of the need for achievement, recognition, and the sense of success, whereas extrinsic sources of satisfaction lean towards the compensation and general working conditions. The "Two factor theory" tries to explain how the different motivators are interconnected with job satisfaction (Herzberg and Snyderman; 1959). On one hand, intrinsic factors (motivators) such as achievement, recognition and promotion opportunities make employees want to work by increasing their motivation and satisfaction (Aristovnik and Jaklič, 2013). These support mechanisms such as rewards and recognition signify the base to support an innovative environment in an organization.

3. Theoretical Framework

3.1. Theoretical and Empirical Perspectives of Organizational Culture

Delobbe et al. (2002) stated that one of the greatest theoretical basis required for understanding organizations is organizational culture. As yet there is no consensus on a defined set of culture dimensions that could describe and compare organizational cultures. The following Table 1 presents some of the most commonly cited dimensions of organizational culture that it is in the interest of this study.

Table 1. Dimensions of Organizational Culture

Researcher (s)	Dimensions of Organizational Culture
Wallach (1983)	Bureaucratic Culture, Innovative Culture, and Supportive Culture
Quinn and Cameron (1983)	Dominant Characteristics, Organizational Leadership, Management of Employees, Strategic Emphasis, and Criteria for Success.
Schein (1996)	Organization's relationship to its environment, Nature of human activity. Nature of time, Human nature, Nature of human relationships, and Homogeneity vs. Diversity.
O'Reilly, Chatman and Caldwell (1991)	Innovation and Risk-Taking, Attention to detail, Orientation towards outcomes or results, Aggressiveness and Competitiveness, Supportiveness, Emphasis on Growth and Rewards, Collaborative and Team orientation, and Decisiveness.
Delobbe, Haccoun and Vandenberghe (2002)	People-orientation, Innovation, Outcome-orientation, and Bureaucratic-orientation.
Tsui, Zhang, Wang, Xin and Wu (2006)	Harmony and Employee orientation, Customer orientation, Systematic management control, Innovativeness, and Outcome orientation.

Table 1 show that the number and terms representing each of the dimensions of organizational culture differ greatly from one researcher or a research team to another. This diversity brings about following interpretations. Although each researcher or research team has identified a mutually agreed set of cultural dimensions, some replication of such dimensions could be found among many different studies. For instance, outcome-orientation has been repetitively revealed in studies such as Tsui et al. (2006), Delobbe et al. (2002), and O'Reilly et al. (1991). Also, innovativeness dimension has been stated by studies such as Tsui et al. (2006), Delobbe et al. (2002) and Wallach (1983).

Wallach (1983) took a different approach to describe the culture by identifying three types of organizational cultures, namely; bureaucratic, innovative, and supportive cultures. She suggested that every organization has a combination of these three cultures to varying strengths and per se, cultures cannot be classified precisely into three divisions. Wallach (1983) argued that unlike bureaucratic culture, the innovative culture is exciting and dynamic and the entrepreneurial and ambitious people thrive in this environment and the supportive culture is best suited for people who are friendly, fair and helpful to each other. The supportive culture reflects the existence of a "harmonious" and "friendly" environment in which all organizational members work (Wallach, 1983, p.33). Supportiveness (O'Reilly, Chatman and Caldwell, 1991), people-orientation (Delobbe, Haccoun and Vandenberghe, 2002) and harmony and employee-oriented (Tsui, Zhang, Wang, Xin and Wu, 2006) are all apparently directing a supportive cultural dimension. The innovative culture indicates an "exciting" and "dynamic" work environment (Wallach, 1983, p.33). The bureaucratic culture is another

substantial dimension that has been frequently highlighted in most of the studies. The work is organized and systematic; these cultures are usually based on control and power. A strong bureaucratic culture is not likely to attract and retain creative or ambitious people (Wallach, 1983, p.32). The bureaucratic construct is reflected in attention to detail (O'Reilly, Chatman and Caldwell, 1991).

The review conducted for the present study revealed that Wallach's (1983) three dimensions of organizational culture are found to be the most acknowledged and widely used in the literature. It is fascinating to note that, most aspects of culture dimensions as suggested by many researchers (e.g. Hofstede et al., 1990; O'Reilly et al., 1991; Tsui et al., 2006; Delobbe et al., 2002) overlap with Wallach's (1983) three dimensions, namely; bureaucratic, innovative, and supportive culture. The focus on the Wallach's (1983) dimensions of culture is appropriate for this study because they represented not only a various set of distinctive culture dimensions but were also found to be extensively researched organizational culture types. Moreover, they have appeared as the most reliable in culture constructs that are available in the literature.

3.2. Organizational Culture and Job satisfaction

Hellreigel et al. (1974) report the existence of relationships between organizational culture and job satisfaction. Wallach (1983) reveals that job performance and job satisfaction are linked to organizational culture. Silverthone (2004) states an innovative and supportive culture creates a higher level of satisfaction than bureaucratic culture. In the 2000's the results of a number of researches revealed the clear relation between organizational culture and job satisfaction (Jiang and Klen, 2000; Mckinnon et al., 2003; Navaie-Waliser et al., 2004; Rad et al., 2006; Arnold and Spell, 2006; Chang and Lee, 2007). The study of Shurbagi and Zahari (2012) resulted that the relationship between the four types of organizational culture (Clan, Adhocracy, Market and Hierarchy culture) and the five facets of job satisfaction (Supervision, Benefits, Rewards, Operating and Co-Workers satisfaction) was positive and significant.

3.3. Two-Factor Theory with Innovation

The two-factor theory has been widely applied to job satisfaction, suggesting two independent aspects of satisfaction and dissatisfaction (Herzberg, Mausner, Peterson, and Capwell, 1957). It represents hygiene factors and motivators. Hygiene factors refer to extrinsic incentives, including external rewards such as salary and organizational environment. Extrinsic factors may directly affect individual job satisfaction, although they cannot enhance the degree of satisfaction, but can prevent dissatisfaction (Herzberg, 1959). In innovation practice, public sector organizations have attempted to provide some incentives or rewards in order to boost the organizational practice of innovation for employees' acceptance or participation. Thus, employees perceive some extrinsic rewards may be provided if they actively participate in innovation practice in the organization (Amabile, 1997). These motivators or intrinsic factors include a sense of achievement, fulfillment, and growth from the job, which represent higher level needs of human beings (Rainey, 2014; Amabile, 1997). Regarding how the organization can make the job more interesting and satisfy the workers' needs for achievement and growth, Herzberg's propositions have received attention from motivation theory (Rainey, 2014). The two factors are considered contributive when we discuss organizational motivation with innovation practice. The contribution of this research is to provide insight into some of the social exchange

interactions that take place amongst SWE employees and their employing organization. There are a large number of previous studies on organizational innovation and performance from an organizational perspective (Damanpour and Evan, 1984; Loof and Heshmati, 2006); however, there has been relatively little research regarding how innovation practices in the organization influence individual work satisfaction (Bryson, Dale-Olsen and Barth, 2009). Nevertheless, our study will be to discover the relationships between the job satisfaction and innovative work behavior. We will investigate whether job satisfaction influences the innovative work behaviour.

4. Methodology

4.1. Sample and Data Collection Procedure

The research was in the form of a questionnaire study. The influence of organizational culture on job satisfaction and the relation with innovative work behavior and external recognition in a sample of group of SWE employees working in a Turkish defense company were evaluated. The sample group who participated in the study was SWE professionals working in the defense software company. The research was conducted with 141 SWE employees working in a defense company in order to determine the effects of organizational culture on job satisfaction and the relation with innovative work behavior and external recognition. The number of employees working as the SWE professionals in the company was 205. Research data were obtained through the questionnaire forms. Sample is selected from a population due to the limitation resulted from the difficulty in reaching all of the employees composing the research population. In this research, probability sampling method is used in which all of the units in the population have equal probabilities of being chosen as a sample and the sample has ability to represent the population well. In this context, the selected sample may be said to represent 69% of the population.

4.2. Measures

Organizational Culture Index Wallach 1983 (24 items OCI), Innovative Working Behavior Scale Jansen 2000 (9 items IWB scale) and Job Satisfaction Survey Scale (Lyons, Lapin and Young, 2003) have been used for this survey. Wallach's (1983) Organizational Culture Index was found to be best suited for the present research. Wallach's Organizational culture Index (OCI) is freely available and reliabilities have been established by many studies (e.g. Chen, 2004 and Kangas et al., 1999). Wallach's OCI has been extensively used in the past as well as recently in different countries, namely; North America (e.g. Kangas et al., 1999), Lok, Westwood and Crawford, 2005), India (e.g. Kanungo et al., 2001), China (Chow and Liu, 2007), and Taiwan (e.g. Chen, 2004).The Organizational Culture Index is comprised of 24 items, with eight items assigned to each of the three dimensions of organizational culture. Survey respondents are required to report the extent to which each of the items is characteristic of their organization. Response options range from 0 ('doesn't describe my organization') to 3 ('describes my organization most of the time'). Jansen (2000) was the first to try and develop one multi-dimensional measure, using both self and other ratings of IWB. He formulated 9-items Innovative Work Behavior (IWB) Scale specifically tapping idea generation, idea promotion and idea implementation, but found strong correlations, and concluded that his items could best be combined and used as a single additive scale. A study by Lyons of 787 American healthcare professionals found that three out of four of the top factors for predicting job satisfaction were intrinsic

incentives including 'worthwhile accomplishment and opportunities for growth and recognition' (Lyons et al., 2003) In the present study the JSS scale (Job Satisfaction Survey) developed by Lyons et al (2003) will be used to measure how satisfied employees are with their jobs and its relation with external recognition.

Pilot study was conducted with 30 employees in order to determine the clarity of the items contained in the questionnaire forms as well as validity and reliability of the scales. As a result of analyses performed to identify the reliability of the organizational culture, job satisfaction, innovative work behavior and external recognition scales; reliability coefficient (Cronbach Alpha) values for the organizational culture scale, job satisfaction scale, innovative work behavior scale and external recognition scale were determined to be $\lambda_1 = 0.884$, $\lambda_2 = 0.901$, $\lambda_3 = 0.966$ and $\lambda_1 = 0.915$, respectively. Reliability coefficient with value close to 1.00 indicates that all of the questions in the measuring instrument are consistent with each other and represent the measure of homogeneity in a sample. Thus, it was decided that compiled data were appropriate for statistical analyses.

4.3. Research Model and Hypotheses

The objective of the study is to investigate the direct and indirect effect of organizational culture on the job satisfaction and innovative work behavior of the employees in a software company operating in the defense sector. The research model related with the objective of the study is shown in Figure 1.

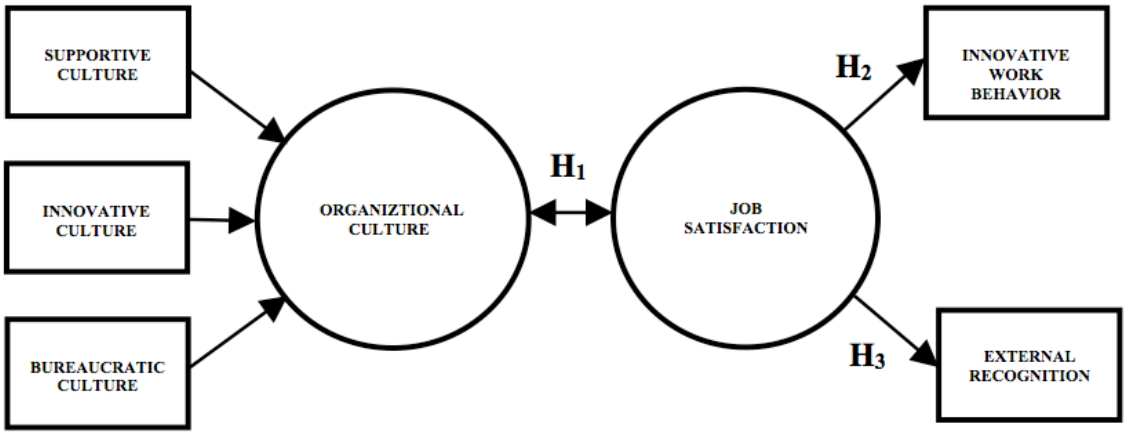

Figure 1. Model Structure

The hypotheses developed based on the research model are given as follows:

H_1: The organizational culture has statistically significant effect on job satisfaction.

H_2: The job satisfaction has statistically significant effect on the participants' innovative work behavior.

H_3: The job satisfaction has statistically significant effect on external recognition.

H_4: The organizational culture varies according to the participants' demographic characteristics, position and employee tenure at the company.

$H_{4.1}$: The organizational culture varies according to the ages of the participants

$H_{4.2}$: The organizational culture varies according to the educational levels of the participants

$H_{4.3}$: The organizational culture varies according to the position held by the participants at the company

$H_{4.4}$: The organizational culture varies according to the employee tenure at the company

H_5: The job satisfaction varies according to the participants' demographic characteristics, position and employee tenure at the company.

$H_{5.1}$: The job satisfaction varies according to the ages of the participants.

$H_{5.2}$: The job satisfaction varies according to the educational levels of the participants

$H_{5.3}$: The job satisfaction varies according to the position held by the participants at the company.

$H_{5.4}$: The job satisfaction varies according to the employee tenure at the company.

H_6: The innovative work behavior varies according to the participants' demographic characteristics, position and employee tenure at the company.

$H_{6.1}$: The innovative work behavior varies according to the ages of the participants.

$H_{6.2}$: The innovative work behavior varies according to the educational levels of the participants

$H_{6.3}$: The innovative work behavior varies according to the position held by the participants at the company.

$H_{6.4}$: The innovative work behavior varies according to the employee tenure at the company.

4.4. Analysis

A computer database was created after the return of the responses of the subjects to the measuring instrument in the application field. IBM SPSS 21 package software was used for the analysis of the data. The data compiled within the scope of the study were analyzed and interpreted in accordance with the defined objectives by utilizing the descriptive statistics and employing various statistical analyses (The T-test, One-way Analysis of Variance, Tukey's Honest Significant Difference Test). Structural Equation Modeling was performed by using IBM AMOS 21 package software.

5. Results and Discussion

5.1. Descriptive Statistics

In this section, descriptive statistics and absolute and relative frequencies were utilized to present demographic characteristics of the participants and examine the dimensions of the organizational culture which may affect the job satisfaction, innovative work behavior and external recognition of the participants.

Table 2. Distribution of the participants according to their demographic properties

Variable	Frequency (f_i)	Percentage (%)
Gender		
Female	41	29.3
Male	99	70.7
Age		
20 - 29	63	44.7
30 – 39	62	44.0
40 - 49	11	7.8
50 and above	5	3.5
Marital Status		
Single	68	48.2
Married	73	51.8
Education Level		
Bachelor's Degree	72	51.1
Master Degree	65	46.1
Doctoral Degree	4	2.8
Occupation		
Engineer (Technical Group)	112	79.4
Deputy Manager/Manager/ Director/Senior Executive	13	9.2
Administrative Staff	16	11.3
Employee Tenure		
Less than 3 years	56	39.7
3 – 6 years	37	26.2
7 – 10 years	25	17.7
More than 10 years	23	16.3

The findings according to the demographic properties of the participants are given in Table 2. According to the table, the sample group consists of 70.7 % male and 29.3 % female. When examining the age distribution of the participants, 44.7 % % are between 26 and 29 years; 44 % are between 30 and 39 years. It was determined that 51.1 % have bachelor degree and 48.9 % have postgraduate degree among participants. It is observed that 79.4% are engineer, 9.2 % are in managerial position and 11.3% are in charge with administrative affairs when the statistics regarding the job positions are examined.

The differences of the participants' opinions about the expressions determining the organizational culture are given in Table 3. It was determined that the participants'

opinions about the expressions relating to the innovative culture, which is considered as one of the determinants of the organizational culture, were less descriptive in respect of the organizational culture. It was concluded that the bureaucratic culture is more established than the other factors when evaluating the expressions about the bureaucratic culture at the company.

Table 3. Participants' opinions about the expressions determining the organizational culture

		Mean ($\bar{x}$)	**Standard Deviation (SD)**
K_1 Inovative Culture	C1. Risk taking	1.52	0.904
	C2. Result-oriented	2.19	0.779
	C3. Creative	1.78	0.925
	C4. Pressurized	1.62	1.024
	C5. Stimulating	1.62	0.923
	C6. Challenging	2.15	0.761
	C7. Enterprising	1.88	0.846
	C8. Driving	1.73	0.788
K_2 Bureaucratic Culture	C9. Procedural	2.12	0.962
	C10. Hierarchical	1.88	0.917
	C11. Structured	2.10	0.795
	C12. Ordered	2.04	0.711
	C13.Regualted	2.03	0.924
	C14. Established, solid	2.09	0.779
	C15. Cautious	2.06	0.740
	C16. Power-oriented	1.72	0.917
K_3 Supportive Culture	C17. Collaborative	1.91	0.818
	C18. Relationships-oriented	1.72	0.886
	C19. Encouraging	1.68	0.903
	C20. Sociable	1.72	0.917
	C21. Personal freedom	1.78	0.917
	C22. Equitable	1.96	0.842
	C23. Safe	2.04	0.833
	C24. Trusting	2.04	0.824

Scale			
Does not describe my organization 0	Describe my organization a little 1	Describe my organization a fair amount 2	Describe my organization most of the time 3

Table 4. Assessment regarding the participants' expressions determining the job satisfaction

Expressions		Mean ($\bar{x}$)	Standard Deviation (SD)
S1.	The amount of job security I have	3.64	0.928
S2.	The amount of personal growth and development I experience while doing my job	3.55	0.914
S3.	The feeling of worthwhile accomplishment I get from doing my job	3.81	0.847
S4.	My relationship with the people I work with on my job	4.22	0.738
S5.	The quality of supervision I receive in my work	3.69	0.974
S6.	The opportunities for advancement that exist in my job	3.25	1.122
S7.	The work load in my current position	3.30	1.082
S8.	The need to do things that are not in my job description or professional role	3.11	1.018
S9.	My compensation/salary	3.31	1.103
S10.	My opportunities to increase my income	2.81	1.059
S11.	The conditions of the physical plant where I work	3.66	1.155
S12.	My current position in the workplace	3.64	0.937
Scale			
Extremely dissatisfied 1	Dissatisfied 2	Neutral 3	Satisfied 4	Extremely satisfied 5

The employees' opinions about the expressions relating to the job satisfaction are shown in Table 4. It was found out that participants indicated their satisfaction with the relationship between their colleagues; however, they expressed dissatisfaction when considering other opportunities to increase their income.

Table 5. Assessment regarding the participants' expressions determining the innovative work behavior

Expressions		Mean ($\bar{x}$)	Standard Deviation (SD)
I1	Creating new ideas for improvements	4.16	1.596
I2	Searching out new working-methods, techniques, or instruments	4.21	1.588
I3	Generating original solutions for problems	4.57	1.596
I4	Mobilizing support for innovative ideas	3.93	1.802
I5	Acquiring approval for innovative ideas	3.70	1.855
I6	Making important organizational members enthusiastic for innovative ideas.	3.62	1.896
I7	Transforming innovative ideas into useful applications	3.49	1.799
I8	Introducing innovative ideas into the work environment in a systematic way	3.52	1.815
I9	Evaluating the utility of innovative ideas	3.66	1.800
Scale			
Never (1)	Sporadically (a few times a year) (2)	Sometimes (once in a month) (3)	Regularly (a few times a month) (4)
Often (once a week) (5)	Very often (a few time a week) (6)	Always (daily) (7)	

Table 6. Assessment regarding the participants' expressions determining the external recognition

Expressions		Mean ($\bar{x}$)	Standard Deviation (SD)
R1.	The recognition I receive from my peers by doing my job	3.87	0.888
R2.	The recognition I receive from other professional groups by doing my	3.59	0.957
R3.	The recognition I receive from the general public by doing my job	3.46	1.028
R4.	The recognition I receive from my superiors by doing my job	3.62	1.014
R5.	The recognition I receive from the status of my position within my profession	3.54	1.039
Scale			
Extremely dissatisfied (1)	Dissatisfied (2)	Neutral (3)	Satisfied (4)	Extremely satisfied (5)

The employees' opinions about scale items indicating the innovative work behavior are shown in Table 5. It is determined that participants showed more innovative work behavior regarding generating new ideas for improvement, developing new working methods and techniques and the solutions generated for problems. In Table 6 which the findings to determine the employees' perceives regarding the external

recognition are provided, it is observed that the participants' opinions about the given expressions are positive in general.

5.2. Test and Analysis of the Hypotheses

5.2.1. Examining whether or not the organizational culture varies according to the employees' demographic properties, position and employee tenure at the company.

The t-test and one-way analysis of variance (ANOVA) were used to determine whether the organizational culture showed any difference according to the employees' demographic properties, position and employee tenure at the company. As the prerequisites of the mentioned tests, whether or not each group included the samples randomly selected from a population exhibiting normal distribution and whether or not the sample variances were homogeneous were examined, and it was decided that the data were appropriate for the t-test and variance analysis. The findings of analysis are given in Table 7. Accordingly, it was concluded that the organizational culture did not vary according to employees' age, educational level, position at company and employee tenure ($p > 0.05$).

Table 7. The difference relating to the organizational culture among employees according to their demographic properties, position and employee tenure at the company

Expressions		Mean ($\bar{x}$)	Standard Deviation (SD)
R1.	The recognition I receive from my peers by doing my job	3.87	0.888
R2.	The recognition I receive from other professional groups by doing my	3.59	0.957
R3.	The recognition I receive from the general public by doing my job	3.46	1.028
R4.	The recognition I receive from my superiors by doing my job	3.62	1.014
R5.	The recognition I receive from the status of my position within my profession	3.54	1.039
Scale			
Extremely dissatisfied 1	Dissatisfied 2	Neutral 3	Satisfied 4	Extremely satisfied 5

5.2.2. Examining whether or not the job satisfaction varies according to the employees' demographic characteristics, position and employee tenure at the company.

The t-test and one-way analysis of variance (ANOVA) were used to determine whether the job satisfaction showed any difference according to the employees' demographic properties, position and employee tenure at the company. As the prerequisites of the mentioned tests, whether or not each group included the samples randomly selected from a population exhibiting normal distribution and whether or not the sample variances were homogeneous were examined, and it was decided that the data were appropriate for the t-test and variance analysis. The findings of analysis are

given in Table 8. Accordingly, it was concluded that the job satisfaction did not vary according to employees' age, educational level, position at company and employee tenure ($p > 0.05$).

Table 8. The difference relating to the job satisfaction among employees according to their demographic characteristics, position and employee tenure at the company

Hypothesis	Variable	n	Average	Standard Deviation	Significance Level (P)
$H_{5.1}$	**Age**				
	20 - 29	63	3.49	0.760	
	30 - 39	62	3.47	0.644	0.587
	40 and above	16	3.67	0.593	
$H_{5.2}$	**Educational Level**				
	Bachelor's Degree	72	3.41	0.738	0.123
	Postgraduate Degree	69	3.59	0.632	
$H_{5.3}$	**Position**				
	Engineer (Technical Group)	112	3.50	0.680	
	Deputy Manager/Manager/ Director/Senior Executive	13	3.54	0.814	0.920
	Administrative Staff	16	3.44	0.707	
$H_{5.4}$	**Employee Tenure**				
	Less than 3 years	56	3.4198	0.756	
	3 – 6 years	37	3.5383	0.605	
	7 - 10 years	25	3.5182	0.728	0.681
	More than 10 years	23	3.6153	0.633	

5.2.3. Examining whether or not the innovative behavior varies according to the employees' demographic properties, position and employee tenure at the company.

The t-test and one-way analysis of variance (ANOVA) were used to determine whether the innovative behavior showed any difference according to the employees' demographic properties, position and employee tenure at the company. As the prerequisites of the mentioned tests, whether or not each group included the samples randomly selected from a population exhibiting normal distribution and whether or not the sample variances were homogeneous were examined, and it was decided that the data were appropriate for the t-test and variance analysis. The findings of analysis are given in Table 9. Accordingly, it was concluded that the innovative work behavior did not vary according to the employees' age, educational level, position at company and employee tenure ($p > 0.05$).

Table 9. The difference relating to the innovative behavior among employees according to their demographic properties, position and employee tenure at the company

Hypothesis	Variable	N	Average	Standard Deviation	Significance Level (P)
$H_{6.1}$	**Age**				
	20 – 29	63	4.21	1.683	0.04
	30 - 39	62	3.66	1.504	
	40 and above	16	3.36	0.860	
$H_{6.2}$	**Educational Level**				
	Bachelor's Degree	72	3.91	1.620	0.760
	Postgraduate Degree	69	3.83	1.498	
$H_{6.3}$	**Position**				
	Engineer (Technical Group)	112	3.92	1.640	0.730
	Deputy Manager/Manager/ Director/Senior Executive	13	3.67	1.095	
	Administrative staff	16	3.66	1.283	
$H_{6.4}$	**Employee Tenure**				
	Less than 3 years	56	4.05	1.576	0.674
	3 – 6 years	37	3.74	1.571	
	7 - 10 years	25	3.87	1.667	
	More than 10 years	23	3.63	1.402	

The multiple comparison tests (post-hoc tests) were used to demonstrate which of the level averages was different from the others and from which age group the difference resulted from. In this context, Tukey HSD (Honest Significant Difference) Test was considered appropriate to compare the independent group averages with equal variances to each other. As a result of the multiple comparison test applied, it was determined that the participants' innovative work behaviors in the age group between 20 and 29 differ from other groups. Moreover, when the descriptive statistics given in Table 9 are examined, it is observed that the participants' level of innovative work behavior decreases while their age increases.

5.3. Assessment of Structural Equation Modeling (SEM)

The main analysis of quantitative data in this research study was done by applying structural equation modelling (SEM) technique. SEM is a combination of statistical techniques that allow a set of relationships between one or more independent variables, either discreet or continuous, and one or more dependent variables to be measured.

Structural Equation Modeling (SEM) was employed to evaluate the effects between the organizational culture, job satisfaction, innovative work behavior and external recognition of the employees who participated in the questionnaire survey and to test the hypotheses proposed in this regard. The model's estimation results and regression coefficients are shown in Figure 2. In order to perform a precise assessment

regarding the model within the scope of this analysis, it is necessary to use some assessment criteria. Goodness of Fit Indices (GFI) allows the decision to be made about the acceptability of each model as a whole by the data. The findings about the goodness of fit indices for the study model are presented in Table 10.

Table 10. Goodness of fit Indices for the structural equation modeling

CRITERION FOR FIT	MODEL VALUE	ACCEPTABLE FIT VALUES
X^2/SD	1.602	X^2/DF ≤ 3
CFI	0.959	CFI ≥ 0.95
NFI	0.854	NFI ≥ 0.90
RMSEA	0.066	RMSEA ≤ 0.08

The results obtained within the scope of the analysis reveals that the factor structure is in acceptable limits in general sense. This indicates that there is no difference between the covariance matrix of the model theoretically shown in Figure 2 and the covariance matrix of the sample, in other words, the model which is theoretically determined, fits the sample data.

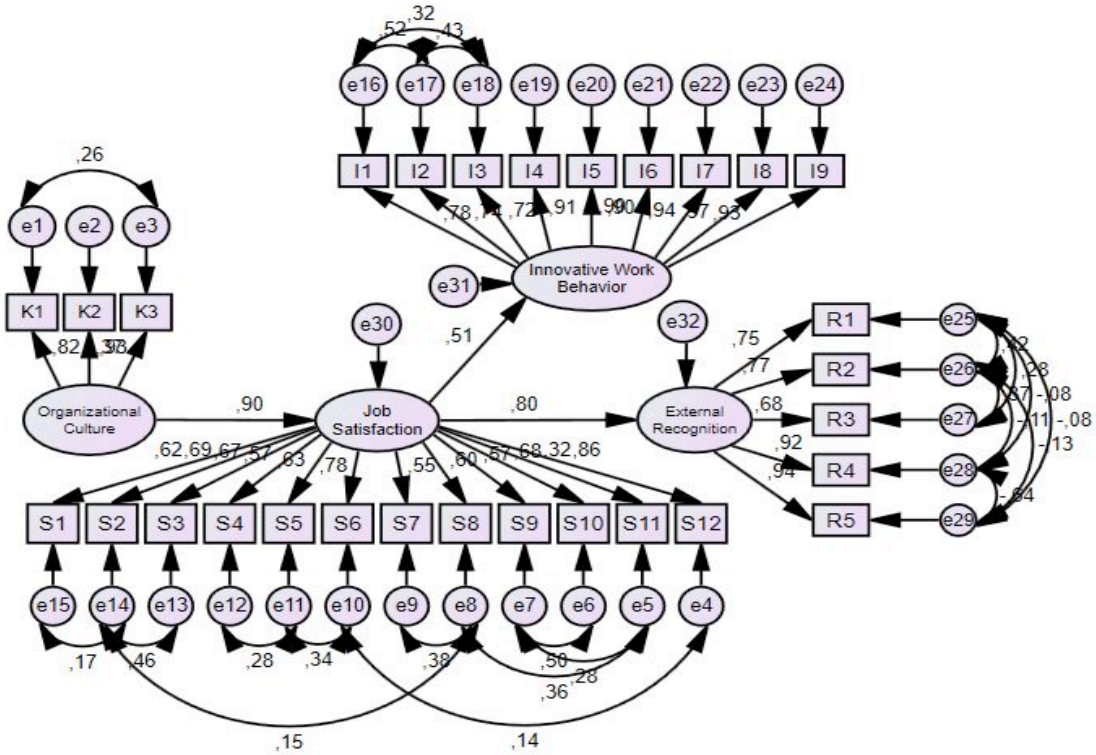

Figure 2. Examination of the relationships between the organizational culture, job satisfaction, innovative work behavior and external recognition by structural equation modeling

Table 11. Tests performed for the assessment of the relationships between the organizational culture, job satisfaction, innovative work behavior and external recognition.

Hypothesis	Path	Estimation	C.R.	P
H_1	Organizational Culture ⟶ Job Satisfaction	1.657	5.464	0.000
H_2	Job Satisfaction ⟶ Innovative Work Behavior	0.785	5.711	0.000
H_3	Job Satisfaction ⟶ External Recognition	0.657	7.666	0.000

The hypotheses developed and the results obtained are given in Table 11 in order to determine whether there is any statistically significant relationship between the organizational culture, job satisfaction, innovative work behavior and external recognition of the participants.

It was concluded that Hypothesis H_1 which is developed between the organizational culture and the job satisfaction were supported, in other words, the organizational culture has a significant effect on the job satisfaction (β=1.657, $p<0.01$). In last decade, the results of a number of researches revealed the clear relation between organizational culture and job satisfaction (Jiang and Klen, 2000; Mckinnon et al., 2003; Navaie-Waliser et al., 2004; Rad et al., 2006; Arnold and Spell, 2006; Chang and Lee, 2007). The study of Sempane et al. (2002) revealed a significant relation between organizational culture and the variables of job satisfaction, as the latter was found to be able to predict employees' perceptions of organizational culture.H_2 hypothesis that describes the significant effect of job satisfaction on the innovative work behavior, were also accepted (β=0.785, $p<0.01$). There has been relatively little research regarding how innovation practices in the organization influence individual work satisfaction (Bryson, Dale-Olsen and Barth, 2009). Oldham (1996) found that employees are more satisfied with their jobs when they work on complex and challenging tasks that require creativity and innovative thinking. The findings support the model in Figure 2 which states moderate relationship between the job satisfaction and innovative work behavior. Moreover, it was concluded that the relationship (H_3) between the job satisfaction and the external recognition was statistically significant (β=0.657, $p<0.01$). The existence of both financial reward and recognition has been found to have a significant influence on knowledge workers (Arnolds and Boshoff, 2004). The findings indicate that there is a strong relationship between the job satisfaction and the external recognition.

5.4. Limitations and Avenues for Further Research

When interpreting the results of this study and their implications, limitations, which provide opportunities for future research, should be considered. First, although the results replicate prior findings in different industries, the small sample and how it was selected reduce the generalisation of the results. Second, the cross-sectional nature of the study precludes causal inferences. The longitudinal study based on a diversified, large and randomly selected sample using different sources of data could be conducted to replicate the findings of this study. The empirical studies face the usual limitations essential in survey designs. Further, all data obtained from the employees was collected cross-sectional. Future research should explore whether the relationship between personal characteristics and innovative work behavior along with strategy is contingent on additional variables. Third, the present work raised the question as to whether

outcome expectations really have an effect on innovative work behavior. As the study's participants reported relatively high levels of outcome expectations, it should be noted that the findings do not mean that outcome expectations are insignificant in the context of innovation. Perhaps, the relationship between outcome expectations and innovative work behavior may be more complex than presumed. Future research should broaden scholarly understanding of when and how outcome expectations relate to innovative work behavior.

6. Conclusion

Organizations must understand how they can both connect and unleash human potential in an increasingly chaotic world. Organizational culture provides good atmosphere where creativity and exchange of ideas are shared and where both collective and individual knowledge are used appropriately. In order to be successful in establishing organizational culture which supports and enhances innovation, companies need to have enough resources and opportunities in the creation of an organization which will be characterized by strong team work, communication, trust, autonomy, transfer of knowledge, creative personnel, risk tolerance and support of innovation. When compared to other professional employees, SWE employees show a considerably higher need for challenging work (Couger and Zawacki, 1978), but they often work in environments categorized by a persistent state of rush or crisis (Ahuja, 2002; Meyerson and Fletcher, 2000) and rapid technological revolution. The results of the current study suggest that in order to have innovative employees, managers should create the innovative work environment in organization so that organizations can achieve competitive advantages through employees. They could also examine the interrelationship between innovative work behavior and personal characteristics. Both innovative work behavior and personal characteristics have been linked with outcomes such as employee commitment to innovation, strategy, motivation and job satisfaction. A successful software company was investigated in this study in order to determine the effect of organizational culture in this defense - conservative industry on the feelings of employees about their jobs. Independent measures were made of organizational culture in the firm and the extent to which the employees felt satisfied or dissatisfied with their jobs. It is expected that the results of the study will have implications for how managers should treat or look after the staff in a defense industry run on relatively 'conservative' lines. This article may serve as an impetus for future research in the area of SWE employees in defense sector. Considering that the majority of the previous studies were conducted in the developed countries, the present study aimed to investigate the innovative work behavior of SWE employees working at the defense company in a developing country with a different cultural structure. In conclusion, the organizational pendulum between the administration and employees and the concern for the job security should oscillate in a way to create a dynamic effect on the phenomenon of workplace environment so that the performance of the SWE staff may increase in harmony with the organizational strategy (Mete and Sökmen, 2016). Challenging managerial work, restructuring, globalization and advances in technology demand along with new ideas should be incessantly generated for organizations to remain on the competitive edge (Martens, 2014). The aforementioned factors together with the turbulent environment require of managers and employees to find aspects of work interesting and pleasurable if business results are to be achieved (Graves, Ruderman, Ohlott and Weber, 2012).

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