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CONTENT

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MULTI-DIMENSIONAL MEASURE OF STRATEGY DEVELOPMENT PROCESS FROM A DIFFERENT CONTEXT: AN EMPIRICAL RESEARCH ON TURKISH MANAGERS

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ABSTRACT
The purpose of this paper is to provide another explanation of strategy development process from a different context. Even though several studies exploring different approaches to strategy development process have been employed, most of them have examined organizations in similar samplings, more specifically Anglo-Saxon cultures/countries. Therefore, in order to explore the strategy development approaches from a different context, the paper aims to expose and describe the strategy development modes followed within organisations from a developing/emerging country based on the perceptions of managers. Towards that end, the paper reveals another multi-dimensional framework of strategy development to more clearly understand the process by which strategy develops within another context. By using factor analysis the study identifies and moreover categorizes six different modes of strategy among organisations.

1. INTRODUCTION

Different explanatory theories aiming to explain the nature of the strategy development process have been proposed within strategy literature. In the early days of traditional strategy literature, the strategy development process followed by organizations was often explained as a rational, analytical, systematic and deliberate process of planning and intent (e.g. Ansoff, 1965; Andrews, 1971; Hofer and Schendel, 1978; Steiner, 1979). Nevertheless, in the following period, strategy development process was also explained in other ways. In this context, several authors have proposed different approaches to the process of making strategies and sought to build up models to integrate the variety of viewpoints in the literature. Consequently, numerous typological approaches have been occured. Typology based works are important to comprehend what let to the existent strategy of the organisations. Moreover the typological explanation of the strategy development process, a concern for how strategies are developed and implemented rose, as well as the multi-dimensional explanations to organisations and strategies. As a result of these trend, the strategy literature finally provides us miscellaneous explanations, theories and approaches in order to identify the attitudes, patterns and tendencies within strategy development process (e.g. Miles and Snow, 1978; Bourgeois and Brodwin, 1984; Grandori, 1984; Mintzberg and Waters, 1985; Chaffee, 1985; Mintzberg, 1987; Ansoff, 1987; Hart, 1992; Idenburg, 1993; Whittington, 1993; McKiernan, 1996; Mintzberg et al.,

1998; Bailey et al., 2000; Haberberg and Rieple, 2001; Jelenc, 2004), resulting in a "model proliferation" (Hart, 1992, p.27). As a result of this proliferation, there are, then, various typologies and methodologies on the explanation of strategy development processes.

Applicability of management theories and practices has historically been a major concern of researchers dealing with developing country situations (Hoskisson et al., 2000). Even though several studies exploring different approaches to strategy development process have been employed, most of them have examined and sampled organizations in similar samplings, more specifically Anglo-Saxon cultures/countries. For example, Parnell (2003) expresses his concern regarding the concentration of strategy development research on a specific sampling from similar or the same region/country. Although many elements of the existing consensus developed from the current studies of strategic management may be directly appropriate to developing/emerging countries (Parnell, 2003), we aim to reveal strategy development approaches of one of the developing/emerging countries, more specificly the nature of strategy development process in Turkish business organisations.

Therefore, in order to explore the strategy development approach from a different context, we intend to describe the strategy development modes followed within Turkish business organisations, as a sample of developing/emerging countries based on the perceptions of their managers. This perspective enables us to look at strategy development process from a non-traditional angle which may provide a different picture of reality.

2. LITERATURE REVIEW – STRATEGY DEVELOPMENT PROCESS AND SCHOOLS OF THOUGHT

The use of the strategy concept in relation to organisations, and the application of the subject of strategic management, most typically to business firms and corporations has only occurred since the twentieth century, more specifically since 1960s (Bracker, 1980; Segal-Horn, 1998; Brannback and Nasi, 2001). During the 1960s the concept of strategy came into the business arena with a superb dominance. As concluded by Brannback and Nasi (2001, p.3) "hardly any other business concept has during the past decades become such a conceptual commodity. What other field within business can portray as many textbooks, courses, consultancy firms or top management meetings than that of strategy?".

The word strategy was introduced into the business field by several pioneers including Alfred D. Chandler, Igor Ansoff, Philip Selznick, and Peter Drucker between the late 1950s and early 1960s (Kay, 1995; McKiernan, 1996; Segal-Horn, 1998). Since then, the concept has evolved into a variety of different thoughts, perceptions, debates, and adaptations by many researchers, scholars, and also practitioners. The term strategy has many aspects and consequently various authors have attempted to split strategy literature into meaningful categories, most probably under the inspiration of their own academic disciplines.

These early pioneers developed many important concepts related to business strategy and those concepts are influential even in the current business world. More specifically, Chandler developed the famous concept 'structure follows strategy' (Chandler, 1962), Ansoff established 'gap analysis' (Ansoff, 1965), Selznick presented the idea of matching

the organisation's internal factors with external environmental conditions famous so-called 'SWOT analysis' (Selznick, 1957), and Drucker formed the concept of 'management by objective' (Drucker, 1954). However, as these concepts indicate, these early scholars associated business strategy to corporate planning under the given industrial structure (Kim, 2011).

After these early pioneers, research on the strategic management has evolved in several ways by interconnecting with different disciplines. Accordingly, research on the strategic management has evolved in several ways by interconnecting with different disciplines. Indeed, the view on the strategic management by a certain group of people is often shaped by the group's own functional heritage and disciplinary legacy (McKiernan, 1996). Considering this, several authors have proposed different approaches to the process of making strategies and sought to build up models to integrate the variety of viewpoints in the literature. As a result of these efforts, the strategy literature finally provides us different schools of thought, in other word different approaches to the strategy development process. A school of thought "is understood to be the range of thought of a specific group of researchers, which has crystallized within the field of strategic management. In other words, a school of thought can be seen as an institutionalized paradigm" (Volberda and Elfring, 2001, p.1).

In Table 1, a short overview and depiction of the schools of thought proposed in the strategic management literature is presented.

From the very first classifications proposed there was a clear conclusion that the process of strategy development cannot be placed within the context of only one paradigm. The analogy is that there is no unique recipe for being successful. And strategy is only the tool of putting these different success recipes into practice. Therefore, strategy development has been inevitably identified as a multi-paradigmatic discipline, requiring varied theoretical perspectives and methodologies (Hoskisson et al., 1999). Mintzberg et al. (1998) also state that organizations having multiple approaches to strategy development process have higher performance to those having unidimensional or more limited approaches to strategy development process.

Table 1: Overview of the Schools of Thought

(Jelenc and Raguz, 2010:218-219)

Author	Year	Criteria	Classification	Comment
Mintzberg	1973	Distinct groupings or "modes" of strategy making	Entrepreneurial Planning Adaptive	An organization will find some combination of the three that reflects its own needs (to fit the situation) mixing them in different stages of development, function or parent/subunit
Miles, Snow	1978	Different strategies arise from the way firms decide to address three fundamental problems (entrepreneurial, engineering, and administrative).	Prospectors Analysers Defenders Reactors	No single strategic orientation is the best, there should be simply establishing and maintaining a systematic strategy that takes into account a company's environment, technology, and structure.
Bourgeois, Brodwin	1984	Approaches that CEO can employ when dealing with the company, the classification is sorted by the increasing level of engaging employees in the process of strategic management.	Commander Change Collaborative Cultural Crescive	None of these approaches is correct for all firms. It depends on the; degree of diversification, rate of growth, change and existing culture.
Grandori	1984	Various properties of decisions models depending on two factors; uncertainty and conflict of interest, comparing different organizational decision strategies	Optimizing Satisfying Incremental Cybernetic Random	The methodology proposed here is prescriptive by nature. It represents the grading of a decision under the different levels of uncertainty and conflict.
Mintzberg, Waters	1985	Exploring the relationship between the leadership plans and intentions and what the organizations actually did.	Entrepreneurial Planned Ideological Umbrella Process Consensus Unconnected Imposed	More elaborated types of strategy between the deliberate- emergent strategies along the continuum.
Chaffee	1985	Depending on the way actions have been taken, the content of strategy and the process by which actions are decided and implemented	Linear Adaptive Interpretative	Primary focus on the three distinguishable mental models and each organization should start at the lower level (linear) and progress (adaptive) toward the complexity level (interpretative) of dealing with the strategy implementation.
Mintzberg	1987	When the strategy is decided and the way it is decided upon	Plan Position Ploy Perspective Pattern	Five definitions of strategy which actually represent the five ways of approaching process of strategic management. They mutually compete and complement.

Author	Year	Criteria	Classification	Comment
Ansoff	1987	Problem dimension, process dimension, rationality dimensions	Systematic Ad hoc Reactive Organic	Strategic behaviour is based on validity of the several domains; scientific-optic, decision process, power, culture, and environmental pressure.
Hart	1992	Varying roles of top managers and organizational members playing in the strategy-making process	Command Rational Symbolic Transactive Generative	Strategy making is an organization wide phenomenon.
Idenburg	1993	Goal orientation (what) and process orientation (how)	Rational planning, Logical incrementalism, Guided learning, Emergent	All four views of the strategy development process should be taught and developed in the firms on the equal level.
Whittington	1993	Generic approaches; the outcomes of strategy and the processes by which is it made.	Classical, Evolutionary, Processual, Systemic	Different views about the human capacity to think rationally and act effectively.
McKiernan	1996	Distinctive and clear way of identifying strategy past and future.	Planning and Practice school, Learning, Positioning, Resource-based	Modern contributions in strategy, not excluded but interwoven.
Henry Mintzberg; Henry Mintzberg, Bruce Ahlstrand, Joseph Lampel	1990 1998	First three prescriptive in nature (should be), next six describing how (actually do), the last is combination of all others	Design, Planning, Positioning, Entrepreneurial, Cognitive, Learning, Power, Cultural, Environmental, Configuration	Schools of strategy formation in publications and in practice, the review of the evolution as well as the current state of the field.
Haberberg, Rieple	2001	General overview on the process of strategic management including option of organizational anarchy	Planning, Process, Decision preference, Organizational anarchy, Ecological, Political, Visionary	The views are only perspectives that could be combined together to form a more realistic approach of top manager toward the process of strategic management. Authors include organizational anarchy which other authors do not take into account.
Jelenc	2004	Active or passive role of top manager and historical or future trends	Classical, Environmental, Competitive, Contemporary	Tested only among the large companies in the Republic of Croatia.

3. DATA AND METHODOLOGY

3.1. Research Instrument - the survey questionnaire

The questionnaire used for the collection of data titled "Strategy Perception Questionnaire" aimed to reveal and categorize the managerial perceptions on strategy development process. The 34 items of the scale were constructed from the premises of Mintzberg et al. (1998)'s Ten Schools of Thought in strategic management. We decided to use Mintzberg's ten schools of thought as an item pool for the questionnaire development, since it covers almost all developments in strategic management (Tsoukas and Knudsen, 2002), coalesces strategic thinking from 1960s into 10 broad schools of thought (Shekhar, 2009), and also clarifies on the most detailed level each school's specific contribution to the strategy field (Volberda and Elfring, 2001). The header question in this scale was framed as follows: 'Consider the below aspects of strategy in your mind and select the one choice in each line, which you feel best indicates your opinion to the relevant statement.' Below this header question were presented the items as statements. The 7 point Likert-type scale was used so that a respondent could choose one of the seven points for each item. For each statement, respondents had to point out the degree to which they agree or disagree with its content on a seven-point scale The scale points were anchored as 1-Strongly disagree and 7- Strongly agree in order to assist a respondent to perceive to what extent each of the items did form in his/her mind. Section D consisting of questions related to the selected situational characteristics of the respondents.

3.2. Sample

A purposive sampling was utilized to define the sample, which means that the sample was "deliberately selected to sample a specific group with a specific purpose in mind" (Burns and Burns 2008, p.206). The decision to use purposive sampling was driven by the fact that no single list was available in which all the managers with adequate strategy knowledge/background are listed. This method enabled us to use our judgement to select cases that will best enable us to answer the research questions and to meet our research objectives.

The sampling frame for business managers was made up of the Top 500 Industrial Enterprises in Turkey specified by the Istanbul Chamber of Industry (ICI) for the year 2013. It provides sufficient information about a business such as its name, address, telephone number, fax number, email address (not in all cases), web site address (not in all cases), products and services, names of executives, annual sales, number of employees, export destinations and so on. We focused on that Top 500 Industrial Enterprises for the reason that we believe this approach was the most adequate for the purposes of this research because, generally, it is the largest companies that invest more resources (time, money, and intellectual capital) in acquiring, implementing, and using strategy and strategic management.

The key informant approach has been employed for respondent selection. This approach is very common in strategic management research in order to obtain quantitative data (Huber and Power, 1985). Phillips and Bagozzi (1986, p.313) describe the method as "a technique of collecting information within a selected number of participants. The

informants are chosen not on a random basis but because they possess special qualifications such as particular status, specialized knowledge, or accessibility to the researcher". However, Huber and Power (1985) advise that its usage needs careful consideration of certain concerns to decrease potential measurement error. Therefore we followed the guidelines provided by Huber and Power (1985) in the research to demonstrate that as far as possible the data was free from informant-specific measurement error. Additionally, if only one informant per organisation is to be questioned, and then the researcher should try to find the most knowledgeable person on the research topic (Huber and Power, 1985; Phillips and Bagozzi, 1986). To ensure managers were sampled who had adequate knowledge on strategy and strategy development process, each organisation was requested to determine the respondent among the managers who had a good awareness and knowledge on strategy as well as strategy development process.

3.3. Data Collection

In this research, the data collection techniques were the web-based online method and the telephone questionnaire method depending on the particular circumstances of the participants and the participating organisations.

The questionnaire link was addressed to either the chief executive officer or the managing director of the 500 firms identified from the Top 500 Industrial Enterprises. The chief executive officer or the managing director was requested to respond the questionnaire and also address it a 'key respondent', who has wide-range knowledge on strategy and strategy development process. At the end of the process, we reached 184 returned questionnaires. 8 questionnaires were assessed as undeliverable. Thus, the data collection process resulted in 176 usable responses in total with a 35.2 % response rate. Hart (1987) states that the response rates in business surveys vary from 17 % to 60 % with an average of 36 %, and Nulty (2008) reports that the overall response rate for online surveys diverge from 20 % to 47 % with an average of 33 %. Therefore, the response rate of 35.2 % was found to be quite a high response rate above the average in terms of both business and online survey perspective and also assessed very acceptable for the research.

As far as the sample size is concerned, it was limited by the research time duration even though the authors recognizes that more responds would be better. As suggested by Saunders et al. (2003), the size of the sample must be large enough to satisfy the needs of the investigation being undertaken. The decision of the adequate sample size is dependent on several factors, such as the purpose of the study, the population size, the types of statistical analysis to be undertaken, and the risk the researcher is willing to accept (Saunders et al., 2003). Since we aim to employ factor analysis in order to reveal mode of strategy among business and military managers, we think that assessing the sample size needs for conducting a factor analysis would be a good criteria to decide the adequate sample size. Among several rules of thumb regarding adequate sample size for a factor analysis Cliff (1987) recommends a sample size of 150 cases when there are 40 variables, whereas Hair et al. (2006) argue that sample size should be 100 or greater. Since, "Approach to Strategy" scale of the research questionnaire has 34 item statements a sample size around 150-200 for both samples was decided as minimum required sample

size. As a result, we believe that the number of collected questionnaire is appropriate to achieve the objectives of this research.

4. EMPIRICAL FINDINGS

In this section, the procedure for factor analysis followed in this study as well as the factor analysis results of Section C (Approach to Strategy) of the questionnaire are discussed, respectively.

An exploratory factor analysis (Principal Component Analysis with Direct Oblimin rotation) was conducted on the data collected from the 34-item "Approach to Strategy" scale to reveail the strategy modes among sample. Principal Component Analysis (PCA) and Principal Axis Factoring (PAF) have been used most commonly in the published literature (Williams et al., 2010). The decision whether to use PCA and PAF is fiercely debated among researchers. However, Gorsuch (1983) recommends utilizing PCA when no priori theory or model exists; Pett et al. (2003) suggest using PCA in establishing preliminary solutions in Exploratory Factor Analysis; furthermore Tabachnick and Fidell (2007) propose that if a researcher is interested in an empirical summary rather than a theoretical solution PCA is a better choice. Since these three recommendations being the case in this study, PCA method was used for factor extraction.

As far as the rotation method is concerned, we employed oblique factor rotation with direct oblimin method. The statistical software SPSS for Windows provides the following orthogonal factor rotation methods: (1) Varimax, (2) Quartimax, and (3) Equamax, and the following oblique factor rotation methods: (1) Direct Oblimin, and (2) Promax. The SPSS default is set to Varimax rotation method, which classifies items into components in such a way that the resultant components are orthogonal to each other (i.e., no correlations among components). According to Laher (2010) this option has at least three problems: (1) in almost all fields of social science, any factor/construct is to some extent related to other factors, and thus, arbitrarily forcing the components to be orthogonal may distort the findings; (2) even if the dimensions or sub-factors of the construct under study are indeed uncorrelated, such patterns should emerge naturally (not as an artefact of the researcher's choice) out of the promax rotation anyhow; and (3) although orthogonally rotated solutions are considered less susceptible to sampling error and hence more replicable, utilizing a large sample should address the concern of replicability. Moreover, Beavers et al. (2013) argues that oblique rotation often is more appropriate within social science research. Therefore, we decided to employ Direct Oblimin method.

Other than above mentioned justification, in order to come with the most suitable rotation method we also took into consideration the recommendation provided by Williams et al. (2010:9): "Regardless of which rotation method is used, the main objectives are to provide easier interpretation of results, and produce a solution that is more parsimonious".

In order to run a principal components analysis, multiple variables in continuous (interval) scale are required (Field, 2000; Burns and Burns, 2008). However, the existing literature

also provides quite a few studies, in which principal component analysis was employed with ordinal data based on a Likert type scale questionnaire (e.g. Ginter and Rucks, 1985; Kotha et al., 1995; Bailey et al., 2000; Parnell, 2003; Parnell and Lester, 2003; Collier et al., 2004). Therefore, we also decided to employ a principal component analysis based on the 7 point Likert type ordinal scale.

4.1. Revealing the Strategy Modes – Factor Analysis

In the first round of exploratory factor analysis, the 34 items on Approach to Strategy scale were intercorrelated and rotated to form a simple structure by means of the oblimin rotation. To determine which variables to keep; strength of relationships between variables, the factor loadings, the cross-loading of items on more than one factor, and the reliability and importance of a variable were taken into consideration before deleting certain items. In the analysis, lowest factor loading to be considered significant is ±0.40. For the purposes of the factor analysis items did not have a Cronbach's Alpha coefficient of at least ±0.40 were excluded.

Once the weak items have been removed, the data should be factored again without the presence of that item for a more refined solution (Field, 2000; Williams et al., 2010; Beavers et al., 2013). After excluding 13 items according to abovementioned criteria, another factor analysis was performed. All the values in the correlation matrix had at least one correlation with another variable greater than the 0.3 ($r > 0.3$) and there is no correlation between any variables greater than the 0.8 ($r < 0.8$). The Kaiser- Meyer-Olkin (KMO) measure of sampling adequacy was 0.842. Since this value was more than the recommended minimum of 0.5, it was indicating that the data was factorable in "metorius" level (Kaiser, 1974). Bartlett's test of sphericity (Bartlett, 1950) gave the value of approximate $\chi 2$ (Chi-square) as 1333,337, with 210 degrees of freedom. Bartlett's test rejected the hypothesis (at $p<0.05$) that the correlation matrix is an identity matrix, without significant correlations between variables. Since the p-value was less than 0.05, the approximate $\chi 2$ was considered as significant. This result also indicated that the data was suitable for factor extraction (Table 2).

Table 2: KMO Measure and Bartlett's Test Results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,842
Bartlett's Test of Sphericity	Approx. Chi-Square	1333,337
	df	210
	Sig.	,000

Therefore, both diagnostic tests confirmed that the data are suitable for factor analysis.

According to the eigenvalues in Table 3, six factors had eigenvalues greater than 1.0, which is a common criterion for a factor to be useful. These six factors explain 64.648 % of the total variance, which is greater than the acceptable level of 50% (Field, 2000; Beavers et al., 2013).

Visual examination of the scree plot (Figure 1) obtained in the Cattell's Scree test also revealed that six factors are located above the elbow of the curve and supported a six factor solution. Therefore, six factors were extracted.

Table 3: Eigenvalues and Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6,072	28,916	28,916	6,072	28,916	28,916	5,081
2	2,297	10,937	39,853	2,297	10,937	39,853	1,749
3	1,556	7,409	47,262	1,556	7,409	47,262	3,433
4	1,373	6,536	53,798	1,373	6,536	53,798	2,826
5	1,216	5,791	59,589	1,216	5,791	59,589	2,044
6	1,062	5,059	64,648	1,062	5,059	64,648	1,626
7	,806	3,837	68,485				
8	,782	3,722	72,207				
9	,712	3,390	75,597				
10	,671	3,197	78,794				
11	,571	2,720	81,513				
12	,538	2,560	84,074				
13	,529	2,521	86,595				
14	,486	2,316	88,911				
15	,434	2,067	90,978				
16	,411	1,959	92,936				
17	,353	1,681	94,617				
18	,349	1,663	96,280				
19	,310	1,474	97,754				
20	,259	1,232	98,987				
21	,213	1,013	100,000				

Extraction Method: Principal Component Analysis.

Fig. 1: Scree Plot
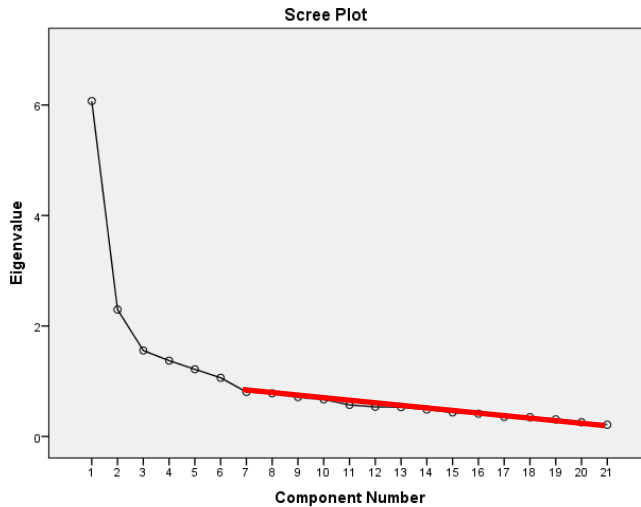
As is typically the case with a factor analysis, the individual items (approach to strategy items) loaded with differing strengths onto several factors. The factor loadings were examined and interpreted using the criteria and recommendations outlined earlier in order to obtain a simple structure of factors. The factor analysis finally resulted in the identification of six meaningful factors based on the Cronbach alpha coefficient scores. The variables (item statements) that clustered under each of the six factors are shown below pattern matrix. The six factors were named tentatively as Factor 1-6.

Factor 1 has eight variables, Factor 2 has two variables, Factor 3 has four variables, Factor 4 has three variables, Factor 5 has two variables, and finally Factor 6 has two variables with significant loadings. Negative loadings on the Factor 5 and Factor 6 are an artefact of using an oblique rotation. Note that all loadings are in the same direction.

The Cronbach's alpha values for the factors are 0.872, 0.551, 0.759, 0.656, 0.684, and 0.597 respectively. Frequently used rules of thumb for acceptable alpha range from 0.50 (Kaiser, 1974; Caplan et al., 1984) to 0.60 (Robinson et al., 1991) and to 0.70 (Nunnally, 1979). Taking into consideration abovementioned rules of thumb, we decided to retain the Factor2 and 6, whose Cronbach alpha values 0.551 and 0.597 respectively, since the alpha values are still above 0.50 and very close to 0.70 thresholds. However, we defined them as "factors with marginal internal reliability" (Bailey et al., 2000; Collier et al., 2004). Moreover, since this is an exploratory study in nature, Cronbach alpha needs only to be greater than 0.50 (Nunnally, 1979), thus, these two factors still have a significant implication for future research in this area. Therefore, the overall Cronbach alpha coefficients indicated that the factors were reliable in relation to internal consistency, which means that the variables in a factor would measure the same concept.

4.2. Naming the Factors

This subsection discusses the names given to the above factors and the explanations for why they were named as such. The characteristics of these six factors and cited studies examining each of the factors will be explained in the upcoming sub section of the study.

The final factors and related items based on the factor analyses results are presented in Table 4.

Table 4: Factors and Related Items

Experience Based Leadership (28.9 %)	• Personalized leadership based on strategic vision is the key to successful strategies. • The vision of the leader has the main effect to strategy. • The role played by managerial values is the most important in the process of strategy making. • The pattern in past decisions has the main role in strategy. • Strategies are generic, specifically common, identifiable positions in the competitive environment. • Strategy exists in the mind of the leader as perspective. • Strategy is not a formulation, instead it emerges out over a period of time as a pattern based on trial and error. • Strategy is a compromise, which accommodates the conflicting interests of powerful groups and individuals.
Planning (10.9 %)	• Strategy should result from a controlled, conscious process of formal planning. • Strategies should be developed after careful deliberation.
Participation (5.8%)	• Strategy is based on negotiation process among all the key players. • Strategy formation is a product of not a single architect but of a homogenous strategy team.
External Environment (5%)	• Structure of the competitive environment derives strategies. • The environment as a set of external forces is the central actor for strategy.
Learning (6.5%)	• Strategies should tend to emerge as the organization learns from its experiences. • Strategy emerges of actions from the pattern in past decisions. • There must be only one strategist, and that must the manager who sits at the apex of the organizational pyramid (rather than consulting the top management team).
Top Management Oriented (7.4%)	• The top management should determine the strategy. • The top-management holds the responsibility for the formulation of the overall process, only the execution rests with the staff planners. • Strategy has a close association with leadership so that setting strategy is responsibility of leaders. • Primarily autonomous or individual behaviour should be preferred in strategy development.

Factor 1 includes items stressing the importance of leadership and learning from the past decisions in strategy development process. Therefore, "Experience Based Leadership" seems an appropriate title, which denotes the perceptions of respondents tested with the related items. Factor 2 reasonably appears including items related to deliberate, formal

and conscious nature of strategy development process. Since the underlying concept in these variables was recognised as planning related, these two factors were named as "Planning". The variables clustering under Factor 3 were recognised to stress the dominant role of top management level in strategy development. Accordingly, the factor was assigned the name of "Top Management Oriented". The item statements or variables grouped under Factor 4 were found to relate to learning from past decisions and experiences, therefore, the factors were given the name of the underlying concept, which is the "Learning". The variables in Factor 5 were found to refer to importance of the participation in strategy development process, and it was decided to name the factors as "Participation". The clustering of variables under Factor 6 suggested a general emphasis on competitive environment and external forces, therefore underlying theme and the name seemed to be "External Environment".

4.3. Interpretation

Factor analysis suggested a six-factor solution was appropriate for the sample (i.e., eigenvalues > 1). A number of conclusions can be drawn from the results of the empirical study relating to the mode of strategy among managers.

The factor analysis not only proved the construct validity and the reliability of the survey instrument, but also specified the critical constructs or themes arising from the questionnaire based on the responses. Each factor describes a distinct theme within the construct of mode. Factors also proved to have satisfactory Cronbach's Alpha coefficients which prove reliability. Together the six factors explain the construct of strategy modes among managers. To help interpret the factors obtained from the sample, we sought help from the works of some leading scholars explaining different modes of strategy development and implementation. Therefore the characteristics of these six modes, and cited studies examining each of the modes are summarized below.

Mode 1: Experience Based Leadership. This mode, mainly based on the premises of the Entrepreneurial School and the Learning School of Mintzberg et al. (1998) stresses both the importance of leadership and learning from the experiences in strategy development process. The leadership dimension of that mode emphasizes the importance of a clear vision of the future, probably promoted by a single-minded or even obsessional leader. The process of strategy development is semi-conscious at best and that strategy exists in the mind of the leader, but with the effect of the past decisions and experiences, which forms the learning dimension of this mode (Mintzberg et al. 1998). In a nutshell, this strategy mode suggests a management or leadership approach with willingness to learn from feedback and maybe criticisms.

Mode 2: Planning. Having analysed the items clustered in the Planning factor, it was realized that the factor is basically composed of a mixture of premises of the Design School and the Planning School of Mintzberg et al. (1998). In general, the Planning mode suggests that the strategy mode is an intentional process involving a logical, sequential, analytic, and deliberate set of procedures. The organization and its environment are systematically analysed (e.g. SWOT model). Strategic options are generated and systematically evaluated. Based on this assessment, the option is chosen that is judged to

maximize the value of outcomes in relation to organizational goals. The selected option is subsequently detailed in the form of precise implementation plans, and systems for monitoring and controlling the strategy are determined (Mintzberg et al., 1998; Bailey et al., 2000). In a nutshell, in this mode strategy driven by formal structure and planning systems. Usually, this process is institutionalized through a formal strategic planning; involving written strategic and operating plans based on a systematic process (Hart, 1992). This strategy mode has been conceptualized by the models of leading scholars, such as Linear Strategy (Chaffe, 1985), Systematic (Ansoff, 1987), Rational (Hart, 1992), Classical (Whittington, 1993), Rational Planning (Idenburg, 1993), Planning and Practice (McKiernan, 1996), Design and Planning (Mintzberg et al., 1998), Planning (Bailey et al., 2000; Haberberg and Rieple, 2001), and Planners (Parnell and Lester, 2003).

Mode 3: Participation. The Participation mode is associated with both the Power School and the Cultural School of Mintzberg et al. (1998), even a combination of those schools. The essence of the Participation mode is strategy making based on interaction and collaboration rather than the execution of a predetermined plan. In that mode, strategy is perceived as a group dynamic and accordingly driven by internal process and mutual adjustment, and developed based upon an ongoing dialogue with key stake holders such as employees, suppliers, customers, governments, and regulators. Cross-functional communication among organisational members is central to this mode (Hart, 1992). The Participation mode has been theorised by different scholars as Collaborative (Bourgeois and Brodwin, 1984), Interpretive (Chaffe, 1985), Transactive (Hart, 1992), Power and Cultural (Mintzberg et al., 1998), Participants (Parnell and Lester, 2003), Internal Politics (Collier et al., 2004) forms of strategy development in the extant literature.

Mode 4: Learning. The items gathered in this mode of strategy, obviously are the premises of the Learning School of Mintzberg et al. (1998). The Learning mode takes the view that the complex and unpredictable nature of the environment prevents deliberate control so that strategy must take the form of learning, which only occurs as a result of action. The learning mode thus recognizes the importance of emerging as opposed to deliberate strategy. Strategy formation cannot therefore be neatly separated from strategy implementation. The results of an effective strategy may be an adaptive organization as much as it is a plan of action (Mintzberg et al., 1998; Macmillan and Tampoe, 2000). In that mode, an iterative approach based on feedback and learning is at in the centre of strategy development. Pattern (Mintzberg, 1987), Transactive (Hart, 1992), Guided Learning (Idenburg, 1993), Learning (McKiernan, 1996; Mintzberg et al., 1998) are some principal strategy making forms defined by leading scholars in the extant literature.

Mode 5: External Environment. The External Environment mode was found to be composed of the main premises of both the Positioning and the Environmental Schools of Mintzberg et al. (1998). Factors in the external environment encourage the adoption of organizational choice structures and activities which best fit that environment. These external constraints may take the form of regulative coercion, competitive or economic pressures or normative pressures as to what constitutes legitimate organizational action. These pressures limit the role of organizational members playing in the choice of strategy.

So the strategies an organization can follow tend to be common to organizations within their industrial sector or organizational field; with changes coming about through variations in organizations' processes and systems which may occur unintentionally or through imperfect imitation of successful structures, systems or processes (Bailey et al., 2000). This mode was also identified by other important studies in the existing literature as Interpretive (Chaffe, 1985), Systemic (Whittington, 1993), Positioning (McKiernan, 1996; Mintzberg et al., 1998), Ecological (Haberberg and Rieple, 2001).

Mode 6: Top Management Oriented. This mode having premises from the Entrepreneurial School of Mintzberg et al. (1998) contains items emphasising the autonomous/individual behaviour and the role of leader as well as top management in the strategy development process. This mode basically stresses the dominant role of top management and/or the leader and the need for strong top management control in strategy development process. In that mode, a particular individual is seen to have a high degree of control over the strategy followed; for example the chief executive or a similar figure with institutionalized authority. Less commonly, such influence may relate to the power of a small group of individuals at the top of the organization. Control and influence may be exercised in different ways, for example through personality, the rigid enactment of rules or through expertise. Alternatively, strategic aspirations and strategy may emerge from a vision associated with the powerful individual(s), which represents the desired future state of the organization (Bailey et al., 2000). Briefly, a strong individual leader or a few top managers exercise total control over the strategy making process, which is a conscious, controlled process that is centralized at the very top of the organization (Hart, 1992). Commander (Bourgeois and Brodwin, 1984), Managerial Autocracy (Shrivastava and Grant, 1985), Command (Hart, 1992; Bailey et al., 2000), Entrepreneurial School (Mintzberg et al., 1998), Controllers (Parnell and Lester, 2003) forms are some of the principal forms in the extant literature stressing the dominant role of the top management in the strategy development process.

5. CONCLUSION, LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The purpose of the paper was to seek to understand and provide another explanation of strategy development process from a different context. Pettigrew (1987) has emphasized the importance of seeking to understand strategy development processes within context because context will influence the way in which strategies develop. The empirical methodology employed within the research has provided the opportunity for a comparative work across different models within a different context. More specifically, the results have revealed six different aspects relating to Turkish understanding of strategy development process. The findings also suggest that the approach on the nature of strategy development process within Turkish context (as compared to the literature) is not entirely different than the other conventional ones.

Other than abovementioned contribution to the existing literature from a different context, taking all findings into account we consider the paper has proved that the use of such kind of research can be used as a tool to investigate the strategy modes of organisations as well. As suggested by Keeton and Mengistu (1992) organizations need to analyse their subcultures and varying perceptions. Through this we believe that it is

important to discover the strategy mode within organisations at the very beginning of strategy development process. We would therefore like to suggest that organisations themselves can employ this or a similar methodology to develop an understanding of their own strategy and modes, and act accordingly.

As with all the research studies, this study also has its limitations. Despite the fact that the research was conducted in the best manner possible, with due consideration to the ideal research design and methodology to address the appropriate research objectives, certain limitations must be noted. The first limitation is generalizability of the research findings. The sample of business organisations is obtained from a sample frame, namely the Top 500 Industrial Enterprises list provided by the Istanbul Chamber of Industry (ICI) for the year 2011. This database cannot be considered as containing the exhaustive list of businesses of all the sizes and from different sectors. Therefore, any generalisations with regard to Turkish firms that are made in the study are limited to the population of businesses provided in the electronic database. Secondly, although we reflected the advices of Huber and Power (1985) to the research in order to mitigate single respondent bias, further research might consider the use of multiple respondents located in different positions in the organisation.

We also would like to raise some suggestions that we believe appropriate to advance the topic further. To begin with, similar studies can be conducted in other countries to further confirm the research findings. More studies are required to reveal and highlight the different approaches that managers of different countries use to both rationalise and guide their organisations' strategy development process. Secondly, a more geographically diverse sample of individuals and organizations should be included in following studies. The use of a non-probability purposive sample helped initial theory-building purposes, on the other hand a broader geographic range of organizations and respondents would be preferred. Thirdly, the scale used in the survey questionnaire can be improved by adding some other premises or aspects from other leading scholars' models for strategy and strategy development process.

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Appendix 1: Rotated Factor Loadings / Pattern Matrix[a]

	Component					
	1	2	3	4	5	6
Personalized leadership based on strategic vision is the key to successful strategies.	**,803**	-,008	,080	-,045	-,119	-,088
The vision of the leader has the main effect to strategy.	**,764**	,123	,236	-,091	,032	,024
The role played by managerial values is the most important in the process of strategy making.	**,703**	-,081	,225	-,098	,006	,070
The pattern in past decisions has the main role in strategy.	**,668**	-,119	,050	,147	-,103	-,264
Strategies are generic, specifically common, identifiable positions in the competitive environment.	**,643**	,037	-,102	,217	,023	-,066
Strategy exists in the mind of the leader as perspective.	**,588**	,308	,064	,272	,189	,140
Strategy is not a formulation, instead it emerges out over a period of time as a pattern based on trial and error.	**,575**	-,216	,115	,161	,098	-,050
Strategy is a compromise, which accommodates the conflicting interests of powerful groups and individuals.	**,477**	,192	,073	,006	-,347	,272
Strategy should result from a controlled, conscious process of formal planning.	,039	**,794**	,035	-,137	,018	-,014
Strategies should be developed after careful deliberation.	-,071	**,768**	-,105	,099	-,115	-,111
The top management should determine the strategy.	,014	-,052	**,850**	-,071	-,097	-,015
The top-management holds the responsibility for the formulation of the overall process, only the execution rests with the staff planners.	,057	-,006	**,696**	,041	-,090	-,011
Strategy has a close association with leadership so that setting strategy is responsibility of leaders.	,244	,089	**,653**	,018	,010	-,063
Primarily autonomous or individual behavior should be preferred in strategy development.	,071	-,051	**,574**	,170	,057	,058
Strategies should tend to emerge as the organization learns from its experiences.	,133	,030	-,033	**,768**	-,016	-,037
Strategy emerges of actions from the pattern in past decisions.	,186	-,049	-,097	**,702**	-,209	,091
There must be only one strategist, and that must the manager who sits at the apex of the organizational pyramid (rather than consulting the top management team).	-,195	-,054	,281	**,684**	,053	-,028
Strategy is based on negotiation process among all the key players.	,039	-,022	,027	,102	**-,870**	,092
Strategy formation is a product of not a single architect but of a homogenous strategy team.	-,162	,114	,122	-,010	**-,786**	-,222
Structure of the competitive environment derives strategies.	,300	-,021	-,168	-,048	-,185	**-,803**
The environment as a set of external forces is the central actor for strategy.	-,137	,269	,243	,038	,109	**-,745**
Cronbach α	.872	.551	.759	.656	.684	.597
Eigenvalue	6.07	2.29	1.55	1.37	1.21	1.06
% of variance	28.9	10.9	7.4	6.5	5.8	5

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 12 iterations.

ESTIMATING AVERAGE LIFESPAN AND EXPECTED COSTS FOR CHRONIC KIDNEY FAILURE (CKF) IN TURKEY

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Keywords

Chronic Kidney Function, peritoneal dialysis, haemodialysis.

JEL Classification
C1, I1, H0

ABSTRACT

The numbers of Chronic Kidney Failure (CKF) cases have increased dramatically in last years in Turkey. For that reason, the causes of CKFs and costs related to treatment of CKF are being assessed to compare the types of treatments and to plan the necessary budget. Through this study, the aim is to view the success factors of CKF treatment and quantify the results by Decision Tools. Hypertension and Diabetics are main causes of CKF. In a past study carried out by (Aslan&Ozen, 2013) in Turkey, it was found that first three stages of CKF are generally ignored and attention is given to the last two stages of CKF kidneys not being able to perform their functions. In the first case study, the average cost for treatment for each patient and probabilities are drawn to estimate future costs. In the second case study, average lifespan, average parameters of important body signs and cost estimations under different conditions were presented based on the data of Turkish Society Nephrology (TNS). The most beneficial treatment method is Transplantation (TX), but it is not possible to find a donor for each patient. The expected lifespan is higher for Haemodialysis (HD) patients but, Dialysis(PD) provides more flexibility than HD. The expected cost of a patient for his/her living years with HD is 160,933.04 TL/Life and the expected cost of a PD patient during the life span is 142, 730.67 TL/life.

1. INTRODUCTION

The increased numbers of CKFs add high costs in the budget of Health Ministry in Turkey. These costs can be decreased by managing the types of treatments and providing more transplantation(TX). There are five stages of kidney failure and each stage has different severity. First three stages are not so severe and people can live a normal life. But, last two stages are serious and needed to be treated regularly to make the blood clean from urine. The progression of Chronic Kidney Failure (CKF) can be slowed down and further stages can be prevented. Patients who are in stage 1-3 of CKF can be treated by taking suitable precautions aganist End Stage Renal Disease(ESRD). For that purpose, costs related to each treatment type and causes are estimated by using past data to draw probabilities. To estimate costs and probabilities, Decision Analysis tools like Genie Software are used. The most common causes of CKF are analyzed in the models to bring attention to the importance of screening and the detection of causes to prevent progress of CKF. From observation and interviews with patients, it was understood that patients head to hospital when they are stage 4-5 of CKD.

Reduced kidney function can cause collection of waste in body and wastes have to be removed from body by dialysis. Each patient needs to visit hospital two-three times of four

hours period each week to filter the blood. In many countries, these kinds of patients lead to high cost.

Thus, these costs can be decreased and the expected quality of life of patients can be increased by some methods and researches. Kidney transplantation is the best way to overcome that situation but it is not possible to find a suitable transplant all time and it requires high costs. Some patients need to wait more than five years in some countries for transplants. Late treatments and not visiting hospital properly lead to collection of uraemia in body resulting in death. Efficiency to treat patients better and equity to allocate resources are main criteria in dialysis treatment in order to manage optimal dialysis strategies and to estimate results. Customization to patient-specific conditions is the main strategy of treatment since standard treatment procedures may not be beneficial for all patients. Transplantation, progression of disease, and death with some probability rates are events that can occur from one stage to another stage and used for modelling by Markov chains. QALY method is a suitable measurement tool to make the model named as the Stochastic Shortest-Path Problem based on reward matrix. Schematic model of simulation shown in Figure 1 can be used for numerical purposes. The model decreases risk of death at the early stage of dialysis and different doses can save some costs. (Lee et. al., 2008)

Figure 1: A schematic representation of the simulation model. (Lee et. al., 2008)
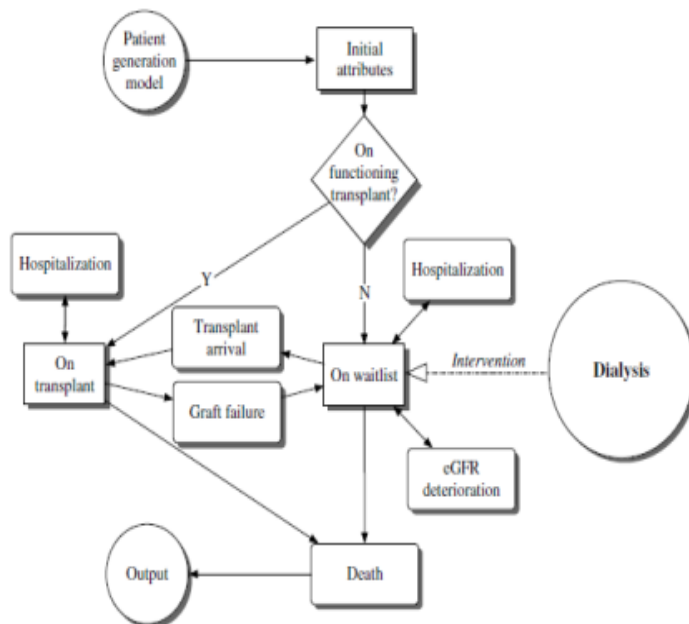
Preventing disease progression, improving patient outcomes, and reducing costs are the main aims of screening CKD. Populations prone to CKD, like those having diabetes,

hypertension, and others with a history of medical illness related to weight, height, and blood pressure are the main focus of screening through blood and urine tests.

Screening data and detecting individuals with undiagnosed or early stages of disease can be used for policy development. Early symptomatic stage can be detected and progression can be slowed down or prevented in CKD. By screening, public can be informed by governments to decrease the burdens. Degrees of risk-factors are expected to be determined before screening(Obrador et. all., 2011) Expected survival rate can be found for a chronic illness. For example, the spread of an illness can be modelled by using markov chains to define the risks and costs with states of having severe illness, being well, coma, or deaths.(Bruce &Peter,2002) Stochastic networks and queuing networks are used over years as cost-effective methods in healthcare decision making. Quality-Adjusted Life Year (QALYs) is named as individual outcomes or effects. (Hazen &Huang , 2011)

2.   THEORETICAL BACKGROUND

Autosomal Dominant Polycystic Kidney Disease (ADPKD) is the slow development of fluid-filled cysts in kidney by enlarging it and effect 1 in 500 and 1 in 1000 people resulting in end ESRD requiring transplant or dialysis(Takiar& Caplan, 2011). TX is mainly done from first and second type's relatives due to high matching probabilities. There are the risks of rejecting the kidney, infection, depression etc. Side effects after transplantation are other important parts of consideration (Yatkın,2007)Dialysis provides just 10% of kidney functions and transplantation can just provide 50% of it. The kidneys of 40% of patients may be rejected by patients in the first year. The lifespan for cadaveric kidney is 8 years and 11 years for living related kidneys (Stein& Wild,2002). It was found that 14% on kidney replant list have had a kidney transplantation before in the University of Pennsylvania in Philadelphia (Stam, 2010). Over years, the survival rate of deceased donor grafts increased from 40% in 1975 to %90 in 2005 for one year. Moreover, it increased from about 35% to about 40% from 1987 to 1995 for ten years. Half-lives of deceased donor transplants increased from 7.9 years in 1988 to 13.8 years in 1995(Ormandy, 2009). Each year, around 5,500 people have experience kidney failure and there are 41,000 people taking treatment. Around half of them are treated with TX, 40% of them are treated with HD and 10% of them are treated with PD in England (NHS., 2013). In UK, the mean living years of CKF is 5.1 years. The mean living years for TX, HD and PD are 10.2, 2.8 and 2.0 years respectively (Ormandy, 2009).

It is stated that there are 7,307,315 people in 1-5 stages of CKF and 2,369,059 patients are in 3-5 stages in Turkey(Süleymanlar et. all., 2011). In 2012, 2,901 kidney transplantations were carried out and 2,377 of them were done on living beings and 524 were carried out on dead bodies. 1,155 people died while waiting for a kidney transplant in that year. 31 kidneys were rejected by receiver. It has been deduced that kidney transplantation have decreased when compared with previous years (SP, 2013). The expected living years are high for first two years. The highest living years come from TX living kidneys. After 10 years, there is 72.5% chance of living with TXs from a live kidney donation. However, there is just 11.1% chance of living with dialysis(Gürkan,2013). The life quality is better for PD for first 1-2 years and there are fewer problems than HD patients having TX after PD (Seyrek, 2013). When HD and PD are compared, more bacteraemia is

seen in HD and more peritonitis is seen in PD. Moreover, higher cather infection is seen in PD and there is a higher risk of pneumonia infection for HD patients. Cellulites are close for both treatments.

With PD, there is more chance of immediate graft function whereas delayed graft function is high with HD. It was found that immediate graft function is 68.5% for PD from 92 patients and 46.5% for HD from 587 patients. Delayed graft function is 22.5% for PD and 39.5% for HD. Besides, never function is 9% for PD and 14% for HD. There is a less graft loss in PD. An integrated treatment method can be applied to patients. In 1-2 years, more PD patients can live than HD patients (Fontán et. All., 1996; Utaş, 2013). For the first year, there is 96.1% and for the third year, there is 83.2% of living chance in PD. Moreover, there is 67.6% of living five years and 33.6% of living ten years from 12 years analysis for PD. As the years increase, the chance of living decreases(Utaş, 2013). The increase of 0.5% of GFR increase the living chance by 9 % (CANUSA, 2013; Seyrek, 2013). This result can be used in Turkish hospitals as a parameter of success. A ranking based on increase of GFR can be drawn for hospitals that patients can make better decisions for their treatments.

ESRD identified and monitored timely for therapy has increased 4 times since 2000. It was found that 98.2% of people are not aware of their CKF. The costs of TX in the first year, and in second year are 23,393 $ and 10,028 $ per year in Turkey. In 2004, 830,000,000 $ was spent on CKF and it was 1,218,650,000 $ for 2006. 5% of health budget is spent on CKFs in Turkey. The cost of HD, PD and TX are 52,000 $, 45.000 $ and 18,000 $ respectively per year in USA. 28.3 billion $ was spent on CKF in USA in 2010(Süleymanlar, 2012). It was found that 25,353.99 TL (17,779 $) is paid for each PD patient per year and 33,287.29 TL (23,342 $) is paid for each HD patient per year. PD is 7,933.3 TL cheaper than PD per year in Turkey. In developed countries, 22% of patients are treated with PD and this rate is low in Turkey. It was found that if 22% patients in Turkey are treated by PD, then one more from 400 patients can be treated with the same budget. Less medication is used in PD and thus it is cheaper than HD (Utaş, 2013). When there are between 50-79 patients per centre, the cost per séance is 181.6 TL and when the number patients increase, the cost decreases (Tatar, 2012). It is found that HD session was about 169.86 TL for each time. About 2/3 haemodialysis patients have been cured in private hospitals. These costs are mainly supported by government insurance(DİADER, 2013).

3B-5 chronic kidney disease patients from 721 multidisciplinary care group and 661 non-multidisciplinary care group patients between 18-80 years from 2007 were followed in National Taiwan University Hospital. Kidney transplant, acute kidney injury, received renal replacement therapy, child pugh class B-C liver cirrhosis, and terminal malignancies were excluded in that study. In that study, all critical body signs, tests and calculating costs were been carried out regullarly. Age, sex, diabetes mellitus, cardiovascular disease, systolic blood pressure, eGFR(estimated Glomerular Filtration Rate), albumin, calcium and phosphate product, and log urine protein creatinine ratio are used to evaluate the results of program. Multidisciplinary care consisting doctors, nurses, and dietitians for patient education, diet consultation, behavior adjustment and continous monitoring system with eGFR < 45 mL/min per 1.73 m2 was found to be more benefical than nonmultidisciplinary care by decreasing the risk renal replacement therapy with 33.6%, having less chance emergent dialysis and being cost effective. With multidisciplinary care,

less ESRDs patients and deaths are seen. Multidisciplinary care group has a significantly slower annual eGFR decline rate and some favorable annual hemoglobin and urine protein-creatinine ratio. There are no differences for albumin level and blood pressures during 2.42 years control period.

Moreover, hospitalization days are shorter for multidisciplinary care group with less emergent start of dialysis and there are significantly more emergency department visits for nonmultidisciplinary care group. Also, multidisciplinary care group has significantly lower annual cost per patient year (US $2372 vs $3794, P < 0.001) due to quick progression of ESRDs for nonmultidisciplinary care group. In this study, it was found that since 2007, the numbers of ESRDs have decreased in Taiwan and the multidisciplinary care program is the most effective for stage 4 CKD patients(Chen et all., 2015).

CKD-related comorbidities such as obesity, diabetes, and hypertension cause to increase the number of CKFs in USA and Australia with 1 from 9 people. Severe CKD or dialysis group ((eGFR)< 30; n = 330), moderate CKD group (eGFR: 30–60; n = 2648) and referent CKD status group (eGFR: ≥ 60; n= 10,020) with percutaneous coronary(PCI) intervention at 12 months following PCI in patients are compared to find the burden of each group. It is found that severe CKF has significantly higher cost than reference CKD status. Mean total costs per patient are 4,442 $AUD for reference group, 4, 851 $AUD for moderate CKD and 6, 958 $AUD for severe CKD/dialysis(Thathya, 2013) Patients with CKD have more risk of having cardiovascular disease (CVD). HMG-CoA reductase inhibitors are used to avoid risk of Myocardial Infarction (MI) and stroke in patients with CVD for. CKD stages 3a (eGFR 45 to), 3b (eGFR: 30 to 44), 4 (eGFR: 15 to 29), and 5 (eGFR <15) with moderate CVD were followed for three monts to estimate the costs. Rates of muscle-related toxicity(rhabdomyolysis) from statins increased with CKF. Stains therapy increse the life expectancy by 50 days, increases total lifetime costs for all patient groups and decrease at least one MI over a lifetime (before to ESRD) from 39.8% to 34.7% For 65-year-old men, cost $18,000 per QALY for 65-year-old men and for 65-year-old women cost $33,400 per QALY are gained with statins at $4 per month. 40 mg of pravastatin with $47 per month results statin therapy cost between $51,700 and $87,700 per QALY gained for 50- 85 years old men with high or moderate hypertension by stocastic models as shown inFigure 4 in Appendix(Erickson, 2014)

25,576 members at Kaiser Permanente around the Portland, Oregon, and Atlanta-Georgia, metropolitan areas of USA were put through 2 diabetes and at least one serum creatinine measurement in 2005. In USA, both CKD and diabetes account for $18 billion treatment costs for patients above 65 years of age. From stage 0–2 to stage 3 or higher, the progression is followed for 90 days. $8206, $12,529, and $23,229 per patient per year for CKD stage 0–2, 3, and 4, respectively cost occured in 2005.   Incremental annual adjusted follow-up costs are cost of excess of baseline costs during during follow-up as shown in Figure ….Costs can be decreased by preventing progression of diabetic kidney disease. MI among patients with diabetes and CKD risk has almost two times higher risk than the risk of patients with just diabetes. Better efficent treatments and improving treatment adherence can decrease the costs as shown in Table 2 in Appendix(Vupputuri et all., 2014)

Fig. 2. Adjusted baseline medical costs and incremental, annual, adjusted medical costs during follow-up, by Baseline Stage of CKD and progression status(Vupputuri et all., 2014)
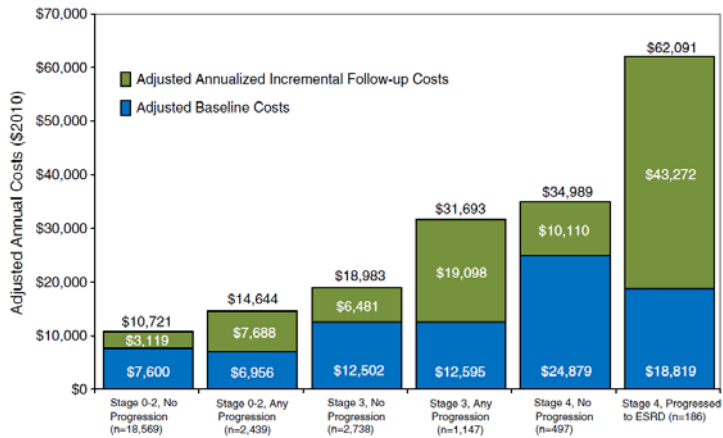
Intensive glycemic control of previously uncontrolled diabetic patients saved 0.075 QALYs for Austrialian patients. Cardiovascular events, deaths, and the need for ESRD are prevented by that control. About six patients deaths and one noncardiovascular death per 1000 patients were prevented. Moreover, less than six patients requiring ESKD were found per 1000 patients. Intensive control of previously inadequately controlled hypertension results in 0.136 QALYs with $A 352 cost. The use of an ACE inhibitor by all diabetic patients brings in a gain of 0.124 QALYs. Screening for diabetes between the ages of 50 and 69 years causes to an incremental lifetime cost of $A1345 and gain of 0.098 QALYs. Screening for hypertension plus intensive blood pressure results in 0.116 incremental QALYs as shown in Table 3. In Appendix (Kirsten et all., 2010). Hyperphosphatemia the excess of serum phosphorus between 2.7 and 4.6 mg/dl in predialysis patients and between 3.5 and 5.5 mg/dl in dialysis patients in the blood increases morbidity and mortality in CKD patients on dialysis. Lanthanum carbonate (LC) a noncalcium-based phosphate binding agent licensed for hyperphosphatemic dialysis patients and calcium-based phosphate binders . CBs(calcium-based binder) are used as a cost effective method for CKD treatment with markov chains. The total clinical benefit of second-line LC at £6900 per QALY gained in the dialysis population after first-line use of CBs was used for gaining 44.1 QALYs in the predialysis population of 1000 predialysis patient cohort with 21 dialysis-free years and cost savings of £339 per patient and 55.8 QALYs in the dialysis population. The gains were 44.1 QALYs in the predialysis population and 55.8 QALYs in the dialysis population of the 1000 incident dialysis patients cohort in United Kingdomas shown in Figure 5. In Appendix (Vegter et all., 2011). Hyperglycemia and chronic complications can develop in patients not incorporating diet modifications. 4.6 million (21%) of diabetes patients in US in 2011 did not include modified diet as a part of their therapy. Patients who did not include diet modification incurred more costs (M = $11,230) than those who included diet modifications (M = $10,638) in their total healthcare expenditure.

By initiating exenatide QW, exenatide, or LIRA with different healthcare costs from 1,610 exenatide QW, 2,690 exenatide, and 6,499 LIRA patients, exenatide has the lowest cost among these metdos via multivariable-adjusted models in USA in 2012. Uncontrolled type 2 diabetes mellitus(T2DM) patients with stage 1, 2, 3A, 3B, and 4 of CKD had total costs of 1.18, 1.17, 1.44, 1.54, and 1.80 times more costs than without CKD patients in US from 23,492 T2DM patients(Chuang et all., 2014)Average cost in the management of anemia among chronic kidney disease patients on hemodialysis per patient per 7 months was 1989.45 $ for EPO, iron and vitamin supplements from 62 patients in Indian(Mateti et all., 2014) 0.09 QALYs after two years, 0.16 after three years, 0.36 after five years and up to 0.93 incremental QALYs after the first 10 years were received in the Lazio Region –Italy with the costs of a low-protein diet(€ 1,440 per patient per year for CKD with satge 4 and 5 of annual cost of dialysis per patient approximately € 34,072(Mennini et all., 2014) Anemia educational program affecting energy, daily activities, and general well-being and clinical pharmacy education (CPE) on infection management among patients with chronic kidney disease (CKD) stages 4 and 5 in Haji Adam Malik Hospital, Indonesia was carried out. Skin, dialysis water, treatment systems, and dialyzer reuse are cause of infection which is the second leading cause of death of patients with CKD, especially those in stages 4 and 5 with inflammatory state later causing the development of atherosclerosis and increased risk of cardiovascular disease. Urinary tract infection, pneumonia, and sepsis of ESRD are three most frequent infectious complications. "too little or too much of the drug provided to the patients", "comprising drug–drug, drug–food"and "drug–laboratory interactions" can make the effects of CKF worser. Control group (n= 80) and experimental group(n=63) were compared by comparing collected data in 2010 with glomerular filtrationrate of less than 15 ml/min/1.74m2   surface area as shown in Table 4. in Appendix. Incremental cost-Effectiveness Ratios(ICERs) were used for cost effectiveness analysis. ICERs= (CostwithCPE –   cost with out CPE)/(Outcome with CPE – Out come without CPE(Nasution et all., 2013).

3.   COST AND LIVING YEARS ESTIMATION

Based on data shown above and TSN registry, two case studies are carried out. In the first case study, the average cost of each patient is estimated for two years. In second case study, the average living years, some average critical body signals, and costs are presented for each patient for his/her living years and all patients by using decision analyzing tools. Genie decision software is used in decision making in that study.

3.1 Case 1: Decision Analysis of CKF based on general data

Below, the reasons of CKF and their effects are seen. Types of treatments data are taken from Turkish Nephrology Community(TNC) and they are equally distributed to each cause.

Table 1: Probabilities of reasons for CKF

The reasons o...	DiabetesM.	Ischemiche...	Congestive...	Chroniclun...	Peripherav...	Malignancy	cerebrovas...	Chronicliver...	Others
HD	0.859	0.859	0.859	0.859	0.859	0.859	0.859	0.859	0.859
PD	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093
TX	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048

Table 2: Sensitive Analysis for HD

The reasons o...	DiabetesM...	Ischemiche...	Congestive...	Chroniclun...	Peripherav...	Malignancy	cerebrovas...	Chronicliver...	Others
HD	0.859	0.7	0.859	0.859	0.859	0.9	0.859	1	0.859
PD	0.093	0.2	0.093	0.093	0.093	0.05	0.093	0	0.093
TX	0.048	0.1	0.048	0.048	0.048	0.05	0.048	0	0.048

When, HD treatment is set and some probabilities are changed as shown above. "What if we judge them to be HD?" we will set the evidence in node Expert Forecast to HD, updating the model, and observing that the probability of Diabetes Mellitus is now 0.35542672 as shown below. To find whether there is a relationship between the roots and treatment type, then more realistic probabilities can be calculated.

Table 3: Changes in probabilities

DiabetesMellitus	0.35542672
Ischemicheartdisease	0.11985004
Congestiveheartfailure	0.10519814
Chroniclungdisease	0.078643269
Peripheravasculardis...	0.069451199
Malignancy	0.048154036
cerebrovasculardisea...	0.044939011
Chronicliverdisease	0.026157748
Others	0.15217983

It was found that the cost of haemodialysis is 22.759 $ per year for each patient.The costs of PD, TX first year, and TX second year are 22,350 $, 23,393 $ and 10,028 $ per year in Turkey(Süleymanlar, 2012).   Based on type of treatment, expected cost of a dialysis per two years can be found. Kidney transplant costs are presented for two years. Hence, the model showed below is used to estimate cost per two years for comparison. The expected cost was found to be 44.846.3 $ per two years for each patient. This result is high due to mainly preferring HD (86%) in Turkey.

Figure 3: Expected Utility of CKF
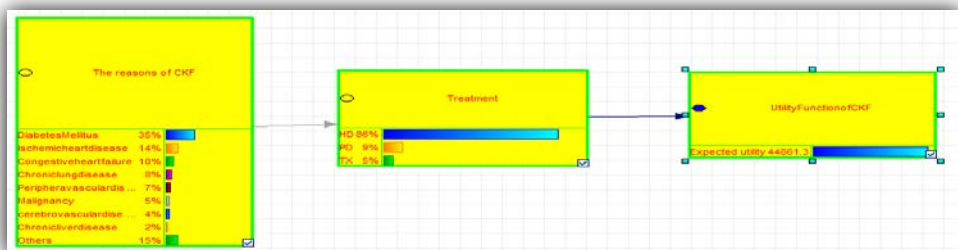
If it is known that all kidneys are at stage 2 as shown below, the probabilities of reasons are changed. The scenario analysis provides beneficial results to develop strategies and sensitivity. 33,421 $ is the expected cost of all treatments per two years for each patient in that case.

Figure 4: Staging states for HD
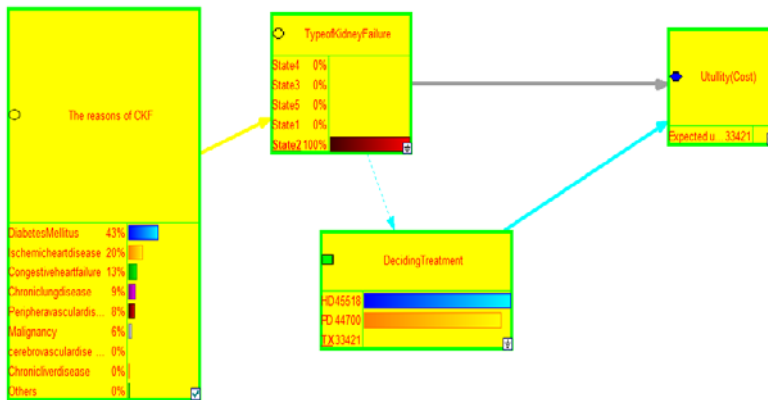
3.2. Case Study 2: 2011 Registry by Turkish Society of Nephrology

TSN has collected data for CKD about HD, PD and TX from 840 out of 1,009 units. 83.3% of units have answered the request (TSN,2012). The expected cost, expected living years and expected values of patients are tried to be drawn based on these data with some decision tools. The results of trend analysis from Aslan & Ozen(2013) are also used to calculate overall cost estimations. Furthermore, some studies results having done in that field are used in the models and estimations.

The costs of TX first year, and TX second year are 23,393 $ and 10,028 $ per year in Turkey (Aslan & Ozen, 2013). It was found that 25,353.99 TL (17,779 Dollar) is paid for each PD patient per year and 33,287.29 TL (23,342 Dollar) is paid for each HD patient per year(Utaş, 2013).

3.2.1 HD Analysis

Almost half of patients (47.1%) of HD have diabeties between 45-64 ages. This means that all diabetics could be potential CKD patients. For all patients with this illness, the CKF tests are required. 37.3% of patients have Type 1 DM and Type 2 DM. At 28.1, hypertension is the second most common disease in Turkey with 28%. 1,139 patients have not answered to that section and 12.8% of HD causes are not known. Around 13.5% patients have a kind of nephrology illness. Cardiovascular system failures are the most frequent cause of deaths for HD patients at 54.4%. It is known that HD and PD create higher blood pressure over time since fluids do not move in body in a suitable manner. Malignancy is the second biggest cause of deaths with 11% in 2011. Cerebrovascular accidents are the third largest cause of death. Cardiovascular events leading to deaths with heart failure as 40.3% and ischemic heart disease at   35.8%. Hypervolemia pulmonary oedema at 35.1 % is the greatest contributor to HD. Persistent nausea; vomiting and anorexia are the second greatest reasons behind severe HD at 18.1%. The urgent patients show different indicators as a cause of HD from regular HD patients. Hypertension is just 12.7% of urgent patients.

The average of serum creatinine is about 6.825 mg/dL by considering median values and max value as 10.0 mg/dL for HD patients. In the same manner, the average value for serum urea is 149.875 mg/dL. Moreover, haemoglobin average is 9.95 g/L. These averages can be compared with acceptable ranges to see their levels. They are mainly high due to malfunction of kidneys and other disorders. 86% patients have more than 0.65 urea reduction rate at the end of 2011. Decreasing the urea rate increases the life years of patients. Another important success factor of CKF can be the amount of urea reduction per patient in each hospital or dialysis centre by calculating the risk of death.

A normal results for serum creatinine are between 0.7 to 1.3 mg/dL for men and 0.6 to 1.1 mg/dL for women. From 7 to 20 mg/dL (2.5 to 7.1 mmol/L) are considered normal for urea(Mayo, 2013).

Table 4: Distribution of chronic HD patients according to dialysis duration, as of the end of 2011.(TSN,2012)

Years	N(Number of Patients)	%
0-5 years	21055	59
6-10 years	9640	27
11-15 years	3538	9.9
16-20 years	1121	3.1
>20 years	337	0.9
Total	35691	100.0

Expected living years is 5.691 years by considering 20 years as the highest life span of living with median values in the range. This value is very small when compared with TX living years and healthy years living average. Increasing that average can be a parameter of success for policy makers with AQLY. The minimum expected living years is 3.385 years with minimum values in the range as shown above.   The average number of HD frequency scans are 2.981 times per week from Table 2. This average can be used to calculate the amount of expenses of all patients. 109,492 scans are taken by 36,730 HD patients per week.

Table 5: Distribution of chronic HD patients according to HD frequency, as of the end of 2011(TSN,2012)

Seans	N(Number of Patients)	%
Once wekly	320	0.9
Twice weekly	2616	7.1
3 times weekly	33526	91.3
Times weekly or nocturnal HD	268	0.7
Total	35691	100.0

Central venous catheterization causes some complications. Artery function is the most common of early complication. Localized exit site infection is the latest complications. Late complications are higher than early complications. Hypertension (<140/90 mmHg) without medicine is 56.8% and Hypertension (<140/90 mmHg) with medicine is 24.7% from 34,733 patients data.

Hypertension is very dangerous for the functions of life like causing brain blooding. Blood pressure's serious complications should be checked regularly to prevent early deaths. 59.0% patients of HD use parenteral iron therapy and 40.2% of them does not use iron therapy. The cost of iron per patient per year is 186 $ for PD and 820 $ for HD. 9,393 patients representing 86.7% according to Hepatitis serology in chronic HD are HbsAg(-) and Anti-HCV(-). Hepatitis can be transmitted by other patients. It is strictly suggested that these kinds of patients are expected to be dialyzed at different rooms and they should not contact with other devices and patients. Secondary hyperparathyroidism excess production of parathyroid hormone and harmful for bone drug use is 50.7% from 34,563 patients and IV vitamin D usage is 33.1 % from that results. The rest of patients do not use any vitamin for that group.

Figure 5: HD Costing and estimating living years ranges
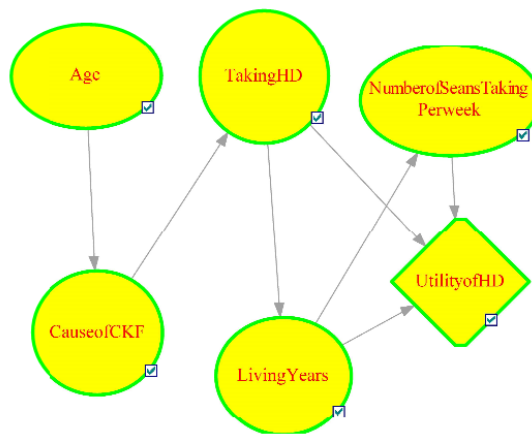
To see the load of HD on the country, a model with 163.5 TL per séance is developed. The cost based on the living years and numbers of séance is calculated from utility function as shown above. The probabilistic nature of CKFs forces to use some decisions tools and simulations for understanding the steps. Based on the model above, scenario analysis can be carried out by setting probabilities.

Table 6: Probabilities for Causes of HD patients

Age	Bir	iki	uc	dort	Bes
TypeDMbir	0.268	0.268	0.268	0.268	0.26
TypeDMiki	0.056	0.056	0.056	0.056	0.05
Heypertension	0.279	0.279	0.279	0.279	0.27
Glomerurlon...	0.07	0.07	0.07	0.07	0.0
PKD	0.048	0.048	0.048	0.048	0.04
Pyleonefrit	0.03	0.03	0.03	0.03	0.0
Amiloidoz	0.017	0.017	0.017	0.017	0.01
RVD	0.011	0.011	0.011	0.011	0.01
Other	0.071	0.071	0.071	0.071	0.07
Unknown	0.139	0.139	0.139	0.139	0.13
Missingdata	0.011	0.011	0.011	0.011	0.01

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Causes of CKF for HD are shown above. For each age group, the same probabilities are used due to not having accurate data for different age group. Diabetic and hypertension are two most serious cause of CKF as stated before. Probabilities of number of séance per week are drawn from data above. Mainly, three séance are taken per week.

Table 7: Living years for HD patients

▸	uptofive	0.6032
	fromfivetoten	0.2616
	Fromeleventofift...	0.09912
	Fromsixteentotw...	0.02728
	Morethantwenty	0.0088

Living years are very important success factor for policy makers. Most people live up to 5 years with 0.6032 probabilities as shown above. This makes HD undesirable since it cleans the blood around 5-10%. Increasing living years is expected to be the main target of Health Ministery in Turkey. Current policy focuses just on treating people instead of quality of life, screening and increasing living years. The expected cost of a patient for his/her living years with HD is 160,933.04 TL/life. If just two séance are taken per week, the cost is 123,753.54 TL/life and with three séance, it is 185,630.31 T/lifeL. Moreover, if just one séance is taken, it is just 61,876.771 TL for the whole life of a patient.

Table 8: Modelling results of cost and living years for whole life of patients at each year

Living Years	Cost Scenario(In TL) for just a patient	Cost Scenario for 2014 and afterward years(In TL)-All patients	Cost Scenario for 2022 and afterward years(In TL))-All patients
0-5	114,227.64	7,009,579,129	9,988,750,207
6-10	228,455.28	14,019,158,260	19,977,500,410
11-15	342,682.92	21,028,737,390	29,966,170,170
16-20	456,910.56	28,038,316,510	39,955,000,830
>20	571,138.2	35,047,895,640	49,955,173,800

The cost of incurred on one patient during the CKF with expected 0-5 living years is currently 114,227.64 TL/life and the cost for all patients is estimated to be 9,988,750,207 TL in 2022 and afterward years life years. If the patients live 20 years, the costs will be 49,955,173,800 for all HD patients for the living years in 2022 and afterward years. The question how this costs can be decreased and the how the living years can be increased. The expected living years are very low currently. Patients are expected to live longer time when compared with developed countries standards. However, this will bring extra costs on government budget and if patients cannot get treatment, they may live shorter with less cost. The humanitarian way of treatment plays great role in the treatment of dialysis that increasing expected living years and quality are expected to the main of focus of policy makers. Minimizing cost at the same time with increasing living years will bring extra advantages as shown in literature part by screening, giving some medicines, diet, education etc.

3.2.2. PD Analysis

PD, hypertension is the biggest cause of CKF aside from HD. Diabeties is also high for this patient group but not as much as of HD. Type 2 DM is the second highest cause of CKF of PD patients. Moreover, glormerulonephritis with 10.1% is also a crucial cause of CKF in that group. Cardiovascular problems are the main cause of deaths with 51% in that group. Infection is 12.4% cause of deaths and this is a very high percent since infection can be prevented with suitable treatments and medicines as shown in literature section. 17.8 % of causes of deaths are not stated in that group needing more accurate data. By considering middle point of ranges, the expected living years for PD patients is 4.2075 years. That means patients of PD live shorter than HD patients of 5.691 years. Average 1.48 years more, patients can live by taking HD. PD patients can live 6.575 maximum expected years and they can live minimum expected 1.84 years and this value is expected 3.385 years.

Table 9: Distribution of chronic PD patients according to dialysis duration, as of the end of 2011(TSN,2012)

Years	N(Number of Patients)	%
0-5 years	2507	73.5
6-10 years	744	21.8
11-15 years	150	4.4
16-20 years	11	0.3
>20 years	0	0.0
Total	3412	100.0

By considering minimum values, the expected serum albumin level is 2.566 g/dL for PD patients. With max values and considering 5 g/dL as the upper value, the expected serum albumin level is 4.043 g/dL in that case. Patients are mainly cantered around 3.5-4 g/dL. Distribution of chronic PD patients according to haemoglobin level (mean value of last 3 months), as of the end of 2011 is 11.19 (9.00-13.60) gr/dL. There are more hypoalbuminemia in PD patients than HD patients (PD: 29.4%, HD: 12%), which can be prevented by iron theraphy. Hyperlipidemia is an important complication in PD with 11.9%. Moreover, obesity with 6.5% can be decreased as a success factor of PD treatment with psychological problems and suitable diet. These two factors can be controlled and checked by healthcare staff. Age, living years, causes of CKF for PD and taking or not PD are depicted in the model below. Utility is drawn based on yearly cost of PD for a patient. The model is simplified due to not having costing about other stages. 6.6% of patients have PD in this model.

Figure 6: Modelling PD with living years
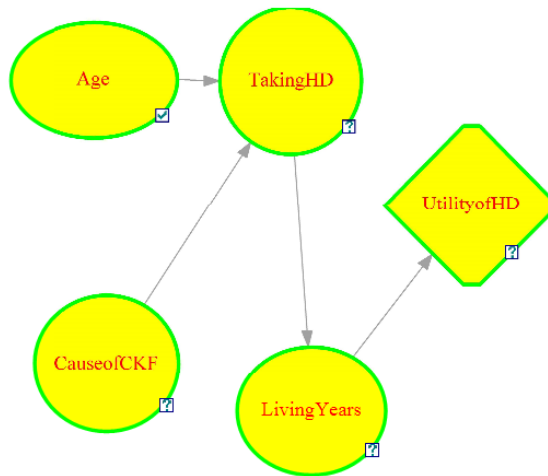
The expected cost of a PD patient during the life span is 142, 730.67 TL with 25 highest living years and middle point of ranges. This cost is 160,933.04 TL for a HD patient for the whole life living years with PD. The minimum total expected cost of PD is 1,171,388.3 TL by considering minimum values in all ranges. The table below is prepared by setting evidence to each living year range as accepting each case happens with 100%. Numbers of PD patients are taken from trend analysis of (Aslan & Ozen, 2013) for estimation. As the number of years increases, the expected costs increase at the same time. These scenario analyses can help decision makers about what they want to do in future about PD. However, the quality dimension of treatment should not be ignored. If evidence is set to PD, 106,676.91 TL cost occurs per patient during expected living years and 145,278.36 TL cost occurs for not having PD.

Table 10: Cost Analyzing for PD for whole life of patients at each year

| Living Years	Cost Scenario(In TL) for just a patient	Cost Scenario for 2014 and afterward years (In TL)-All patients	Cost Scenario for 2022 and afterward years (In TL))-All patients
0-5	63,384.975	45,5547,815.3	644,625,195.8
6-10	202831.92	1,457,753,009	2,062,800,626
11-15	329,601.87	2,368,848,640	3,352,051,018
16-20	456,371.82	3,279,944,270	4,641,301,409
>20	633,849.75	4,555,478,153	6,446,251,958

3.2.3. TX Analysis

It was found that 22, 759 $ for HD, 22,350 $ for Continuous Ambulatory Peritoneal Dialysis (CAPD), and 23393 $ and 10,028 $, respectively, for the first and second years of transplantation (TX) is spend in turkey(TSN,2013).

Age, ischemic heart disease, no primary renal disease, and HD treatment associate with greater daily costs in dialysis of patients (Mayo,2013). Drugs are the most expensive part of TXs with 10,348 $.Operation cost is just 1,150 $.In the second year, the cost of drugs is 5,084 $. These drugs increase the chances of accepting the kidney. However, they cause infections and cancer in long run(tsn,2013) TXs of living donors are given by relatives to the patient with 68%. Mother and sisters or brothers are two main providers with 42%.The biggest donor segment of kidneys is spouse from non relatives. Hypertension is the main cause of CKFs in TX patient group and an interesting result is that diabetes mellitus is the fourth aetiology different from HD and PD patients group. Glomerulonephritis is the second greatest cause of CKFs. 39% of data are not clearly categorized in that patient group. Not completely register CKFs are another weakness of this data. Some patients carry out their TX at abroad and these patients are also not included in this data. These data gives just general information about TX but not accurate information. Due to the money turning in organ trafficking, it is difficult to get most accurate data. Infection is the highest cause of deaths with 44.8% since some medicines are given and these medicines decrease the immunology system of patients. Pulmonary emboli with 17.2% is the third cause of deaths in TXs patients group. Cardiovascular distribution cause of deaths is low in that group of patients. Most of TXs patients come from HD with 69.9%. The PD patients are the second greatest group from 883 patients. Pre-emptive TX operated before is 14.2%. The graft loss in KTx patients, as of the end of 2011 is 20.3% from 1,082 sample. The greatest cause of graft loss is death with 61.5%.This shows the risk of TX clearly. Chronic rejection is 27.1%. TX provides high quality of life. However, patients are expected to be aware the risk of dying and rejection. If the cause of all graft loss is evidenced as death, the expected cost per two years is 41,616 $. Expected cost is 26,863.908 $ for a patient. If all TXs are accepted, the cost is 29,512.62 $ per two years for a patient. When the probabilities sated TNC are used, the expected cost is 30,710.855 $ for two years. When all kidneys are rejected, the cost is 41,616 $ per two years. Based just from arrow of accept or reject node as shown in Appendix in Figure 3., the cost is 30,634.47 $. The expected cost of all patients in 2014-15 is 107,557,448.6 $ and it is 174,739,016.9 $ for 2021-2022 years.

3.2.4. The Whole Model of All Treatments

The model shown below represents the whole model based on data of TNC. There are more complex relations than that figure compared with previous models. Each probabilistic node can be used to estimate the probabilities of others. Taking treatment is in this model not a decision node but a probabilistic node. Living years, death and taking treatments are centre nodes in that model to make estimation. Due to not having actual costing of all nodes, some of them are not connected to utility node (Node5). The model nodes are selected according data collected by TNC. More accurate data can be collected in future to get real data. Expected years of living are 8.005 years according to maximum years in the range, 5.2825 years according to middle point and 3.055 according to minimum point for CKF patiens with ESRD.

Figure 7: Whole model
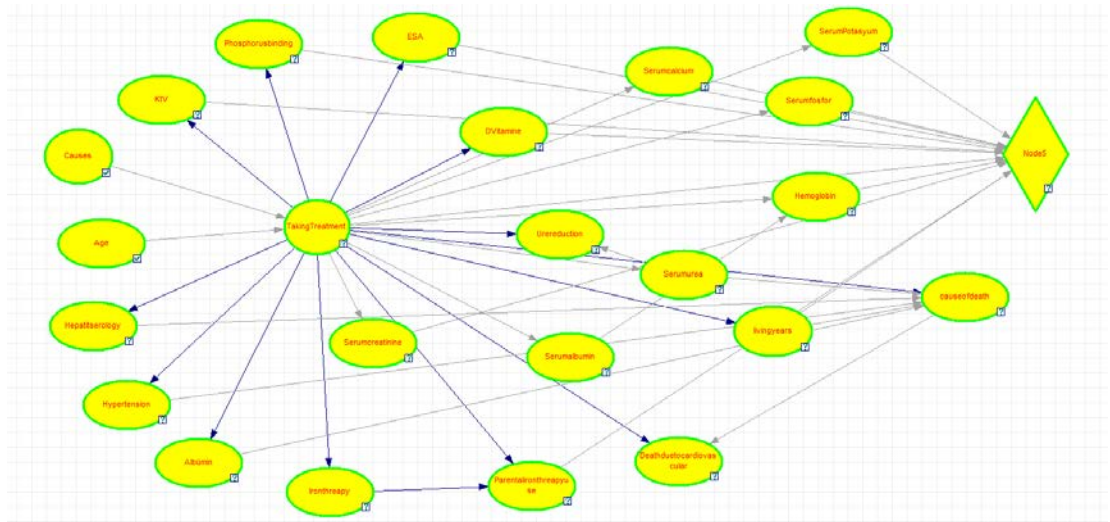
When setting evidence as TX, the expected living years are 20.7225. TXs patients live three times more than HD and PD patients. The probability of living more than 20 years is 59% for TX as shown below. Expected cost according data and considering TX as 20,806 $ is 1, 707,610,400 $ for 2022 for all CKF patients.

Table 11: Years of living for treatments

Taking Treatment	HD	PD	TX
uptofive	0.59	0.735	0.01
fromfivetoten	0.27	0.218	0.031
Fromeleventofifteen	0.099	0.044	0.099
Fromsixteentotwenty	0.031	0.003	0.27
Morethantwenty	0.01	0	0.59

4.   DISCUSSION OF RESULTS

The numbers of increasing CKFs are to be decreased in Turkey when the high expected costs are considered in the model above. Patients are mainly treated by private hospitals supporting by governments. Results show that the number of patients will be doubled in 2022 in Turkey , resulting in high costs. CKD progression in predialysis patients can be slowed down or prevented to decrease the number CKFs patients and costs. The living chance of predialysis patients is higher than dialysis patients. Diabetics and cardivasiculer patients are to be followed to prevent CKF. Some medicines as shown in literature section can prevent the progression of CKF and increase the living years. Some costly medicenes can be added the treatment of CKF patients.

The registration about 1-3 stages is not available in private and government hospitals. Screening can be carried out over risky patients to prevent ESRD patients by some medicines and precautions.

Private hospitals are not willing to take a leader role in screeing of patients in Turkey since governments do not give any monetary support. Government hospitals are mainly full of patients and sometimes there are not enough doctors to handle CKFs patients.

5. CONCLUSION AND FUTURE RESEARCH

TX is best way of treatment after comparing the   three methods. However, it is not possible to find a donor kidney that easily. Hence, patients have to take PD and HD during CKF. The summary of case studies and literature is shown in Table 1 in Appendix for PD and HD. These results can be helpful to select the type of method for treatment. PD is cheaper but PD patients live for shorter duration than HD patients. Immediate graft function is higher for PD than HD. Moreover, satisfaction is higher with PD.

Expected years of living are 8.005 years according to maximum years in the range , 5.2825 years according to middle point better than UK average 5.1 years and 3.055 according to minimum point for all treatments in Turkey . When setting evidence as TX, the expected living years are 20.7225 in Turkey.

One weakness of this data, is that there aren't enough data points to make all connections in the main model. Also, TNC do not have all data about causes of CKF and TXs. Early hypertension can be a cause of some complications in later stages like cerebral haemorrhage - the biggest cause of deaths. Diabetics has a high impact on the kidneys and most of secondary complications are developed from it. Moreover, low budget is allocated on CKF in Turkey when compared with developed countries. Also, 1-3 stages of CKF are ignored. However, increasing aging population may redirect more health spend to CKF. Further studies about studies presented in literature section can be done in Turkey to see the effects of mentinioned medicines. Moreover, individual diet for patients can be found by giving different foods to patients.

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Appendix A

Table 1: Comparing HD and PD

HD	PD
• 33,287.29 TL cost each year • The expected cost of a patient for his/her living years with HD is 160,933.04 TL • If the patients live 20 years, the costs will be 49,955,173,800 TL for all HD patients for the living years in 2022 and afterward years. • Diabetics is the biggest cause of CKF • Cardiovascular events cause of deaths with heart failure as 40.3% • Bacteraemia is common complication. • Immediate graft function is 46.5% • Delayed graft function is 39.5% for HD and never any function is 14% for HD • About 85% of dialysis in Turkey • Just at hospital cared, there are HHDs too. • The satisfaction of HD is 56% (Juergensen et al., 2006). • The average of serum creatinine is about 6.825 mg/dL in Turkey • The average value for serum urea is 149.875 mg/dL in Turkey • Hemoglobin average is 9.95 g/L in Turkey • Expected living years are 5.691 years in Turkey and the minimum expected living years are 3.385 years • The average number of HD frequency is 2.981 times per week in Turkey • 86% patients have more than 0, 65 urea reduction rate at the end of 2011 in Turkey • Hypertension (<140/90 mmHg) without medicine is 56.8% and Hypertension (<140/90 mmHg) with medicine is 24.7% in Turkey. • 59.0% patients of HD use parenteral iron therapy and 40.2% of them do not use iron therapy. • The cost of iron per patient per year is 820 $ for HD. • Secondary hyperparathyroidism is 50.7%. • IV vitamin D usage is 33.1 %. • The cost of Vitamin D is 321 dollar for HD per year for each patient.	• 25,353.99 TL cost each year • The expected cost of a PD patient during the life span is 142, 730.67 TL • If the patients live 20 years, the costs will be 6,446,251,958 TL for all PD patients for the living years in 2022 and afterward years. • Hypertension is the biggest cause of CKF • Cardiovascular is the main cause of deaths with 51% in that group • Peritonitis, pneumonia, and cathere infection are complications • Immediate graft function is 68.5% for PD • Delayed graft function is 22.5% for PD and never any function is 9% for PD • About 10% of dialysis in Turkey • The satisfaction of PD is 85% (Juergensen et al., 2006). • No vessel is used in PD • Flexible, can be used at home • The expected serum albumin level is 2.566 g/dL • Distribution of chronic PD patients according to haemoglobin level as of the end of 2011 is 11.19 (9.00-13.60) gr/dL. • The expected living years for PD patients are 4.2075years and minimum is 1.84 years • The cost of iron per patient per year is 186 dollar for PD • The cost of Vitamin D is 92 $ for PD year for each patient

Figure 4: Price Sensitivity Analysis: Cost-Effectiveness at Different Statin Prices
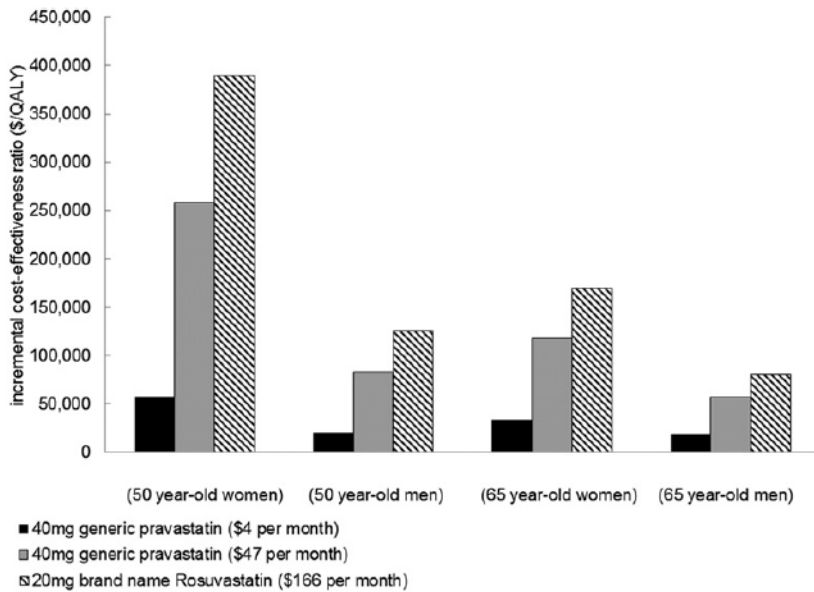
Kaynak: Kevin F. Erickson, Sohan Japa, Douglas K. Owens, Glenn M. Chertow, Alan M. Garber, Jeremy D. Goldhaber-Fiebert(2013) "Cost-Effectiveness of Statins for Primary Cardiovascular Prevention in Chronic Kidney Disease*", Journal of the American College of Cardiology*, Vol. 61, No. 12, 2013.

Table 2: Annual follow-up costsa PPPY among patients who progressed to a higher stage of CKD, prior to and following progression, by Baseline stage of CKD.

	Years of Observation, Mean	Costs, Mean			
		Total	Inpatient	Outpatient	Pharmaceuticals
Stage 0–2 (n = 2439)					
Prior to Progression to CKD	2.12	$12,561	$5051	$4818	$2692
After Progression	2.52	$22,039	$12,124	$6760	$3155
Cost of Progression	–	$9478	$7073	$1942	$463
p value[b]	–	<0.001	<0.001	<0.001	0.011
Stage 3 (n = 1147)					
Prior to Any Progression	2.07	$24,026	$13,834	$6395	$3797
After Progression	2.14	$64,704	$43,947	$16,257	$4500
Cost of Progression	–	$40,678	$30,113	$9862	$703
p value[b]	–	<0.001	<0.001	<0.001	0.007
Stage 4 (n = 186)					
Prior to Any Progression	1.76	$29,573	$12,403	$12,470	$4700
After Progression	1.88	$162,238	$104,812	$51,250	$6176
Cost of Progression	–	$132,665	$92,409	$38,780	$1476
p value[b]	–	<0.001	<0.001	<0.001	0.315

CKD = chronic kidney disease; PPPY = per patient per year.
[a] Unadjusted models.
[b] Calculated using paired t-tests.

Kaynak: Suma Vupputuri , Teresa M. Kimes , Michael O. Calloway, Jennifer B. Christian, David Bruhn , Alan A. Martin, Gregory A. Nichols(2014) "The economic burden of progressive chronic kidney disease among patients with type 2 diabetes" *Journal of Diabetes and Its Complications,* 28.pp-10–16.
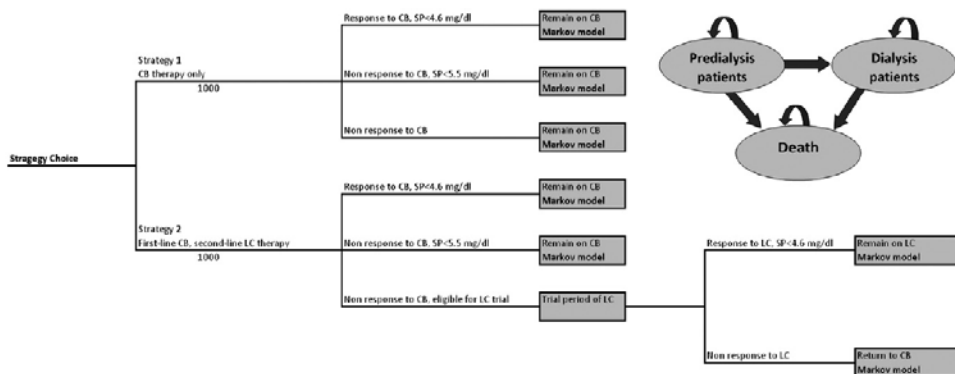
Table 3: Cost-effectiveness of population screening strategies with alternative starting ages and screening participation

Screening intervention	Cost ($A 2008) (intervention)	Cost ($A 2008) (comparator)	Incremental cost ($A 2008)	QALYs (intervention)	QALYs (comparator)	Incremental QALYs	ICER ($ per QALY gained)
Diabetes screening							
Starting age for screening							
30	$18,231	$16,487	$1,744	12.808	12.701	0.107	$16,299
40	$18,097	$16,487	$1,610	12.805	12.701	0.104	$15,481
50 (base-case)	$17,832	$16,487	$1,345	12.798	12.701	0.097	$13,866
60	$17,495	$16,487	$1,008	12.789	12.701	0.088	$11,455
Screening participation (%)							
25%	$17,419	$16,487	$932	12.794	12.701	0.093	$10,022
50%	$17,671	$16,487	$1,184	12.797	12.701	0.096	$12,333
75% (base-case)	$17,832	$16,487	$1,345	12.798	12.701	0.097	$13,866
100%	$17,931	$16,487	$1,444	12.8	12.701	0.099	$14,586
Hypertension screening							
Starting age for screening							
30	$14,302	$14,004	$298	12.955	12.831	0.124	$2,403
40	$14,183	$14,004	$179	12.946	12.831	0.115	$1,557
50 (base-case)	$14,061	$14,004	$57	12.947	12.831	0.116	$491
60	$13,677	$14,004	−$327	12.953	12.831	0.122	Dominant
Screening participation (%)							
25%	$13,570	$14,004	−$434	12.953	12.831	0.122	Dominant
50%	$13,803	$14,004	−$201	12.951	12.831	0.12	Dominant
75% (base-case)	$14,061	$14,004	$57	12.947	12.831	0.116	$491
100%	$14,194	$14,004	$190	12.953	12.831	0.122	$1,557
Proteinuria screening							
Starting age for screening							
30	$17,102	$16,821	$281	12.763	12.731	0.032	$8,781
40	$17,034	$16,821	$213	12.764	12.731	0.033	$6,455
50 (base-case)	$16,974	$16,821	$153	12.763	12.731	0.032	$4,781
60	$16,897	$16,821	$76	12.764	12.731	0.033	$2,303
Screening participation (%)							
25%	$16,815	$16,821	−$6	12.764	12.731	0.033	Dominant
50%	$16,856	$16,821	$35	12.763	12.731	0.032	$1,094
75% (base-case)	$16,974	$16,821	$153	12.763	12.731	0.032	$4,781
100%	$17,065	$16,821	$244	12.764	12.731	0.033	$7,394

ICER, incremental cost-effectiveness ratio; QALY, quality-adjusted life-year.

Kaynak: Kirsten HowardSarah WhiteGlenn Salkeld, Stephen McDonald, Jonathan C. Craig, MBBS, Steven Chadban, MBBS, Alan Cass(2010) "Cost-Effectiveness of Screening and Optimal Management for Diabetes, Hypertension, and Chronic Kidney Disease: A Modeled Analysis", Value in Healt h, Volume 13 , Number 2.

Figure 5: Decision analytical structure and Markov model (top right corner). CB, calcium-based binder; LC, lanthanum carbonate.

Table 4: Cost-effectiveness analysis in group with and without CPEs

Description	Without CPE		With CPE	
	Stage 4 (n = 14)	Stage 5 (n = 66)	Stage 4 (n = 8)	Stage 5 (n = 55)
Direct medical cost	Rp34,938,537.00	Rp276,918,614.00	Rp21,653,012.00	Rp243,850,649.80
Direct nonmedical cost (hotel)	Rp3,780,000.00	Rp22,235,000.00	Rp2,160,500.00	Rp13,095,003.00
Total	Rp38,718,537.00	Rp299,153,614.00	Rp23,813,512.00	Rp256,945,652.80
Cost to treat 100 patients	Rp276,560,978.57 (x_1)	Rp453,263,015.52 (x_2)	Rp297,668,900.00 (x_3)	Rp467,173,914.18 (x_4)
Outcome (hypothetical lives saved per 100 patients treated) (y)	78.57 (y_1)	57.58 (y_2)	88.89 (y_3)	65.45 (y_4)
CE ratio = x/y	Rp3,519,931.00/life saved	Rp7,871,882.87/life saved	Rp3,348,733.27/life saved	Rp7,137,874.93/life saved
		ICER		
CKD stage 4	(Cost x_3 − Cost x_1)/(Outcome y_3 − Outcome y_1) = 21,107,921.43/10.32 = 2,045,341.22			
CKD stage 5	(Cost x_4 − Cost x_2)/(Outcome y_4 − Outcome y_2) = 13,910,898.66 /7.87 = 1,767,585.60			

CKD, chronic kidney disease; CPE, clinical pharmacy education; ICER, incremental cost-effectiveness ratio.

DETERMINANTS OF CAPITAL STRUCTURE IN VARIOUS CIRCUMSTANCES: COULD THEY BE SIMILAR?

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JEL Classification
G10, G15, G30, G32

ABSTRACT

The financial economics literature has given the capital structure choice of firms a lot of attention. Indeed, this literature includes not only econometric analysis of the determinants of capital structure, but also surveys of Chief Financial Officers on this financial decision. This paper reports the leverage ratios of listed Saudi and Palestinian non-financial firms and examines whether the differences in the determinants of their ratios are due to firms-specific factors, or country-specific difference. Based on a total of 55 listed Saudi firms and 18 listed Palestinian firms during the period 2006-2012, and using the Seemingly Unrelated Regression, and Panel data Analysis, the results indicate that factors like asset structure and firm profitability impact the capital structure of both sets of firms. However, the differences in their impact are due to country-specific and not firm-specific factors. This result is not really surprising given that both sets of firms operated under different political and economic circumstances.

1. INTRODUCTION

Following any examination of basic corporate finance textbooks, one can learn that the objective which underlies this subject matter is the maximization of the firm's stock price. Indeed, this is achieved when firms maximize the difference between their return on assets and weighted average cost of capital. Within this context, the fact that the capital structure of firms affects their cost of capital, one can appreciate why this issue (capital structure) maintains its eminent place in the financial economics literature.

The theoretical basis of the capital structure of firms can be traced back to Modigliani and Miller's (1958). Assuming that markets are perfect, in terms of information and costs, Modigliani and Miller (1958) showed that the value of a firm is independent of its capital structure.

Following the theoretical paper by Modigliani and Miller (1958), and the publication of various theories, like the trade-off theory, agency theory, signaling theory, market timing theory, and pecking order theory, the finance literature has managed to produce an exceptionally large number of empirical papers that examine the determinants of the debt-to-equity choice of firms within countries and across countries.

Notwithstanding the fact that there is a myriad of capital structure theories, the fact remains that none of them shows finance managers how to determine an optimal debt to equity ratio for their respective firms.

Indeed, this is why, the empirical literature uses many factors like firm age, firm size, firm profitability, firm risk, firm non-debt tax shield, firm liquidity, firm ownership structure, firm asset structure, corporate tax rate, stock liquidity, behavioral concepts, and others, in explaining the capital structure of firms.

The literature that examines capital structure is impossible to review even by listing Authors. For illustrative purposes, some of these papers are Titman and Wessels (1988), Harris and Raviv (1991), Rajan and Zingales (1995), Bevan and Danbolt (2000), Booth et al. (2001), Voulgaris et al. (2004), Antoniou et al. (2005), Daskalakis and Psillaki (2007), Mefteh and Oliver (2007), Feidakis and Rovolis (2012), Eldomiaty (2012), Shah and Khan (2013), Alipour et al. (2015), and Koksal and Orman (2015).

The scholarly papers by Singh and Hamid (1992) and Singh (1995) have also encouraged researchers to look into the capital structure of firms located in developing economies. On average, this literature reports the fact that in advanced economies, firms tend to rely on more debt. For example, it is stated that "total liabilities to total assets has a median of 0.41 for Egypt while the world median is 0.57" (Love, 2005).

In addition to the papers that examine the determinants of capital structure, some researchers examine the difference in the debt to equity ratio of firms that operate in different economies. In other words, this line of research examines whether the differences are due to country-specific factors or firm-specific factors. Some of these papers are published by Daskalakis and Psillaki (2007), De Jong et al. (2008), Joeveer (2013), Acedo-Ramirez and Ruiz-Cabestre (2014), and Turk (2015). For example, following his examination of the capital structure of firms in 99 Eastern European countries, it is stated that "country-specific factors are the main determinants of variation in leverage for small unlisted companies, while firm-specific factors explain most of the variation in leverage for listed and large unlisted companies" (Joeveer, 2013).

As far as the capital structure of listed Arab firms is concerned, there has been some, albeit relatively limited, research effort. For example, Al-Qaisi and Shubita (2013) examine the capital structure of 15 listed Palestinian during the period 2003-2007. In this paper they report a mean value of leverage (total liabilities to total assets) equal to 31 percent. Similarly, based on the time period 2000-2010, and a panel of 93 firms, Alzomaia (2014) finds that the mean leverage ratio of these firms is equal to 34 percent. Finally, other listed Arab firms have also been examined. These include listed Jordanian, Kuwaiti, Omani, and Saudi Arabian firms (Omet and Mashharawe, 2003), Jordanian firms (Omet, 2006), Omani firms (Fernandez et al., 2013), and Tunisian firms (Ghazouani, 2013).

Notwithstanding the fact that the capital structure of firms is important, it would be interesting to apply this research issue (capital structure) to two sets of firms that operate under different circumstances. These are listed non-financial firms on the Saudi Stock Exchange (SSE) and the Palestinian Securities Market (PSM). Indeed, these two sets of firms could not be more apart in their respective local environments.

First, the populations of Saudi Arabia and the West Bank and Gaza are about 29 million and 4.2 million respectively.

Second, the 2013 Gross Domestic Product (GDP) of Saudi Arabia is equivalent to $748 billion and this is much greater than that of the West Bank and Gaza's GDP ($11.3 billion).

Third, the GDP per capita (purchasing power parity) in international dollars is around 55,000 in Saudi Arabia and 5,000 in the West Bank and Gaza. Fourth, the 2014 market capitalization of the SSE and the PSM are equal to $483 billion and $3.1 billion respectively. Finally, one cannot really underestimate the difference between the two sets of firms' political circumstances.

Relative to the above brief account of the literature, this paper has three objectives and these are: (1) Document the leverage ratios of listed Saudi and Palestine non-financial firms. (2) Examine the determinants of the leverage ratios of listed Saudi and Palestinian non-financial firms. (3) Determine whether the differences in the determinants of the leverage ratios between the Saudi and Palestinian firms are due to firms-specific factors or country-specific difference.

The rest of the paper is organized as follows. Section 2 provides information about the SSE and PSM. In section 3, the data and the used methodology are outlined. In addition, the results are reported and commented on. Finally, the last section summarizes and concludes the paper.

2. THE SAUDI AND PALESTINIAN MARKETS: SOME BASIC INFORMATION

The SSE and PSE were established in 1984 and 1997 respectively. In both of these markets, investors get their orders executed by the order-driven system. The markets have no specialists to provide immediacy in trading. Investors must get their orders executed through brokers, and in common with other similar markets, orders are prioritized (for execution) according to price and then time.

We report in Tables 1 and 2 some information about the SSE and PSE. As expected, the Saudi capital market is much larger than the Palestinian market in terms of, for example, number of listed firms (Table 1), and market capitalization (Table 2).

It is also interesting to note that while the turnover ratio (trading volume to market capitalization) in the SSE is much higher than in the PSE, both markets experienced significant falls during the period 2005-2010. However, since then, the SSE has recovered. In actual fact, it has increased from 12.9 percent in 2010 to 27.1 percent in 2014 (Table 2).

Table 1: Number of Listed Firms

Year	No. of Listed Firms (Saudi Market)	No. of Listed Firms (Palestinian Market)
2005	77	28
2010	146	40
2014	166	49

Source: Arab Monetary Fund, Capital Markets Bulletins.

Table 1: Relative Size of Stock Markets ($- Million)

	The Saudi Market		The Palestinian Market	
Year	Capitalization	Turnover Ratio	Capitalization	Turnover Ratio
2005	646,120.8	0.612	3,157.2	0.184
2010	353,400.0	0.129	2,449.0	0.048
2014	482,896.5	0.271	3,190.6	0.024

Source: Arab Monetary Fund, Capital Markets Bulletins.

In addition to the above, we report in Table 3 the market capitalization to GDP ratio for a number of markets. Clearly, one can see that the Tunisian and Egyptian markets are the only ones comparable in size to the PSE. Moreover, one can state that while the SSE is smaller than the Jordanian market, it is much smaller than the UK, Malaysian, Chilean, and Swedish markets.

Table 3 reveals one further interesting observation. The reported figures reveal that while the markets in the UK, Sweden, Turkey, Korea, Indonesia, and Chile have recovered from the 2008 global financial crisis, the Saudi, Palestinian, and most other Arab markets have not recovered. There is no doubt that the 2011 onslaught of the "Arab Spring" is one of the reasons behind the inability of these markets to recover.

Table 3: Capitalization to GDP Ratio

Arab Markets:	2005	2008	2010	2012
UAE	64	22	27	18
Egypt	89	53	38	22
Jordan	299	163	117	87
Lebanon	23	33	33	24
Qatar	196	66	99	66
S. Arabia	197	47	67	51
Tunisia	9	14	24	20
W. Bank & Gaza	92	32	27	23
Other Markets:				
Brazil	54	36	72	55
Chile	110	74	157	118
China	35	62	80	45
UK	127	66	129	115
Indonesia	28	19	51	45
Korea	80	49	100	97
Malaysia	126	81	166	156
Sweden	104	49	119	103
Turkey	33	16	42	39

Source: World Bank Database.

Finally, we report in Table 4 the market capitalization of each market relative to the capitalization of all Arab markets. The reported proportions reveal the fact that the Saudi market remains dominant. Indeed, in 2014, it accounted for about 40 percent of the capitalization of all Arab markets. The PSE, on the other hand, is larger than only the Algerian and Sudanese markets.

Table 4: Relative Size (Market Capitalization) of Arab Stock Markets

Market	2005	2014
Abu Dhabi Securities Market	10.3	9.4
Amman Securities Market	2.9	2.1
Bahrain Stock Exchange	1.3	1.8
Saudi Stock Market	50.1	40.1
Kuwait Stock Exchange	9.6	8.3
Casablanca Stock Exchange	2.1	4.4
Algeria Stock Exchange	0.0	0.01
Tunis Stock Exchange	0.2	0.77
Dubai Financial Market	8.7	7.3
Khartoum Stock Exchange	0.3	0.07
Palestine Stock Exchange	0.3	0.16
Muscat Securities Market	0.9	3.2
Doha Securities Market	6.8	15.4
Beirut Stock Exchange	0.4	0.93
Cairo & Alexandria Exchanges	6.2	5.8
Total	**100**	**100**

Source: Arab Monetary Fund, Capital Markets Bulletins.

3. THE DATA, METHODOLOGY AND ESTIMATED RESULTS

The statistical analysis is based on a total of 55 listed Saudi companies and 18 listed Palestinian companies. The time period used is 2006-2012. The fact that the total numbers of listed non-financial Saudi and Palestinian firms are 100 and 24 firms respectively, it can be argued that the our sets of data represent both markets well. In addition, and based on the data which is available, the researchers estimate the following model for both sets of data:

$$\text{LEVERAGE}_{i,t} = \alpha_0 + \beta_1 \text{SIZE}_{i,t} + \beta_2 \text{ROA}_{i,t} + \beta_3 \text{TANGIBILITY}_{i,t} + \beta_4 \text{GROWTHOPP}_{i,t} + \varepsilon_{i,t} \qquad (1)$$

The dependent variable (leverage) is measured by dividing total liabilities by total assets.

The independent variables are SIZE (natural logarithm of sales), ROA (return on assets), TANGIBILITY (book value of fixed assets to total assets), and GROWTHOPP (market value of equity to book value of equity). $\varepsilon i,t$ = the error term.

In Tables 5 and 6, we report basic statistical information. The mean values of leverage are equal to 35.2 percent (Saudi firms) and 33.7 percent (Palestinian firms).

Whilst these ratios are lower than firms which operate in advanced economies (around 50 percent), it is useful to mention the fact that most of the Saudi and Palestinian firms do

not borrow on a long-term basis. In actual fact, the mean long-term leverage ratio (long-term debt to total assets) becomes less than 8 percent in both markets. Again, this is lower than that which exists in advanced economies (around 20 percent).

Table 5: Leverage Ratios: Saudi and Palestinian Firms

Measure	Listed Saudi Firms	Listed Palestinian Firms
Mean	0.352	0.337
Median	0.343	0.260
Maximum	0.814	0.834
Minimum	0.008	0.022
Std. Deviation	0.254	0.321

Table 6: Independent Variables: Saudi and Palestinian Companies

	SIZE	ROA	TANGIBILITY	GROWTHOPP
Saudi Arabian Listed Firms				
Mean	8.872	0.059	0.895	3.452
Median	8.978	0.048	0.836	3.057
Std. Deviation	0.645	0.084	0.186	1.235
Palestinian Listed Firms				
Mean	7.330	0.026	0634	1.823
Median	7.140	0.021	0.680	1.590
Std. Deviation	0.746	0.094	0.234	1.766

The similarity in the leverage ratios is probably surprising. The Palestinian firms, undoubtedly, operate under exceptionally difficult political, and perhaps economical, circumstances. In other words, one would have expected them to have lower leverage ratios than their Saudi counterparts. However, it is also worth noting that the standard deviation of the Palestinian leverage ratios is higher than in Saudi Arabian ratios.

As expected, the size of the average Saudi firm is larger than the Palestinian firm (Table 6). The mean natural logarithm of total assets is equal to 8.872 for the Saudi firms and 7.330 for the Palestinian firms. This observation would not surprise anybody given the much larger size of the Saudi economy. Similarly, the accounting performance (ROA) of the Saudi firms is superior. For these (Saudi) firms, it is equal to 5.9 percent. Again, this is expected. The asset structure of the Saudi firms reflects the greater proportion of fixed assets. This indicates that the Saudi listed firms rely more on fixed (real) assets in producing the goods and services they produce. Finally, with a mean market to book ratio of 3.452 (Saudi firms) and 1.823 (Palestinian firms), one can relate this difference to the superior performance of the Saudi firms.

In Table 7, we report the estimation results of model (1) for each set of firms. The reported results indicate the followings.

(1) The coefficient of firm size (SIZE) is significant in the Saudi and Palestinian firms. These results support the trade-off theory which argues that because larger firms tend to be

more diversified, they have a lower probability to experience financial distress, and hence have, on average, higher levels of debt.

Table 7: Separate Estimation Results

	Saudi Firms	Palestinian Firms
Constant	-0.315 (-3.345[*])	-0.429 (-1.213)
SIZE	0.075 (5.032[*])	0.158 (2.976[*])
ROA	-0.412 (-4.125[*])	-0.419 (-2.578[**])
TANGIBILITY	-0.024 (-1.462)	0.197 (2.356[*])
GROWTHOPP	0.041 (7.414[*])	-0.018 (-1.895[**])
Adjusted R^2	0.525	0.498
Durbin-Watson Statistic	1.732	1.923
F-Statistic Prob.	35.872 (0.000)	15.670 (0.000)

Method: Pooled EGLS (Period SUR). Cross-section weights (PCSE) SE and covariance (d.f. corrected). *, **, and *** indicate significance at the 99, 95, and 90 percent confidence levels.

(2) The sign of the coefficient of accounting performance (ROA) is negative and significant in the Saudi and Palestinian firms. This sign signifies that firms which earn greater levels of income tend to rely less on debt. Based on the pecking order theory, it is known that firms prefer to depend on internal funds before they seek external sources, and if internal funds are not sufficient, they prefer to issue debt because the cost of issuing new equity is higher (Myers and Majluf, 1984). In other words, these findings support the pecking order theory.

(3) The coefficient of asset structure (TANGIBILITY) is positive and significant in the Palestinian case only. The Palestinian firms operate under more difficult political and economic circumstances, and hence are expected to face greater levels of risk. This risk is probably mitigated by the collateral of the fixed assets.

(4) The impact of the market-to-book ratio on leverage is significant in both the Saudi and Palestinian cases. However, the signs are different. The Saudi result supports the agency theory. In more specific terms, Jensen (1986) argues that the shareholders of firms with higher levels of growth opportunities force managers to obtain more debt knowing that higher levels of debt can act as a disciplining device that mitigates agency costs. The Palestinian result is consistent with the trade-off theory. Firms with higher future growth opportunities tend to maintain lower debt levels to mitigate the under-investment problems when future opportunities arise (Myers, 1977).

The above-reported results clearly reflect some similarities and differences in the determinants of capital structure.

To examine the differences in depth, we rely on the methodology used by Daskalakis and Psillaki (2007). We pool the data for both sets of firms and estimate a panel which restricts the coefficients of the determinants of capital structure to be the same. Following this exercise (estimation), we calculate the value of the F-statistic as follows:

F = [(RSSALL – RSSSAU – RSSPAL) / k] / [(RSSSAU + RSSPAL) / (n – 2k)]

where,

RSSALL = Residual Sum of Squares for the restricted model that includes all firms.

RSSSAU = Residual Sum of Squares for the model that includes Saudi firms only.

RSSPAL = Residual Sum of Squares for the model that includes Palestinian firms only.

n = number of observations.

k = number of variables.

The results of pooling the data for both sets of firms are reported in Table 8. The fact that the computed F-statistic is equal to 3.529 and statistically significant, we conclude that there are differences in the structure of the relationship between leverage and its determinants across the Saudi and Palestinian sample of firms.

Table 8: Aggregate Estimation Results

Variables	Coefficients
Constant	-0.415 (-4.14*)
SIZE	0.096 (4.365*)
ROA	-0.362 (-3.274*)
TANGIBILITY	-0.158 (-2.118*)
GROWTHOPP	0.018 (4.005*)
Adjusted R^2	0.508
Durbin-Watson Statistic	1.922
F-Statistic Prob.	38.359 (0.000)

Method: Pooled EGLS (Period SUR). Cross-section weights

The differences in the structure of the relationship between leverage and its determinants can be due to the differential effects of firm-level differences or country-level differences.

To examine this issue, we re-estimate the panel model (1) by controlling for the presence of fixed effects in the capital structure relationship. The estimated results for both sets of firms and the combined set of firms are reported in Tables 9 and 10 respectively.

Based on the above results, and after controlling for firm-specific effects, there is a difference in the magnitude of the relationship between the impact of the independent

variables and leverage. Indeed, with a computed F-statistics equal to 6.454, we conclude that once firm heterogeneity is accounted for, there appears to be some significant differences in the determinants of the capital structure choice between the two countries. In other words, the differences in the capital structure determinants between Saudi and Palestinian firms are due to country-specific factors rather than firm-specific factors. This finding should not be surprising given the difference in political and economic circumstances of the two countries.

Table 9: Separate Estimation Results: Saudi and Palestinian Companies

	Saudi Results	**Palestinian Results**
SIZE	0.053 (7.055[*])	0.033 (3.274[*])
ROA	-0.509 (-5.321[*])	-0.327 (-2.582[*])
TANGIBILITY	0.047 (0.734)	0.128 (2.031[**])
GROWTHOPP	0.039 (2.891[*])	-0.010 (-1.739[***])
Adjusted R^2	0.428	0.490
Durbin-Watson Stat.	1.808	1.659
F-Statistics Prob.	66.514 (0.000)	27.560 (0.000)

Method: Pooled EGLS (Period SUR). Cross-section weights (PCSE) SE and covariance (d.f. corrected).

Table 10: Aggregate Estimation Results

Variables	**Coefficient**
SIZE	0.046 (9.551[*])
ROA	-0.437 (-5.468[*])
TANGIBILITY	0.071 (1.207)
GROWTHOPP	0.009 (1.329)
Adjusted R^2	0.370
Durbin-Watson Statistic	1.950
F-Statistic Prob.	54.634 (0.000)

Method: Pooled EGLS (Period SUR) with fixed effects. Cross-section weights (PCSE) SE and covariance (d.f. corrected).

4. SUMMARY AND CONCLUSIONS

The capital structure of listed and non-listed firms has always been an important issue that leads to the publication of research papers. As mentioned previously, this interest is based on the fact that the leverage ratios of firms affect their cost of financing their assets.

This paper examined the capital structure of listed non-financial firms Saudi and Palestinian firms. Based on the results, a number of conclusions can be made. First, the leverage ratios of both Saudi and Palestinian firms are low. Second, most of the known determinants of capital structure are found significant in both sets of firms; the Saudi and Palestinian. Third, the differences in the sign and magnitudes of the coefficients are due to country-level differences and not firm-level differences.

Based on these results, a number of recommendations can be suggested. **(1)** What is the reason behind the low leverage ratios of the Saudi and Palestinian firms? Are these low ratios due to firm management or bank management? **(2)** It is worth considering the impact of other variables on capital structure. For example, future research can look at the impact of "corporate governance" on the capital structure choice. In addition, the impact of stock liquidity on capital structure would be worthwhile pursuing.

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THE RELATIONSHIP BETWEEN ORGANIZATIONAL CULTURE AND THE ENVIRONMENTAL MANAGEMENT PERCEPTION OF EMPLOYEES: A RESEARCH ON GREEN STAR HOTELS

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ABSTRACT

This study aims to investigate the relationship between organizational culture types (adhocracy, clan, bureaucracy, market) and environmental management perception of green 4-star and 5-star hotel employees in Istanbul. It will also explore the links between different organizational cultures of hotels, their brand affiliation and star ratings. Organizational culture has an important impact on realization of management aims. The main focus of the study is to determine the organizational culture types among green star hotels that are approved by Ministry of Tourism and Culture. The role of organizational culture is important to settle certain standards and implementations of being a green star hotel. Hence organizational culture has to be flexible enough to comply with the standards and implementetions and it should also be adopted by employees. In this frame,a research was conducted to examine the organizational culture types among green star hotels. For this purpose a survey was utilized on 212 employees working in 22 green star hotels in İstanbul. The results revealed that green star hotels tend to adopt market culture but hotel employees who have a positive perception toward environmental management tend to comply with the characteristics of a clan culture.

ÇALIŞANLARIN ÇEVRE YÖNETİMİ ALGILARI VE ÖRGÜT KÜLTÜRÜ İLİŞKİSİ: YEŞİL YILDIZLI OTELLERE YÖNELİK BİR ARAŞTIRMA

ÖZET

Bu çalışmada, İstanbul'da faaliyet gösteren yeşil yıldıza sahipı dört ve beş yıldızlı otellerde çalışanların örgüt kültürü tipleri (adhokrasi, klan, bürokrasi, pazar) ile çevre yönetimi algıları arasındaki ilişki incelenecektir. Ayrıca yeşil yıldızlı otellerin örgüt kültürü tiplerinin ne olduğu ve yıldız sayısına ve işletme yapısına göre örgüt kültürü tipleri arasında ilişki olup olmadığı tespit edilecektir. Örgüt kültürü işletme amaçlarının gerçekleştirme biçimi üzerinde önemli etkilere sahiptir. Belirli standart uygulamalar gerektiren Kültür ve Turizm Bakanlığı tarafından belgelenen yeşil yıldızlı otellerde örgüt tipleri arasında farklılık olup olmadığı araştırmanın temel sorusunu içermektedir. Belirli standartlar ve uygulamaların gerçekleştirilmesinde örgüt kültürünün rolü büyüktür. Bu yüzden gerçek anlamda bu uygulamaların yürütülmesinde örgüt kültürünün geliştirilmesi ve oluşturulan standartlara uyarlanması gerekmektedir. Bu nedenle bu araştırmada yeşil yıldızlı otellerin örgüt kültürleri arasında fark olup olmadığı incelenecektir. Araştırma kapsamında İstanbul'da 22 yeşil yıldızlı otel işletmesine gidilmiş ve anket bırakılmıştır. Yapılan analizler neticesinde yeşil yıldızlı otellerin genel olarak pazar kültürünü benimsedikleri bununla beraber, çevre yönetimi ile ilgili olumlu algıya sahip çalışanların örgüt kültürü algılarının klan kültürü olduğu belirlenmiştir.

1. GİRİŞ

Turizm son yirmi yılda sürekli büyüyen ve gelişen dinamik bir endüstri haline gelmiştir (WTO, 2010). Bu büyüme beraberinde fiziksel, sosyal ve kültürel çevre üzerinde bazı olumsuz etkiler yaratarak, turizm gelişimine zarar vermeye başlamıştır. Dünya kaynaklarının hızla yok olması, küresel ısınma ve iklim değişikliğinin giderek kendini daha fazla göstermesi, ekolojik dengenin bozulması gibi sonuçlar hem dünyada hem de Türkiye'de çevre bilincinin hızla gelişmesine yol açmıştır. Çevrenin, turizm endüstrisi için çok önemli bir unsur olması sebebiyle, çevre ve turizm birbirini etkileyen ve iki önemli değişken halini almış böylece, bu endüstri içinde faaliyet gösteren turizm işletmeleri de çevreye yönelik önlemler almaya başlamıştır.

Günümüzde otel işletmelerinin, çevreyle ilgili sorunları dikkate almadan varlıklarını sürdürmeleri giderek zorlaşmaktadır. Bu nedenle, iş stratejilerine, uzun vadeli planlarına ve yapacakları her türlü faaliyete çevre boyutunu dahil etmek durumundadırlar. Otel işletmelerinin yerel çevreyi korumak ve yerel halka katkıda bulunmak gibi önemli görevleri vardır (Yu-Chin Hsieh, 2012). Otel işletmelerinde çevre yönetimi uygulamaları; atıkların geri dönüşümü, atık yönetimi, enerji tasarrufu, su koruması, mevzuat uyumu, satın alma politikaları ve çevre eğitimi konularını içerir (Chan, 2009; Kotler, Bowen, & Makens, 1999; Middleton & Hawkins, 1998). Yapılan araştırmalar, çevre dostu bir otelin rekabet avantajı kazandığı ve azalan maliyetlerden faydalandığı, olumlu bir imaj inşa ettiği, çalışan sadakatinin arttığı ve müşterileri elinde tutabildiğini ortaya koymaktadır (Newman ve Breeden, 1992; Tzschentke vd., 2004; Claver-Cortes, 2007; Graci ve Dodds, 2008). Aynı zamanda, çevre yönetimi uygulamaları otel işletmeleri için günümüzde rekabet üstünlüğü sağlamada önemi bir araç haline gelmiştir.

Otellerin çevre yönetimine verdikleri önem arttıkça yerel halkın yaşam kalitesi de artmakta ve bu durum yerel halkın turizm girişimlerine bakış açısını olumlu yönde etkilemektedir (Guthunz & Krosigk, 1996; Swarbrooke, 1998). Ürünlerin ekolojik özellikleri yeşil tüketiciler tarafından takdir edilen yeni bir rekabet konusu olup (Chan & Wong, 2006; Elkington, 1994), kirlilik seviyesinin azaltılması çevreye duyarlı tüketicilerden olan talebi arttırabileceği gibi otellerinde daha fazla ekolojik ün kazanmasını sağlayabilir (Miles&Covin, 2000; Shrivastava, 1995). Çevre yönetimi uygulamalarının işletmenin tüm birimlerince benimsenmiş olması bu uygulamaların başarılı bir şekilde yürütülmesini sağlayabilmektedir.

Örgüt kültürü, işletmelerin amaçlarını gerçekleştirerek uzun dönemde başarıya erişmelerinde ve rekabet üstünlüğü elde etmelerinde büyük bir role sahiptir. Örgüt kültürü, örgüt amaçlarının gerçekleştirilmesi yanında, işletme politikalarının ve stratejilerinin oluşmasında ve yöneticiler açısından seçilen stratejilerin uygulanmasında kolaylaştırıcı bir etkiye sahiptir (Eren, 2001). Çevre yönetimi gibi topluma ve çevreye duyarlı uygulamaların başarılı bir şekilde gerçekleştirilebilmesi ancak örgüt içinde yer alan tüm çalışanların ortak inanç, değer ve normlara sahip olması ile mümkün olabilir. Bu nedenle çevre yönetim uygulamalarının başarılı olmasında örgüt kültürünün önemi büyüktür. Bu çalışmanın amacı rekabette önemli bir avantaj sağlayan çevreye duyarlı yeşil yıldızlı otellerde çalışanların örgüt kültürüyle çevre yönetimi algıları arasındaki ilişkiyi belirlemektir. Ayrıca,   yeşil yıldızlı otel işletmelerinin örgüt kültürü tipleri ne olduğu ve

yıldız sayısına ve işletme yapısına göre örgüt kültürü tipleri arasında ilişki olup olmadığı araştırılacaktır.

2. LİTERATÜR TARAMASI

2.1. Konaklama İşletmelerinde Çevre Yönetimi Uygulamaları ve Yeşil yıldızlı oteller

Otel işletmelerinde; su, ısınma, soğutma, aydınlatma, çamaşırhane sistemi gibi çevre üzerine önemli etkisi olan bir çok faaliyet gerçekleştiğinden, çevresel sürdürülebilirliğin sağlanmasında önemli bir rol oynamaktadır (Yu-Chin Hsieh, 2012) Konaklama sektörü kurumsal sosyal sorumluluğa giderek daha fazla dahil olmaktadır. Birçok otel, yerel halka hizmet etmek, çalışanların mutluluğunu arttırmak ve çevreyi korumak için bir takım kurumsal sosyal sorumluluk girişimlerinde bulunmaktadır (Bohdanowicz ve Zientara, 2009; Lee ve Heo, 2009). Sürdürülebilir turizme yönelik ve doğayı korumaya odaklı otel yönetimi çalışmalarını içinde barındıran yeşil otelcilik, ekolojik otel, çevre dostu otel, yeşil otel veya yeşil yıldızlı otel olarak adlandırılan bu tür konaklama işletmeleri enerji tasarrufu sağlamanın yanı sıra doğaya bırakılan atıkların azaltılmasına da yardımcı olmaktadır. Çevre Yönetim Sistemleri (Environmental Management Systems) çevre koruma ile ilgili otellerin uygulamalarını değerlendirmektedir. Yeşil yıldız uygulaması son yıllarda Avrupa başta olmak üzere tüm dünyaya yayılan, müşteriler tarafından yeni bir tercih kriteri olarak benimsenen sürdürülebilir otel işletmeciliği modeli haline gelmektedir. Ayrıca, bu uygulamalara işletmelerinde yer veren konaklama tesislerine "Ekolojik Otel" veya "Yeşil Otel" (Green Hotels) denilmektedir (Green Hotel Association, 2013). Yeşil otel imajı çoğunlukla otellerin sosyal sorumluluk stratejisinin bir sonucudur (Gaoa ve Mattila, 2014). Yeşil oteller çevreye duyarlı politikaların geliştirilmesinde yeşil stratejiler belirleyen ve bunları uygulamaya koyan işletmelerdir.

Otel işletmelerinin çevre yönetimi uygulamaları; çevre politikalarını, yeşil pazarlamayı, çevreyle ilgili yasa ve yönetmeliklere uygunluğu, çevreyi denetlemeyi, sertifikalandırma, atık yönetimi ve atıkların geri dönüşümünü, su ve enerji kaynaklarını korumayı, çevre konusunda eğitimi, kirliliğin önlenmesini, çevresel pazarlama sorumluluğunu ve yerel toplulukların desteklenmesini içerir (Bohdanowicz, 2006; Erdogan ve Baris, 2007). Kirk (1995)'e göre çevre yönetiminin başlıca faydası yerel halkın turizme olan bakış açısını iyileştirme ve yerel halkla daha iyi ilişkiler kurulmasıdır. Çevresel konular, seyahat ve konaklama motivasyonunu etkilemeye başladığından (Miller, 2003) turizm destinasyonlarının ve otellerin rekabet edilebilirliği açısından büyük bir öneme sahiptir. Bu konuyla ilgili yapılan birçok çalışma, çevre yönetiminin destinasyon rekabet edilebilirliğini arttırdığını göstermiştir (Hassan, 2000; Huybers ve Bennet, 2003; Mihalic, 2000). Çevre yönetimi uygulamalarının otellerin performanslarını arttırdığından, rekabet avantajı sağlamada önemli bir başarı faktörü haline gelmiştir (Yen vd. 2013).

Literatürde son dönemde otel işletmelerinde çevre yönetimi ile ilgili birçok çalışma olduğu görülmektedir. Konaklama işletmelerinde yapılan çalışmalar incelendiğinde otellerin çevre farkındalığı ve girişimleri (Bahdanowicz, 2006), otellerde su tüketimi (Tortella ve Tirado, 2011) otellerde enerji tüketimi (Pieri ve Santamouris, 2015; Lu, Wei, Zhang, Kong, ve Wu, 2013; Xin vd., 2012) otellerde çevre yönetimi sistemleri ve politikaları (Mensah, 2006; Erdogan ve Baris, 2007), kalite yönetimi ve çevre yönetimi ilişkisi (Pereira-Moliner vd.,

2012; Molina-Azorin vd., 2015), otel performansına etkisi (Tari vd., 2010), otellerin çevre performansı (Oreja-Rodríguez ve Armas-Cruz, 2012) çevre yönetim sisteminin otel yöneticileri açısından (Geerts, 2014) ve çalışanlar açısından (Chou, 2014; Chan vd., 2014) değerlendirilmesi gibi çalışmalar göze çarpmaktadır. Hsiao vd. (2014) ISO 14000 den faydalanarak otelcilik sektörü için standart bir çevre yönetimi sistemi oluşturmaya çalışmışlardır. Chan vd. (2014) üç yeşil tetikleyici olarak adlandırılan çevre bilinci, çevre bilgisi ve çevre kaygısının çalışanların çevre davranışları üzerindeki etkisini ve çalışanların çevre davranışlarının da çevre uygulamaları eğilimlerindeki etkisini araştırmışlar ve her iki tarafta da pozitif yönlü bir ilişki tespit etmişlerdir. Fraj, vd. (2014)'ne göre proaktif çevre stratejisinin ve inovasyonun örgütsel rekabeti desteklemektedir. Tari vd. (2010), kalite ve çevre uygulamalarına bağlılığı hem birlikte hem ayrı değerlendirip otel performansına etkilerini analiz etmişler, kalite ve çevre uygulamalarına bağlılığın otel performansını etkilediği sonucuna ulaşmışlardır. Tung, vd. (2014), çevre performansın ön koşulu olarak çevre yönetim süreçlerinin etkinliğinin, örgütsel faktörler (Üst yönetim desteği, eğitim, çalışanların katılımı, takım çalışması ve ödüllerin performansla ilişkisi) ile çevre performansı arasındaki ilişkide arabulucu bir rolde olduğunu vurgulamışlardır. Gil vd. (2001) çevre yönetimi uygulamalarının otellerin finansal performansı ile olumlu yönde ilişkisi olduğunu saptamışlardır.

Türkiye'de çevre bilincinin gelişmesi ve çevre korunmasına yönelik faaliyetlerin önem kazanmasıyla, sürdürülebilir turizm kapsamında, 1993 yılından itibaren talep eden ve aranılan niteliklere sahip konaklama işletmelerine, Kültür ve Turizm Bakanlığı tarafından Çevre Dostu Kuruluş Belgesi (Çam Simgesi) verilmeye başlanmıştır. 2008 yılından itibaren ise, çevreye duyarlı konaklama tesisleri için uygulanmakta olan sınıflandırma formu, güncelleştirilmiş ve geliştirilmiş olup "Turizm İşletmesi Belgeli Konaklama Tesislerine Çevreye Duyarlı Konaklama Tesisi Belgesi (Yeşil Yıldız Simgesi) verilmeye başlanmıştır. Bakanlıkça yayınlanan tebliğde, "enerji, su, çevreye zararlı maddelerin tüketiminin ve atık miktarının azaltılması, enerji verimliliğinin arttırılması, yenilenebilir enerji kaynaklarının kullanımının teşvik edilmesini, konaklama işletmelerinin yatırım aşamasından itibaren çevreye duyarlı olarak planlanmalarını ve gerçekleştirilmelerini, tesisin çevreye uyumunu, çevreyi güzelleştirici düzenleme ve etkinlikleri, ekolojik mimariyi, çevreye duyarlılık konusunda bilinçlendirmeyi, eğitim sağlanmasını ve ilgili kurum ve kuruluşlarla işbirliği" (Kültür ve Turizm Bakanlığı, 2008) konuları yer almaktadır. Bakanlığın bu uygulamayı yapmasındaki amacı; çevrenin korunmasına dair çevre bilincinin geliştirilmesi ve turistik konaklama işletmelerinde çevreye duyarlı yapılaşmanın ve işletmecilik özelliklerinin teşvik edilmesinin sağlanmasıdır. Bu çalışma da istanbulda bulunan Bakanlığın bu şartlarını sağlayan yeşil yıldız simgesini almaya hak kazanmış, çevreye duyarlı konaklama işletmeleri araştırılmıştır.

2.2. Konaklama İşletmelerinde Örgüt Kültürü ve Tipleri

Kültür, beklenen davranışlar, inançlar, değerler, dil gibi bir toplumun üyelerince paylaşılan hayatın nasıl yaşandığını toplamı olarak tanımlabilir (Herbig ve Dunpy, 1998). Nystrom (1990)'a göre; örgüt kültürü örgüte bağlı bireylerin tümünü kapsayan değerler, inançlar, normlar ve ilkeler olarak tanımlanır. Oden, (1997) ise örgüt kültürünü, örgüt üyelerini bir arada tutan ve yazılı olmayan en önemli normlar bütünü olarak belirtmiştir. Hofstede, kültür alanının en çok atıf yapılan yazarı olarak, örgüt kültürü kavramının şekillenmesinde

önemli bir rol üstlenmiştir. Örgüt kültürüyle ilgili çalışmalarıyla anılan Hofstede (2000) örgüt kültürünü 'bir örgütün çalışanlarını, diğer örgütlerden ayıran niteliklerin bütünü' olarak açıklayıp örgüt kültürünü müşterek varlık olarak tanımlamıştır. Örgüt kültürü; bir kimlik ve farklı özgün bir kabiliyet kaynağı olarak organizasyonu bir arada tutan bir bağdır. Bir kuşaktan diğer bir kuşağa paylaşılan ve öğrenilen bir davranış kalıbıdır (Masood, Dani, Burns ve Backhouse, 2006). Bir organizasyonun kültürü; organizasyonu farklı kılan değerli şeyin ne olduğunu, organizasyonda egemen olan liderlik stilini, dil ve sembolleri, prosedürleri, usulleri ve başarının tanımını yansıtır (Masood, Dani, Burns ve Backhouse, 2006). Ogbonna ve Whipp (1999), örgüt kültürünün örgütsel strateji ve insan kaynakları yönetimi arasında önemli bir rol oynadığına değinmişlerdir. Örgüt kültürü, işletmeler için önemli bir kaynak olduğu için insan kaynakları yönetimi ve işletme performansı arasında anahtar bir rol oynamaktadır (Lau ve Ngo 2004). Heskett ve Kotter (1992) yaptıkları çalışmada kültürün performansı arttırabileceğini savunmuşlardır."Rekabetçi değerler modeli" (competing values frame work) olarak adlandırılan yapıda, bir uçta iç odaklılık, diğer uçta dış odaklılığın olduğu bir eksenin bir tarafta esneklik ve dinamizmin, diğer tarafta durağanlık ve kontrolun yer aldığı diğer bir ekseni kesmesiyle ortaya çıkan dört tür örgüt kültür tipi bulunmaktadır (Pennington vd., 2003; Stoica vd., 2004; Bendixen ve Burger, 1998; Dastmalchian vd., 2000). Bu dört örgüt kültürü çeşidi ise klan kültürü, hiyerarşi kültürü, adhokrasi kültürü ve pazar kültürüdür. Hem bilimsel araştırmalarda hem de yönetim çalışmalarında Quinn ve Cameron'un rekabetçi değerler analizi modeli çok sık kullanılmaktadır. Bu sebepten dolayı bu çalışmada bu model tercih edilmiştir.

Klan kültürü takım çalışmasına, katılıma ve uzlaşıya önem veren, örgütte sadakat ve geleneklere bağlılığı sağlayan, insanların paylaşım içinde bulunduğu geniş bir aile gibidir. (Hooijberg ve Petrock 1993).Klan tipi bir kültürde, ortak bir amaca yönelen toplum ruhu çok güçlüdür ve bireylerin katkılarının uzun dönemde adil olarak değerlendirmesi, bireylerin doğal olarak ortak amaca hizmet etmekten mutluluk duymasını sağlamaktadır (Ouchi, 1987).

Adhokrasi kültürü dinamik, girişimci ve yaratıcı bir iş ortamı sunarak, çalışanları risk almaya teşvik eden, örgütün uzun vadede büyümesini ve yeni kaynaklar elde etmeye odaklanması gerektiğini savunan, örgütü bir arada tutabilmek için bağlılık ve yenilikçilik gibi kavramlardan faydalanan bir örgüt tipidir (Hooijberg ve Petrock, 1993). Elektronik ticaret yapan şirketler, pazarlama, elektronik ve kozmetik sektöründe çalışan örgütler, müşteri memnuniyeti oluşturmada hızlı hareket etmeleri gerektiğinde, bu kültür tipini yansıtırlar (Daft, 2004).

Pazar kültürü sonuç odaklı olmayı gerektiren örgütü bir arada tutmak için "kazanma" kavramından yola çıkan, uzun vadede rekabetçi faaliyetleri, ölçülebilir amaç ve hedeflere ulaşmayı öngören rekabetçi bir fiyatlandırma politikası ve pazar liderliğini önemseyen kültür tipidir. (Hooijberg ve Petrock,1993). Dastmalchian vd. (2000)'e göre örgütü bir arada tutan güç, kazanma vurgusudur.

Hiyerarşi kültürü; çalışanların yaptıklarının yönetilmesi konusunda prosedürlerden faydalanan saat gibi işleyen bir örgüt oluşturma çabasında olup, örgütü bir arada tutmak için resmi kural ve politikalardan faydalanmaktadır (Hooijberg ve Petrock, 1993). Deal ve Kennedy (1982)'e göre bu kültür çeşidini "süreç kültürü" olarak adlandırmakta ve

bankalar, sigorta şirketleri, büyük kamu örgütleri ve ilaç şirketleri gibi detaylı düzenlemeleri bulunan sektörler hiyerarşi kültürüne örnek olarak gösterilebilirler.

Literatür incelendiğinde örgüt kültürüyle ilgili çok sayıda çalışmaya rastlanmaktadır. Bu çalışmalar incelendiğinde, örgüt kültürü ve motivasyon (Panagiotis vd., 2014), örgüt kültürünün uluslararası teşebbüslerdeki etkisi (Low vd., 2015), örgüt kültürü ve sosyal davranış (Henrich, 2015) ve örgüt kültürü ve işletmelerin finansal performans (Yesil ve Kaya, 2013) arasındaki ilişkilerin araştırıldığı görülmektedir. Low vd., (2015)'nin bulgularına göre örgüt kültürünün uluslararası girişimlerde karar almayı etkilediğini ancak özellikle riskli kararlar alınması gerektiğinde baskın bir unsur olmadığını göstermiştir. Valmohammadi ve Roshanzamir (2015) örgüt kültürünün toplam kalite yönetimi (TKY) ve performansla ilişkisini inceleyen bir çalışma yapmışlardır. Buna göre örgüt kültürünün toplam kalite yönetiminin performans üzerinde pozitif yönlü doğrudan bir ilişkinin olduğu görülmüştür.

Literatürde konaklama işletmelerinde örgüt kültürü ve çevre yönetim sistemleri arasındaki ilişkiyi inceleyen bir çalışmaya rastlanmamıştır bununla birlikte literatürde örgüt kültürüyle örgütsel değişkenleri inceleyen bir çok çalışmanın olduğu görülmektedir. Konaklama işletmesinde örgüt kültürüyle ilgili yapılan çalışmalara bakıldığında, örgüt kültürüyle personel devir hızı (Deery ve Shaw, 1999), örgüt kültürü ile çalışan memnuniyeti ve iş tatmini (Tepeci ve Barlett, 2002; Rızaoğlu ve Ayyıldız, 2008; Eşitti, 2014; Akıncı, 2002). arasındaki ilişkilerin incelendiği görülmektedir. Hallowell ve diğ. (1996) çalışan memnuniyeti ile örgüt kültürü arasındaki olumlu ilişkinin rekabet üstünlüğü sağlamada önemli olduğunu belirtmişlerdir. Blomme ve diğ. (2013) yüksek eğitimli işgörenler arasında negatif ev-iş etkileşiminde örgüt kültürünün etkisini inceleyen bir araştırma yapmışlardır. Araştırmanın bulgularına göre klan kültürü deneyiminin olmadığı konaklama işletmelerinde mesai yapmak, negatif ev-iş etkileşimine neden olmaktadır. Kemp ve Dwyer (2001) Sydney'de faaliyet gösteren Regent Oteli'nde yapmış oldukları çalışmada kültürel unsurların, örgütteki davranışı nasıl meydana getirdiğini ve bu bileşenlerin örgüt üstündeki etkisini inceleyen bir araştırma yapmışlardır. Araştırmanın bulgularına göre, örgütün performansını artırmak için stratejik analiz özellikle başvurulması gereken bir yöntem olarak belirlenmiştir. Tajeddini ve Trueman (2012) kültürel unsurların yenilikçilik ve müşteri odaklı değer sistemlerinin otel performansına etkilerini inceleyen bir çalışma yapmışlardır. Bu çalışmaya göre, kültürel bileşenlerin müşteri odaklılıkla, yenilikçilik ve işletme performansıyla olumlu bir ilişkisi olduğu belirlenmiştir. Baytok (2006)'un örgüt kültürü ve liderlik arasındaki ilişkiyi incelediği çalışmada, örgüt kültürünün müşteri odaklılık, yüksek hizmet standardı, takım halinde çalışma ve işgöreni güçlendirme özelliklerini taşıdığını belirlemişlerdir. Çavuş ve Gürdoğan (2008) örgüt kültürüyle örgütsel bağlılık arasındaki ilişkiyi incelemişlerdir. Buna göre örgüt kültürünün örgütsel bağlılığın duygusal ve devam bağlılığı ile arasında olumlu yönde anlamlı bir ilişkinin olduğunu ortaya koymuşlardır. Kocaman ve diğ. (2012) örgüt kültürünün örgütsel çatışma üzerine etkilerini inceleyen bir çalışma yapmışlardır. Araştırma sonucuna göre kişisel, grup içi ve gruplar arası çatışmaların tümünde örgüt kültürünün önemli oranda etkiye sahip olduğu gözlemlenmiştir. Özkan ve Gümüş (2013) çalışanların sahip oldukları iş değerleriyle örgüt kültürü arasında ilişkiyi incelemişlerdir. Yaptıkları çalışmada iş değerleri ile örgüt kültürü arasındaki güçlü bağın işletmeye olan sadakati arttırdığı sonucuna ulaşmışlardır. Öz, (2013) İstanbul'da 4 ve 5 yıldızlı otellerde personel güçlendirme düzeyine etki eden örgüt kültürü

tiplerinin belirlenmesi amacına yönelik olarak yaptığı çalışmada, örgüt kültür tipleriyle personel güçlendirme düzeyi arasında anlamlı farklılıklar bulmuştur (Öz, 2013). Görüldüğü gibi literatürde otel işletmelerinde örgüt tipleriyle personel devir hızı,iş tatmini, motivasyon, ev iş etkileşimi, liderlik, iş değerleri, çatışma, örgütsel bağlılık, takım çalışması,müşteri odaklılık, performans ve güçlendirme gibi değişkenlerle ilişkisi araştırılmıştır. Literatürde çevre yönetim sistemleri algısı ve örgüt kültürü tipleri arasındaki ilişkinin incelendiği bir çalışmaya rastlanmamıştır.

3. ARAŞTIRMA VE YÖNTEM

3.1. Araştırmanın Amacı

Bu çalışmada, İstanbul'da faaliyet gösteren yeşil yıldıza sahip dört ve beş yıldızlı otellerde çalışanların örgüt kültürü tipleri (adhokrasi, klan, bürokrasi, pazar) ile çevre yönetimi algıları arasındaki ilişki incelenecektir. Ayrıca yeşil yıldızlı otellerin örgüt kültürü tiplerinin ne olduğu ve yıldız sayısına ve işletme yapısına gore örgüt kültürü tipleri arasında ilişki olup olmadığı tespit edilecektir.

3.2. Araştırmanın Amacı ve Yöntemi

Çalışmanın evrenini, İstanbul'daki çevreye duyarlı yeşil yıldızlı otel işletmelerindeki işgörenler oluşturmaktadır. Otel işletmelerinin örgüt kültür tipleri ile ilgili alan araştırması yapılmış ve veriler anket tekniğinden faydalanılarak toplanmıştır. Örneklem seçiminde kolayda örneklem yöntemi kullanılmıştır. Anketlerin uygulanmasında ise bırak-topla yöntemi kullanılmıştır. İstanbul ilinde bulunan çevreye duyarlı yeşil yıldızlı otellerin sayısı kültür ve turizm bakanlığından 31.01.2015 tarihinde alınan bilgilere göre belirlenmiştir. Veriler 6 Şubat - 2 Mart 2015 tarihleri arasında toplanmıştır. Bu kapsamda 22 yeşil yıldızlı otel işletmesine gidilerek toplam 550 anket dağıtılmış, ancak 221 anketten geri dönüş sağlanabilmiştir. 221 anketin içerisinden 9 tanesi analiz için uygun bulunmadığından değerlendirmeye alınmamıştır. Bu nedenle ilk aşama analizlerde 212 anketten elde edilen veriler kullanılmıştır. İlk bölüm demografik sorulardan oluşmaktadır. İkinci bölümde ise araştırmanın amacı doğrultusunda, konaklama işletmelerinde çalışan iş görenlerin örgütsel kültür tiplerini belirlemek için ölçeğin güncel olması sebebiyle Cameron ve Quinn (1999)'den alınan "Kurumsal Değerler Ölçeği" kullanılmıştır. Kurumsal değerler ölçeği dört örgüt kültürü tipini ölçen toplam 20 sorudan oluşmaktadır. Kültür tiplerini açıklayacak olan sorular beşerli olarak sırasıyla adhokrasi, klan, bürokrasi ve pazar kültürü tiplerini ölçmeyi amaçlamaktadır. Anketin üçüncü bölümünde ise çalışanların çevre yönetimi algılarını tespit etmeye yönelik çevre yönetimi uygulamaları yazın taraması yoluyla ve Türkiye Kültür ve Turizm Bakanlığı'nın yeşil yıldız simgesi için başvuruda bulunan otellerden aradığı kriterler dikkate alınarak çevre yönetim uygulamalarını içeren toplam 12 soruluk anket hazırlanmış ve çalışanlara uygulanmıştır.

3.3. Analiz ve Bulgular

Katılımcıların yüzdesel dağılımları şu şekildedir; cinsiyete göre işgörenlerin %54.2'si (n=115) baylardan, %45.8'si (n=97) ise bayanlardan oluşmaktadır. Yaşları bakımından çoğunlukla %46,7 ile (n=99) 31-45 yaş aralığında oldukları görülmektedir. Eğitim düzeyleri açısından ise çoğunluğunun %28,8'sinin (n=61) lise düzeyinde ve %23,6'sinin (n=50)

önlisans düzeyinde, %23,1'inin (n=49) lisans düzeyinde eğitime sahip oldukları tespit edilmiştir. Katılımcıların sektörde çalışma sürelerine bakıldığında ise çoğunluğunun %43,4'ünün (n=92) 1-5 yıl arasında, sektör deneyimine sahip olduğu görülmektedir.

Tablo 1: Araştırmaya Katılan İşgörenlere ve Çalıştıkları İşletmelere İlişkin Bilgiler

Katılımcılara İlişkin Bilgiler	Sayı (n)	Yüzde (%)
Cinsiyet		
Bay	115	54,2
Bayan	97	45,8
Toplam	212	100
Yaş		
18-30	82	38,7
31-45	99	46,7
46-60	31	14,6
Sektörde Çalışma Süresi		
1-5	92	43,4
6-10	53	25,0
11-15	38	17,9
16 ve üzeri	29	13,7
Otelin Sınıfı		
4 yıldız	81	38,2
5 yıldız	131	61,8
Otelin Yapısı		
Bağımsız Otel	66	31,1
Uluslararası Zincir Otel	146	68,9
İşletmede Çalışma Süresi		
1-5	137	64,6
6-10	43	20,3
11-15	22	10,4
16 ve üzeri	10	4,7
Eğitim Durumu		
İlköğretim	44	20,8
Lise	61	28,8
Ön lisans	50	23,6
Lisans	49	23,1
Lisansüstü	8	3,8
Görev Aldığınız Departman		
Önbüro	33	15,6
F&B	30	14,2
Mutfak	31	14,6
Muhasebe	15	7,1
İnsan Kaynakları	6	2,8
Satın Alma	11	5,2
Kat Hizmetleri	63	29,7
Diğer	23	10,8

İşgörenlerin çalıştıkları departmanlar incelendiğinde çoğunluğunun %15,6 (n=33) önbüro, %14,6'sının (n=31) mutfak departmanında %14,2'sinin (n=30) F&B departmanında, görev aldığı görülmektedir. 22 yeşil yıldızlı otelin sınıfı %27 oranında (n=4) dört yıldız, %63 oranında (n=7) beş yıldız şeklinde dağılım gösterdiği belirlenmiştir. İşletme yapısına bakıldığında %45,5 (n=5) bağımsız otel, %54,5 (n=6) ise uluslararası zincir otel olduğu görülmektedir.

Çalışmada kullanılan ölçeklerin güvenilirliğin tespitinde Cronbach Alpha katsayıları incelenmiştir. Örgüt kültür tipleri ölçeğinde güvenilirlik katsayısı %92 oranında yüksek güvenilirliğe sahiptir. Çevre yönetimi uygulamaları ölçeğinin güvenilirliği ise %90 oranında yüksek güvenilirliğe sahiptir.

Tablo 2: Yeşil Yıldızlı Otel İşletmelerinin Örgüt Kültür Tipleri Ortalamalarının Sonuçları

Kültür Tipleri	Ortalama	Standart Sapma
Adhokrasi Kültürü	3.85	,837
Klan Kültürü	3.74	,905
Bürokrasi Kültürü	3.78	,690
Pazar Kültürü	4.07	,698
Çevre Yönetimi Faktörü	3.92	,823

Tablo 2 incelendiğinde yeşil yıldızlı otel işletmelerinde en yüksek ortalamaya sahip kültür tipinin pazar kültürü (x=4.07) olduğu görülmektedir. Onu sırasıyla adhokrasi (x=3.85), bürokrasi (x=3.78) ve klan kültürü (3.74) takip etmektedir.

Tablo 3: Yeşil Yıldızlı Otellerin İşletme Yapılarına Göre Örgüt Kültür Tipleri

Kültür Tipi	Çalıştığınız İşletmenin Yapısı	Ortalama	Standart Sapma	Sig
adhokrasi	uluslararası zincir hotel	3,7247	,80039	,001
Klan	uluslararası zincir hotel	3,5123	,91274	,000
bürokrasi	uluslararası zincir hotel	3,6630	,64530	,000
Pazar	uluslararası zincir hotel	3,9644	,70337	,001
Kültür Tipi	**Çalıştığınız İşletmenin Yapısı**			
adhokrasi	Bağımsız otel	4,1364	,85082	,001
Klan	Bağımsız otel	4,2455	,65332	,000
bürokrasi	Bağımsız otel	4,0424	,61019	,000
Pazar	Bağımsız otel	4,3091	,62873	,001

Tablo 3'e göre çalışılan işletmenin yapısına göre uluslararası zincir otellerin örgüt tipleri tek tek incelendiğinde, en yüksek ortalamaya sahip örgüt tipinin pazar kültürü tipi (x=3.96) olduğu görülmektedir. Pazar kültürünü sırasıyla; adhokrasi kültürü (x=3.72), bürokrasi kültürü (x=3.66) ve klan kültürü (x=3.51) takip etmektedir.

Çalışılan işletmenin yapısına göre bağımsız otellerin örgüt tipleri tek tek incelendiğinde, en yüksek ortalamaya sahip örgüt tipinin pazar kültürü tipi (x=4.30) olduğu görülmüştür. Pazar kültürünü sırasıyla; klan kültürü (x=4.24), adhokrasi kültürü (x=4.13) ve bürokrasi kültürü (x=4.04) izlemektedir.

Tablo 4: Yeşil Yıldızlı Otellerin İşletme Sınıfına Göre

Kültür Tipi	İşletmenizin Sınıfı	Ortalama	Standart Sapma	sig
adhokrasi	4 yıldız	4,1210	,82017	,000
Klan	4 yıldız	4,1728	,63068	,000
bürokrasi	4 yıldız	4,0296	,56313	,000
Pazar	4 yıldız	4,2815	,61137	,001
Kültür Tipi	**İşletmenizin Sınıfı**			
adhokrasi	5 yıldız	3,6870	,80579	,000
Klan	5 yıldız	3,4733	,94729	,000
bürokrasi	5 yıldız	3,6275	,66599	,000
Pazar	5 yıldız	3,9420	,71875	,001

Tablo 4'de 4 yıldızlı otel işletmelerinin örgüt tiplerine bakıldığında pazar kültürünün (x=4.28) en yüksek ortalamaya sahip olduğu görülmektedir. Sırasıyla klan kültürü (x=4.17), adhokrasi kültürü (x=4.12), bürokrasi kültürü (x=4.02) takip etmektedir.

5 yıldızlı otel işletmelerinin örgüt tiplerine bakıldığında pazar kültürünün (x=3.94) en yüksek ortalamaya sahip olduğu görülmektedir. Sırasıyla adhokrasi kültürü (x=3.68), bürokrasi kültürü (x=3.62) ve klan kültürü (x=3.47) takip etmektedir.

Tablo 3 ve 4'e bakıldığında işletme sınıfı ve yapısına göre örgüt kültürü tiplerinin değişiklik göstermediği, aynı örgüt kültür tiplerinin yakın ortalamalara sahip olduğu, en baskın örgüt kültürünün ise pazar kültürü olduğu görülmüştür.

Tablo 5: Örgüt Kültürü Tipleri ve Çevre Yönetimi Uygulamalarına İlişkin Korelasyon Analizi Sonucu

	Boyutlar	*Ort.*	*St.*	*1*	*2*	*3*	*4*	*5*
Örgüt Kültürü Tipleri	1.Adhokrasi Kültürü	3.85	,837	1				
	2. Klan Kültürü	3.74	,905	,722**	1			
	3. Bürokrasi Kültürü	3.67	,690	,779**	,697**	1		
	4. Pazar Kültürü	4.07	,698	,688**	,765**	,756**	1	
5. Çevre Yönetimi Uygulamaları		**3.92**	**,823**	**,664****	**,680****	**,533****	**,615****	**1**

Tablo 5 incelendiğinde, İstanbul'da faaliyet gösteren yeşil yıldıza sahip dört ve beş yıldızlı otel işletmelerinde çalışanların örgüt kültürü tipi (adhokrasi, klan, bürokrasi, pazar) ile

çevre yönetimi algılamaları arasında yüksek, pozitif yönlü ve anlamlı bir ilişki olduğu görülmektedir. Örgüt kültürü tipleri tek tek incelendiğinde, çevre yönetimi uygulamaları ile arasında en yüksek ve pozitif ilişkinin olduğu örgüt kültürü tipi klan kültürüdür (r = 0,680; p<0,01). Buna göre, klan kültür tipi yüksek olan otel işletmelerinde çalışanların çevre yönetimi algılamalarının olumlu ve orta düzeyde olduğu tespit edilmiştir.

Klan kültürünü sırası ile adhokrasi kültürü (r = 0,664; p<0,01), pazar kültürü (r = 0,615; p<0,01) ve son olarak bürokrasi kültürü (r = 0,533; p<0,01) takip etmektedir.

Genel olarak çevre yönetimi uygulamalarının değerine bakıldığında İstanbul'da faaliyet gösteren yeşil yıldızlı otel işletmelerinde çalışanların 3,92±0,823'lik bir ortalamaya sahip oldukları görülmektedir. Bu durum ise, işgörenlerin çevre yönetimi algılarının ortalamanın üzerinde olduğunu göstermektedir.

Tablo 6: Örgüt Kültürü Tiplerinin Çevre Yönetimi Uygulamaları Üzerindeki Etkisinin Regresyon Analizi Sonucu

Bağımsız Değişkenler	B	SE	β	t	Sig.
Constant	2.24	0.15		14.131	0.00
Bu oteldeki yöneticiler genelde bilge, yol gösterici, kolaylaştırıcı ve anne baba gibidir(klan kültürü)	0.30	0.03	0.56	8.64	0.00**
Otelimiz girişimci ve dinamik olduğu için, çalışanlar iş bitirici ve risk almaya isteklidir (adhokrasi kültürü)	0.19	0.03	0.33	6.08	0.00**
Oteldeki yönetim biçimi çalışanın kendini güvencede hissetmesini, risk ve belirsizlikleri ortadan kaldırıcı, eşit, uyumlu ve tutarlı ilişkileri destekler(bürokrasi kültürü)	0.11	0.03	0.15	3.59	0.00**
Otel takım çalışmasını, kararlarda fikir birliğini ve çalışanın yönetime katılımını destekler(klan kültürü)	-0.11	0.04	-0.13	-2.52	0.01**

Not: B, coefficient; SE, standard error; B, standardized coefficient; t, t-value; Sig., significance. Bağımlı Değişken: çevre yönetimi uygulamaları; R= 0.838; R^2 0.70; adjusted R^2 = 0.69; standard error = 0.454. Anlamsız maddeler tablodan çıkartılmıştır. *Significant at p < 0.05 level; **Significant at p<0.01 level.

Tablo 6'da regresyon analizi sonucuna göre çevre yönetimi uygulamaları üzerinde en etkili değişken pozitif yönlü bir ilişkisi olan(β=0.56) 'yöneticilerin yol gösterici, anne baba yaklaşımı'dır. İlk değişkeni sırasıyla pozitif yönlü ilişkisi olan: 'çalışanlar iş bitiricidir' (β=0.33), 'yönetim biçimi güvende hissettirir' (β=0.15) değişkenleri takip etmektedir. 'otel takım çalışmasını destekler'(β=-0.13)değişkeni ile ise ters yönlü bir ilişkisi bulunmaktadır. Bu sonuca göre çevre yönetimi uygulamalarında en etkili (açıklayıcı) kültür tipi klan kültürü olduğu görülmektedir.

5. SONUÇ

Konaklama işletmeleri, son yıllarda çevreyle ilgili sorunları dikkate almadan sektörde rekabet edemeyeceklerini ve varlıklarını sürdüremeyeceklerini fark ederek, hem iş stratejilerine hem de uzun vadeli işletme planlarına çevre unsurunu katmaya başlamışlardır. Turizm endüstrisinde çevresel duyarlılık günümüzde rekabet üstünlüğü

sağladığından, konaklama işletmelerinin faaliyet gösterdiği çevrede yerel halkın gelişimini mümkün kılmak ve çevrenin sürdürülebilirliğine katkıda bulunmak gibi önemli işlevleri ortaya çıkmıştır.

İşletmeler açısından rekabet üstünlüğü sağlayan bir diğer konu ise örgüt kültürüdür. Konaklama işletmelerinde çalışan işgörenlerin davranışlarına yön veren örgüt kültürü, işletmenin başarısını da doğrudan etkilemektedir. Konaklama işletmelerinde güçlü bir örgüt kültürü yaratabilmek için örgüt kültürünün çalışanlar tarafından benimsenmesi gerekir. işgörenler tarafından benimsenmeyen örgüt yapılarının zaman içerisinde başarısız olduğu bilinen bir gerçektir.

Araştırmada İstanbul'da faaliyet gösteren yeşil yıldıza sahip dört ve beş yıldızlı otel işletmelerinin öncelikle çalışanların algıladıkları örgüt tipleri belirlenmiştir. Yapılan analiz sonucunda yeşil yıldızlı otel işletmelerinin kendilerine en yakın algıladığı örgüt kültürü tipi pazar kültürü olduğu saptanmıştır. Elde edilen bulgulara göre yeşil yıldızlı otel işletmelerinin örgüt kültür tiplerinin işletme yapısı ve sınıfına göre değişiklik göstermediği belirlenmiştir. Bu durum yeşil yıldızlı otellerin sınıf ve işletme yapısı açısından örgüt tiplerinin farklılaşmadığını göstermektedir. Pazar kültürü kazanma duygusunu ve rekabetçiliği öne çıkarırken, biçimselleşme ve durağanlık özelliklerine sahip mekanik örgütleri temsil etmektedir (Dastmalchian vd., 2000).Buna göre yeşil yıldızlı otel işletmelerinin pazar liderliğini önemseyen rekabete dayalı yönetim biçimi benimsediği söylenebilir. Bu sonuç genel itibarıyla yeşil yıldızlı otellerin her ne kadar çevreye duyarlı uygulamalar gösterseler bile asıl amaçlarının kazanma duygusu ve rekabetçilik olduğu ortaya çıkmıştır. Bununla birlikte yeşil yıldızlı otellerde çalışanların çevre yönetimi algıları olumlu olan çalışanların örgüt kültürü algılarının farklılık gösterdiği saptanmıştır. Çevre yönetimi algıları yüksek olan çalışanların klan kültürüne sahip oldukları belirlenmiştir.Klan kültürü iç odaklı, esnek süreçlerin bulunduğu, ekip çalışmasına önem verilen, örgüt çalışanlarına ilgi gösterilen ve örgütün geniş bir aile olarak görüldüğü ortamları ifade etmektedir(Hooijberg ve Petrock 1993). Bu durum çevre yönetimi uygulamalarını içselleştiren çalışanların daha çok katılımcı, iç odaklı, çalışma arkadaşlarına ilgi gösteren, ekip çalışmasına yatkın, esnek süreçleri destekleyen örgüt tipine yakın olduğunu göstermektedir. Öz (2014)' ün, İstanbul'daki 4 ve 5 yıldızlı otel işletmeleri çalışanlarına yönelik yaptığı çalışmada, kendilerine en yakın algıladıkları örgüt kültürü tipinin pazar kültürü olduğu ortaya çıkmıştır. Bu çalışma ile karşılaştırıldığında çevre yönetimi uygulamaları algısının olumlu olduğu çalışanların örgüt kültür tipinin pazar kültüründen klan kültürüne farklılaştığı belirlenmiştir. Bu da çevre yönetimi uygulamalarının geliştikçe örgüt kültürünü değiştirebileceğini göstermektedir.

Sonuç olarak, bu çalışma çalışanların çevre yönetimi algılarıyla örgüt kültürü tipleri arasındaki ilişkiyi ortaya koyması açısından ve çalışanların çevre yönetimi uygulamaları algılarının geliştikçe örgüt kültürünün değişebileceğini göstermesi açısından literatüre katkı sağlamaktadır. Literatürde yeşil yıldızlı otellerin bazı yazarlara göre pazarlama amacıyla müşterilere karşı imaj yaratmak için kullanıldığına yönelik iddialar bulunmaktadır. Bu çalışmada bu iddialarla ilgili çalışanların örgüt kültürü ve çevre yönetimi algılamaları arasındaki ilişkiyi göstererek bu iddialara kısmen de olsa katkıda bulunduğu söylenebilir. Otel işletmeleri yöneticileri çevreye yönelik uygulamaların başarılı sonuçlar vermesini sağlamaları için örgüt çalışanlarına bu uygulamaları benimsetmesi ve örgüt kültürünün bir

parçası haline getirmesi gerekmektedir. Bunun için de çevre yönetim sistemlerini başarılı bir şekilde uygulayabilecek örgüt tipinin seçilmesi önem taşımaktadır. Bundan sonra yapılacak araştırmalarda konunun daha geniş kapsamda ele alınması ve çevre yönetimi sistemlerinin başarılı bir şekilde uygulanabileceği örgüt tipinin belirlenmesi örgüt kültürüyle çevre yönetimi sistemlerinin daha iyi anlaşılması açısından faydalı olacaktır.

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A RESEARCH ABOUT THE RELATIONSHIP OF PSYCHOLOGICAL SAFETY AND ORGANIZATIONAL POLITICS PERCEPTION WITH COMPULSORY CITIZENSHIP BEHAVIOR AND THE PRESSURES BEHIND COMPULSORY CITIZENSHIP BEHAVIOR

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Keywords

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ABSTRACT

The main purpose of this study is to examine the relationship of Psychological Safety (PS) and Organizational Politics Perception (OPP) with Compulsory Citizenship Behavior (CCB). In order to investigate whether CCB exists or not in Turkish institutions, 27 item-OCB scale is considered with its dimensions and asked with an introduction that whether the respondents have experienced any pressure for displaying these behaviors. Moreover, the potential pressures such as respondents' oneself, family, coworkers, organizational climate and supervisor were asked. Participants are composed of 170 employees working in Turkish finance institutions. CCB scale is divided into three factors which are labeled as Compulsory Harmony, Compulsory Devotion and Compulsory Conscientiousness. According to the results, PS does not make significant contribution on CCB but OPP makes a significant contribution. Results showed that CCB are not high among finance employees. However, employees mostly put pressure on themselves and secondly they feel the pressure of their family responsibilities for displaying CCB. Besides, self and family pressure both do not make significant contribution on CCB and its dimensions but manager, successful coworker and organizational climate pressures make significant contribution on CCB.

1. INTRODUCTION

COMPULSORY CITIZENSHIP BEHAVIOR (CCB) is a recent phenomenon which takes organizational scholars attention. CCB assumes that organizational citizenship behavior (OCB) is exhibited by immediate supervisor, management or coworker pressure rather than voluntarism. However, OCB is assumed that it is exhibited with voluntarism rather than pressure. Most writings about OCB emphasized its positive side till today and many empirical studies state that OCB play a key role in increasing the effectiveness, efficiency and positive climate in the workplace but there are also other researches that give clues about the existence of pressure and coercive managerial implementations in the workplace and these results have risen the criticism about the voluntarism nature of OCB. Then, this question has risen: What kind of pressure is that?

Companies expect their employees to engage in more OCBs. Therefore, these extra-role behaviors become a norm of the workplace that creates coercion on workers to perform OCBs and they may feel themselves pressured directly or indirectly. These pressures may be "internal" which can be derived from the workers' own traits and preferences or "external" which may be stemmed from organizational factors such as immediate supervisor, coworkers, organizational culture, etc.

CCB concept is virtually a new phenomenon and literature about this concept is limited. CCB was analyzed on teachers in Israel schools (Gadot, 2007), on subordinates and supervisors in a large diversified company in southern China (Zhao et al., 2014) and on employee-coworker pairs in a large service company in China (Zhao et al., 2013). Also, the similar concept: Citizenship Pressure, which was developed by Bolino et al. (2010), was investigated among full-time employees enrolled in a Professional Master's of Business Administration (PMBA) program at two universities located in the southwestern United States (Bolino et al., 2010). However, CCB has not been investigated in Turkish culture yet. Therefore, this research was implemented on Turkish companies in order to seek that if there is any internal or external pressure on employees to exhibit CCB.

2.THEORETICAL FRAME AND HYPOTHESES

2.1.Compulsory Citizenship Behaviors

According to Organ, Podsakoff, and MacKenzie (2006), OCB is a behavior "that is discretionary, not directly or explicitly recognized by the formal reward system, and in aggregate promotes the efficient and effective functioning of the organization". Generally speaking, OCBs involve actions such as being helpful and cooperative, tolerating inconveniences at work, taking on additional responsibilities, and keeping up with company affairs (Organ et al., 2006). Besides, it is asserted that OCB increases the organizations' effectiveness and competitiveness (Bolino, Turnley & Bloodgood, 2002; Organ et al., 2006).

OCB is investigated from the positive side such as its positive image, its constructive implications, its contribution to individuals and organizations at multiple levels, and its general reinforcement of performance in the workplace till today but in recent years, the assumptions behind the concept are started to question and there are growing studies (Bolino, Klotz, Turnley & Harvey, 2013; Bolino, Turnley, Gilstrap & Suazo, 2010; Bolino, Turnley & Niehoff, 2004; Gadot, 2006; Salamon & Deutsch, 2006; Zhao, Peng, Han, Sheard & Hudson, 2013; Zhao, Peng & Chen, 2014) which have examined OCB from a different perspective focuses on internal or external pressures on employees for exhibiting those behaviors.

Gadot (2006) has proposed that OCB can arise from other motives, some of them less voluntary or less self-initiated. Among these motivations are the abusive and exploitative behavior of immediate supervisors and the pressure by management or peers to become involved in activities in which the employee would otherwise not involve himself (Tepper, 2000). For example, a manager may require that employees stay late to put in extra work on a project, or intrude on a worker's vacation to have him or her put the final touches on a presentation (Bolino et al., 2013). Thus, while the conventional approach has defined OCB on the assumption that all extra-role behaviors and OCBs are rooted in employees'

"good will," rarely has anyone taken a different perspective, suggesting compulsory antecedents to extra-role or citizenship behaviors in and around the workplace (Gadot, 2006). Gadot (2006) stated that if an external pressure is applied to perform OCB, then OCB (altruism, conscientiousness, sportsmanship, courtesy, civic virtue) lose its voluntary meaning.

Modern organizations are trying to survive in a competitive environment and their main target is to maximize their profits. Thus, in this competitive environment citizenship behavior is one of the means of being successful, thus managers expect and encourage employees to perform OCB. However, this encouragement can turn into a source of pressure if it is excessively implemented on employees. As Gadot (2006) states that abusive and exploitative activities may include exerting strong pressure on individuals to engage in unrecompensed extra-role work activities beyond their formal job definitions and creating a social atmosphere in which working extra hours beyond the formal work day with no formal compensation becomes the accepted norm. Employees may also be made to feel that unless they are willing to undertake these activities, their social position or even their formal standing in the organization, in terms of tenure, will be jeopardized.

Another important issue is that, there is not a clear boundary between extra-role and in-role behaviors. Although Organ (1988) conceived of OCB as extra-role activity, subsequent studies questioned its discretionary nature. In an attempt to increase competitiveness and the performance of the work unit, some managers and peers may try to narrow the gap between formal and informal work definitions (Gadot, 2006). Salancik and Pfeffer (1978) suggest that jobs are socially constructed rather than objectively defined. Thus, the distinction between in-role and extra-role behaviors cannot properly defined and as a consequence they are open to interpretations (Gadot, 2006).

When we examine the conceptualization of CCB, we can state that CCB concerns with external pressures like abusive supervision, market-based pressure, peer pressure, social and managerial pressure, etc. Moreover, prior work suggests that employees may engage in OCBs because they are worried about losing their job because of poor economic conditions, layoffs, or other uncertainties, and that engaging in citizenship behaviors may provide a way for workers to stand out from their peers. For instance, Salamon and Deutsch (2006) argued that employees engage in citizenship behaviors for instrumental reasons in order to demonstrate that they are exceptional employees worth retaining (Bolino et al., 2013). However, another similar concept which is called citizenship pressure also covers internal pressures besides external. It is defined as a specific job demand in which an employee feels pressured to perform OCBs. Conceptualizing citizenship pressure in this way suggests that feelings of pressure could stem from either internal (e.g., dispositional) or external (e.g., group norms, role perceptions, desire for advancement) forces (Bolino et al., 2010).

Then, these important questions have risen: Are we engaging in OCB with pressure or do we prefer to perform them with our own decisions? If there is any pressure, is it stemmed from internal or external factors?

In this study, we mainly focus on two perspectives. At first, we analyzed antecedents of CCB and select psychological safety and organizational politics perceptions as antecedents

to examine. As a second, we obtain the internal and external pressures behind CCB and the impacts of these probable pressures on employees are specified.

2.2. Psychological Safety as an Antecedent of Compulsory Citizenship Behaviors

Psychological safety is defined by Kahn (1990) as 'feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career. More specifically, the concept of Psychological Safety is rooted in interpersonal interactions where individuals who perceive that they are not at risk interpersonally will be more willing to try new and different ways of getting work done hence increasing individual work performance (Ning & Jin, 2009).

Psychological Safety has many favorable outcomes such as greater job engagement (Kahn 1990), improved learning and performance (Carmeli et al., 2009), increased vitality and involvement in creative work endeavors (Karik & Carmeli, 2009), and reduced escalation of commitment to unpromising decisions (O'Neill 2009) at the individual-level.

As Dollard and Bakker (2010) asserted that a lack of Psychological Safety climate in an organization could lead to poorly designed jobs and chronic job demands. For example, high levels of work pressure may prevail because of a lack of policies, practices, and procedures aimed at maintaining work demands at manageable levels. An example could be a lack of procedures to report work overload and fatigue. A lack of Psychological Safety climate could also lead to increased pressure to hide emotions rather than express them.

In a less psychologically safe working environment, employees are less willing to examine the generally accepted ways of getting work done by suggesting new ways and eventually it negatively affects individual work performance which also covers extra-role activities (Li & Yan, 2009). We can infer that in low levels of Psychological Safety, the discretionary willingness nature of exhibiting OCB deteriorates and employees just "seem" to display extra-role activities because of refusing to face some undesirable outcomes such as losing job, retaliation from the supervisor, being compared with other co-workers who have OCBs and being assessed as inadequate by the supervisor if they do not display OCB etc. Thus, the discretionary nature of OCB deteriorates because of a social, environmental or managerial pressure on it. Besides, employees generally cannot resist or say "no" if there are coercive job demands because they think that their resistance may harm their social or formal position in the organization and also they feel that they may face with retaliation. However, in a psychologically safe working environment, employees can easily express themselves, opinions, thoughts, suggestions, etc. and therefore we expect that it has a negative effect on CCBs. Thus, we assert that:

H1: Psychological safety contributes negatively to compulsory citizenship behavior.

2.3. Organizational Politics Perception as an Antecedent of Compulsory Citizenship Behaviors

There are two widely used definitions of political behavior (Cropanzano et al., 1997). One view sees politics as an influence process that is exercised within work settings. In this view, politics includes a very general set of social behavior. However, a more common view defines politics more narrowly. In the more specific definition, the term politics is

limited to behavior that is strategically designed to maximize short term or long term self interests (Ferris, Russ & Fandt, 1989).

Since politics is an epidemic phenomenon in organizations, the impact of organizational politics on OCB has captured the interest of organizational scholars for quite some time (e.g., Cropanzano, Howes, Grandey, & Toth, 1997; Gadot, 2000). In highly political environments, employees think that their performance will not be recognized properly and it is believed that rewards are generally given by considering group membership, power, nepotism, and retaliation motives rather than objective factors (Rusbult et al. 1990).

From a social exchange theory perspective, political working environments are associated with ambiguity and uncertainty that results in psychological strain and lower morale which all of them deteriorates the altruistic and voluntary nature of OCB (Chang, Rosen, & Levy, 2009). If employees perceive an imbalance in the employee-organization exchange, they start to decrease effort from their job, firstly from their extra-role activities by thinking that the decrease in extra-role activities are less likely to be recognized and punished by supervisors (Rosen et al.2009a, b). However, the above perspective cannot fully explain the relationship between organizational politics and OCB. In the 1990s, scholars asserted impression management theory to explain the occurrence of OCB. These all propose that citizenship behaviors may stem from impression enhancing and self-serving motives (e.g., Bolino, 1999; Eastman, 1994). Previous research has found employees who exhibit higher levels of OCB receive higher performance evaluations and more rewards than those who exhibit lower levels of OCB (Podsakoff, Whiting, Podsakoff, & Blume, 2009). If OCB accrues individual benefits, employees may engage in such behaviors based on self-serving purposes rather than the motives of altruism, reciprocity, and concern for the organization (Rioux & Penner, 2001). Individuals are more likely to engage in impression management and feel self-serving motives in highly political environments (Bolino, 1999). Therefore, organizational politics may encourage individual employees to use citizenship behaviors as a means to shape their public image and pursue personal goals. Hence, it can be deduced that employees are not motivated to perform OCB due to negative feelings towards colleagues or the organization if they perceive the workplace as political (Hsiung et al., 2012). However, they feel obliged to perform OCBs as a tool to survive in the workplace because as Bolino et al. (2010) mentioned that managers are encouraging OCB by means of organizational norms and culture, employee performance evaluation, and stories that highlight the expected beyond-duty behavior (OCB). While there can be a direct pressure on employees for engaging in OCB such as a job demand, there can be also indirect pressures such as social and organizational so that employees feel pressured to perform OCB in order to survive in the political work environment.

Gadot (2006) stated that employees may experience different types of social and managerial pressure in terms of CCB, such as immediate supervisors, powerful peers and organizational climate which in turn influences compulsory citizenship's structure. Individuals working in a political environment should have high levels of job strain because they are unable to predict how others will act or to forecast what the most appropriate action to take would be (Harris & Kacmar, 2005). In highly political environments, employees do not think that their work efforts will be recognized and valuable rewards

will be distributed by considering those efforts (Cropanzano et al., 1997). Therefore, employees may think that they cannot create a difference if they solely fulfill their formal job tasks. In highly political environments, employees may feel themselves pressured to create a difference and feel strain to seek other activities such as OCB to show themselves in order to survive. Therefore, we can deduce that the organizational politics will be a source of pressure on employees for displaying OCB which turns out to be CCB. Thus, we assert that:

H2: Organizational politics perception contributes positively to compulsory citizenship behavior.

2.4. Research Question Regarding Contributions of Internal and External Pressure Sources on Compulsory Citizenship Behavior

Three motives are identified for OCB (Finkelstein & Penner, 2004; Rioux & Penner, 2001). Two are relatively other oriented: pride in and positive affect for the organization (Organizational Concern) and regard for and the desire to help coworkers (Prosocial Values). The more self-focused impression management motives refer to the desire to be perceived as helpful to acquire certain rewards or avoid negative consequences (Finkelstein, 2011). These negative consequences should be analyzed in depth such that they can be the fear of losing job, avoiding staying behind of other coworkers, the worry about getting a low performance rate by supervisor, etc. These may all create pressure on employees that they are aware or unaware of. As Bolino et al. (2010) states, it can be understood that employees can engage in OCB because of either their dispositions, or external factors. Similarly, Gadot (2006) states that it is possible for CCB that may result from various types of external pressure such as immediate supervisors and powerful peers.

From this point of view, we have separated the factors which can affect CCB such as the person itself, the family and the work environment that consists supervisor, powerful peers and organizational climate. Family responsibilities are added to the scale because we thought that it might be an indirect pressure on employees to show themselves at work and it can be a stimulus for not losing the job. At this point, our interest is to investigate whether some sources of pressure are more significant for employees in displaying CCB. Hence, we ask the research question below.

Research Question: Which sources of pressure most contribute to CCB?

3. METHODOLOGY

3.1. Sample and Procedure

The sample of this study consists of 170 employees who are working in various finance organizations located in Istanbul-Turkey. Questionnaire was uploaded to a survey program and e-mail was sent to 265 employees to invite them for participating to the study. In two weeks period, 170 participants responded the questionnaire hence 64% of response rate was achieved. A brief introduction explaining the purpose of the study was given to the participants. Also, the assurance of the study confidentiality was provided by mentioning the academic purposes of the study. The fulfillment of the questionnaires took less than

10 minutes. More than half of the respondents are female (60%). Most of them are between 31-40 years old (61%), married (64%) and university graduates (74%). Respondents' tenure in their current organization is 6 years in average and the tenure changes between a range of 1-21 years.

3.2.Measuring Instruments

3.2.1. Perception of Organizational Politics Scale

The shortened version of POPS scale with 12-item by Kacmar and Carlson (1997) is used. The response alternatives of the scale ranged from 1 (totally disagree) to 6 (totally agree). While low scores mean that organizational politics is low, high scores mean that organizational politics is high in the organization. Three items from the POPS scale were omitted because of the similarity of expressions with psychological safety scale: "There is no place for yes-men in this organization: Good ideas are desired, even when it means disagreeing with superiors", "Employees are encouraged to speak out frankly, even when they are critical of well-established ideas", "Employees here usually don't speak up for fear of retaliation by others".

3.2.2. Psychological Safety Scale

Psychological Safety is measured by a 7-item scale which was developed by Edmondson (1999). The response alternatives of the scale ranged from 1 (totally disagree) to 6 (totally agree). While low scores mean that psychological safety is low, high scores mean that psychological safety is high in the organization.

3.2.3. Compulsory Citizenship Behavior Scale

Compulsory Citizenship Behaviors are measured by 27-item Organizational Citizenship Behavior Scale which was compiled from the items of scales developed by Organ and Konovsky (1989; 1996), Bolino et.al (2010) and Gadot (2007). The items were selected by considering the most complaining topics at work by employees. CCB was measured with this compiled scale by asking respondents to indicate how often they felt pressure to engage in these behaviors such as altruism, sportsmanship, courtesy, civic virtue and generalized compliance (conscientiousness). The response alternatives of the scale ranged from 1 (with no pressure) to 6 (always with pressure). While low scores mean that CCBs are low, high scores mean that CCBs are high in the organization.

3.2.4. Pressure Sources Scale

The sources of pressures which can be stemmed from employees' themselves, their family, their coworkers, their managers and their working environment for displaying CCB are asked with an introduction: "If you think about yourself, the people that you interact and your working environment; could you please give a rating for the pressure is felt for each of the sources given below while considering the pressure ratings that you gave for OCB items in the previous section." The response scale ranged from 1 (with no pressure) to 6 (always with pressure). The 5-item pressure sources scale is as follows: "I feel that I am putting pressure on myself", "I feel the pressure of my family responsibilities", "I feel the pressure of my coworkers who are successful and have a strong career", "I feel the pressure of my manager", "I feel the pressure of my working environment".

4. EMPIRICAL FINDINGS

4.1. Reliability of the Scales

Cronbach's coefficient alpha was utilized and all the scales demonstrated high reliability of over .70 (Table 1).

Table 1: The Summary Statistics of Variables

Factors	Number of questions	Mean	SD	α
Compulsory Citizenship Behaviors	19	1.78	.83	.94
Organizational Politics Perception	9	2.97	.88	.86
Psychological Safety	7	3.29	.83	.84

4.2. Factor Analysis of Compulsory Citizenship Behavior

Factor analysis was carried out in order to determine factorial structure of the compulsory citizenship behavior. In factor analysis, principle components method and varimax rotation technique are used. Adequacy of the sample size and applicability of factor analysis is tested with Kaiser-Meyer-Olkin (KMO) and Bartlett sphericity test. Through the analysis eight items are extracted because of their near factor loadings under more than one factor such that the difference of factor loadings is less than .100. The remaining 19 items are loaded under three factors. The three factors which are named as Compulsory Harmony, Compulsory Devotion and Compulsory Conscientiousness explain 67.896% of the total variance. The reliability analysis indicated that three factors have Cronbach's alpha of reliability coefficient greater than .70 (See Table 2).

Table 2: Factor and Reliability Analysis of Compulsory Citizenship Behavior

	Compulsory Citizenship Behavior Scale Factors	**Factor Loading**	**% Variance Explained**	**α**
Item No.	**Factor 1: Compulsory Harmony**		**24.576**	**.905**
18	Respecting to the right of the other employees	.839		
19	Trying not to cause problems for the coworkers	.814		
10	Warning the other employees for their good when unexpected problems occur	.743		
11	In work related problems do not hesitate sharing my resources with the others	.731		
12	Participating in all research and project groups for the improvement of the organization	.612		
9	Helping a new comer in his tasks	.598		
20	Do not complaining about the tasks under my responsibility	.535		
Item No.	**Factor 2: Compulsory Devotion**		**23.399**	**.896**
3	Investing more effort in my job beyond my formal job requirements	.766		
8	Performing actively in the conflict management within the organization	.745		
6	Helping others who has not come to work or who have been absent	.710		
1	Engaging in extra job tasks beside my own tasks	.704		
5	Assisting my supervisor even if I have no time or energy	.691		
2	Working extra hours for performing more than my own tasks without expecting any reward	.654		
7	Supporting the changes in the organization	.595		
Item No.	**Factor 3: Compulsory Conscientiousness**		**19.921**	**.874**
21	Working without taking a break	.853		
25	Rearranging or altering my personal plans because of work load	.755		
24	Going into the office and starting to work before the formal business hour	.677		
26	Trying to keep the attendance at work above	.669		
13	Dealing only with my job tasks through the formal business hours	.604		
KMO = .927; Bartlett's test of Sphericity = 2300.488; df = 171; p = .000				

4.3. Test of Hypotheses

Correlation analysis was performed to evaluate the relationships between the research variables. As shown in Table 3, there is a linear, significant, negative and weak relationship between psychological safety and compulsory citizenship behavior (r = -.177, p < .05). When we analyze the relationship between psychological safety and the dimensions of compulsory citizenship behavior, we can see that psychological safety weakly but negatively and significantly correlated with compulsory devotion (r = -.169, p < .05) and with compulsory conscientiousness (r = -.223, p < .01). However, there is not a significant relationship between psychological safety and compulsory harmony (r = -.081, p > .05).

Regarding organizational politics perception, it has linear, significant, positive and moderate relationship with compulsory citizenship behavior (r = .417, p < .01). Moreover, organizational politics perception is positively correlated with each dimension of compulsory citizenship behavior (with compulsory harmony: r = .363, p < .01; with compulsory devotion: r = .389, p < .01; and with compulsory conscientiousness: r = .349, p < .01).

Table 3: Correlation Analysis for Variables

	1	2	3	4	5	6
1. Psy. Safety	1					
2. Org. Politics Perception	-.153*	1				
3. CCB (19-tems)	-.177*	.417**	1			
4. Compulsory Harmony	-.081	.363**	.885**	1		
5. Compulsory Devotion	-.169*	.389**	.904**	.690**	1	
6. Compulsory Conscientiousnes	-.223**	.349**	.857**	.667**	.653**	1

*p< .05; **p< .01

In order to reveal the contributions of psychological safety and organizational politics perception on compulsory citizenship behavior and on its dimensions, regression analysis was performed. As can be seen from Table 4, psychological safety and organizational politics perception together explain 17.7 percent of the variance of compulsory citizenship behavior (Adj.R^2 = .177, F = 19.218, p < .001). However, the beta coefficients show that the variances of compulsory citizenship behaviors are significantly predicted by only organizational politics perception (β = .399, p < .001); psychological safety (β = -.116, p > .05) is not a significant predictor of compulsory citizenship behaviors. Therefore, it can be concluded that organizational politics perception is the variable that can explain the variances of compulsory citizenship behaviors. Hence H2 is supported but H1 is rejected.

Table 4: Regression Analysis for Testing Hypothesis 1 and 2

	Dependent Variable **Compulsory Citizenship Behavior**
Independent Variables	**β**
Org. Politics Perception	.399***
Psy. Safety	-.116
Adj R²	.177
F	19.218***

***p< .001

Table 5 presents the contributions of psychological safety and organizational politics perception on each dimension of compulsory citizenship behaviors. As can be seen from Table 5, psychological safety and organizational politics perception together explain 12.2 percent of the variance of compulsory harmony (Adj.R² = .122, F = 12.751, p < .001). However, the beta coefficients show that the variances of compulsory harmony are significantly predicted by only organizational politics perceptions (β = .359; p < .001). Again, the variances of compulsory devotion are explained together by psychological safety and organizational politics perception (Adj.R² = .153, F = 16.300, p < .001). However the beta coefficients show that the variances of compulsory devotion are significantly predicted by only organizational politics perceptions (β = .371, p < .001). Therefore, it can be concluded that politics perception is the variable that can explain the variances of compulsory harmony and compulsory devotion. On the other hand, as can be seen at the last column of Table 5, variances of compulsory conscientiousness is significantly predicted by both psychological safety (β = -.173, p < .05) and organizational politics perception (β = .323, p < .001), (Adj.R² = .141, F = 14.901, p < .001).

Table 5: Regression Analysis for Dimensions of Compulsory Citizenship Behavior

	Dependent Variable **Compulsory Harmony**	Dependent Variable **Compulsory Devotion**	Dependent Variable **Compulsory Conscientiousness**
Independent Variables	**β**	**β**	**β**
Org.Politics Perception	.359***	.371***	.323***
Psy. Safety	-.026	-.113	-.173*
Adj R²	.122	.153	.141
F	12.751***	16.300***	14.901***

*p< .05; ***p< .001

4.4. Descriptive Statistics and Reliability of Pressure Sources

As it is seen in Table 6 below, self pressure is the most felt pressure with a mean of 3.71. The other pressures that are felt by employees respectively; family responsibility pressure with a mean of 3.15, organizational climate pressure with a mean of 3.07, manager pressure with a mean of 2.97, successful coworker pressure with a mean of 2.51. Also, the pressure sources scale demonstrated high reliability of over .70.

Table 6: The Summary Statistics of Pressure Sources on CCB

Factors	Number of questions	Mean	SD	α
Self Pressure	1	3.71	1.45	
Family Responsibility Pressure	1	3.15	1.49	
Successful Coworker Pressure	1	2.51	1.49	.81
Manager Pressure	1	2.97	1.53	
Organizational Climate Pressure	1	3.07	1.50	

4.5. Test of Correlations and Contributions of Pressure Sources on Compulsory Citizenship Behavior

In order to reveal the relational power of each pressure source with compulsory citizenship behavior and with its dimensions correlation analysis was first performed. As it is seen in Table 7, there are linear, significant and positive relationships between each pressure sources and compulsory citizenship behaviors. Compulsory citizenship behavior is correlated positively but weakly with self pressure (r = .199, p < .01) and with family responsibility pressure (r = .246, p < .01). On the other hand, it is correlated moderately with manager pressure (r = .508, p < .01), with successful coworker pressure (r = .508, p < .01), and with organizational climate pressure (r = .508, p < .01).

Table 7: Correlation Analysis for Pressure Sources

	Self Pressure	Family Responsibility Pressure	Successful Coworker Pressure	Manager Pressure	Org. Climate Pressure
CCB (19-items)	.199**	.246**	.508**	.508**	.508**
Compulsory Harmony	.176*	.197*	.490**	.341**	.372**
Compulsory Devotion	.181*	.196*	.449**	.505**	.507**
Compulsory Conscientiousness	.169*	.270**	.405**	.494**	.458**

*p< .05; **p< .01

To reveal the contributions of pressure sources on compulsory citizenship behavior and on its dimensions regression analysis was performed. As shown in Table 8, the pressure sources together explain 35.9 percent of the variance of compulsory citizenship behavior (Adj.R^2 = .359, F = 19.948, p < .001). That means the sources of pressure on employees significantly explain the variances of compulsory citizenship behavior. The beta coefficients show that the variances of compulsory citizenship behavior are significantly predicted by three pressure sources: successful coworker pressure (β = .346, p < .001), manager pressure (β = .239, p < .05), and organizational climate pressure (β = .210; p < .05). However, the contribution of successful coworker pressure on compulsory citizenship behavior is stronger.

Table 8: Regression Analysis for Pressure Sources on Compulsory Citizenship Behavior

	Dependent Variable **Compulsory Citizenship Behavior**
Independent Variables	**B**
Self Pressure	-.134
Family Responsibility Pressure	.006
Successful Coworker Pressure	.346***
Manager Pressure	.239*
Organizational Climate Pressure	.210*
Adj R²	.359
F	19.948***

*p< .05; ***p< .001

Table 9 presents the contributions of pressure sources on each dimension of compulsory citizenship behaviors. As can be seen from Table 9, pressure sources together explain 24.8 percent of the variance of compulsory harmony (Adj.R^2 = .248, F = 12.152, p < .001). The beta coefficients show that the variances of compulsory harmony are significantly predicted by only successful coworker pressure (β = .436, p < .001). The other four pressures are not significant predictors of compulsory harmony.

Regarding compulsory devotion, pressure sources together explain 32.6 percent of the variance of compulsory devotion (Adj.R^2 = .326, F = 17.327, p < .001). The beta coefficients show that the variances of compulsory devotion are significantly predicted by three pressures: successful coworker pressure (β = .277, p < .001), manager pressure (β = .245, p < .05), and organizational climate pressure (β = .249, p < .05). However, the contribution of successful coworker pressure on compulsory devotion is stronger.

Further, pressure sources together explain 28.7 percent of the variance of compulsory conscientiousness (Adj.R^2 = .287, F = 14.617, p < .001). The beta coefficients show that the variances of compulsory conscientiousness are significantly predicted by two pressures:

successful coworker pressure (β = .200, p < .05) and manager pressure (β = .322, p < .001). However, the contribution of managerial pressure on compulsory conscientiousness is stronger.

Table 9: Regression Analysis for Pressure Sources on Dimensions of Compulsory Citizenship Behavior

Independent Variables	Dependent Variable **Compulsory Harmony**	Dependent Variable **Compulsory Devotion**	Dependent Variable **Compulsory Conscientiousness**
	B	**β**	**β**
Self Pressure	-.086	-.120	-.152
Family Responsibility Pressure	-.039	-.037	.110
Successful Coworker Pressure	.436***	.277***	.200*
Manager Pressure	.069	.245*	.322***
Organizational Climate Pressure	.150	.249*	.139
Adj R²	.248	.326	.287
F	12.152***	17.327***	14.617***

*p< .05; ***p< .001

5. CONCLUSION

OCB is mainly criticized because of the accepted assumption in the literature that it has a discretionary nature. Scholars instead support the argument that OCB is not based on the genuine, spontaneous "good will" of the individual (Gadot, 2006). Instead, it emerges in response to external pressures by significant and powerful others in the workplace (i.e., managers or co-workers) who wish to increase the employees' work load by involving them in duties that are beyond the scope of their job description (Porpara, 1989).

When we take a look at the literature, it is considered that compulsory citizenship behaviors are measured by different scales. For example, Gadot (2007) measured compulsory citizenship behaviors with 5 items that includes pressure expressions and scholars mentioned the necessity to generate a more comprehensive scale which covers the pressures for engaging in more than one kind of OCB (altruism, conscientiousness, sportsmanship, courtesy or civic virtue) and also it is mentioned that CCB can result from various types of external pressures such as immediate supervisors, powerful peers and organizational climate (Gadot, 2006; Zhao et al, 2013). From these points of view, we have used the OCB scale with an introduction that includes whether employees experience any

pressure to perform these CCBs in order to measure the pressure level on all CCB items. Also, we have thought that there can be external or internal pressures for performing these CCBs and we obtained five sources of pressures such as they may be stemmed from the self, family responsibilities, successful coworkers, immediate supervisors and organizational climate.

In the factor analysis of our CCB scale, 3 factors has emerged which are labeled according to the content of the items as compulsory harmony, compulsory devotion and compulsory conscientiousness. The first factor is labeled as compulsory harmony because of containing different items which were classified under different factors such as courtesy, altruism, civic virtue and sportsmanship in the literature and which express harmonic relationships. The second factor is labeled as compulsory devotion because of containing items which can be assessed as satisfactory behaviors such as engaging in extra job tasks, investing more effort in the job beyond the requirements, working extra hours, etc. The third factor is labeled as compulsory conscientiousness because of containing items which can be assessed as dutiful behaviors such as working without taking a break, starting to work before formal business hours, dealing only with job tasks through formal business hours, etc.

According to the results of correlation analysis, psychological safety is in a significant and negative relationship with CCB; but when it has been regressed together with organizational politics perception on CCB, it appeared to have no significant contribution to CCB. However, politics perception has a significant and positive contribution to CCB and its all three dimensions. Thus, politics perception should be considered as a pressure source for displaying compulsory citizenship behaviors. Employees generate two different behavior types in response to organizational politics: staying or leaving. When they leave the political organization, the problem is solved but when they choose to stay, they should cope with the political relationships so this coping refers to a pressure on the employee and it increases CCB.

Psychological safety has no significant contribution to CCB but it has a significant and negative contribution to compulsory conscientiousness. People feel safe in situations in which they trusted that they would not suffer for their personal engagement (Kahn, 1990) and not surprisingly, conscientiousness has also been considered as an aspect of contextual performance by Smith, Organ, and Near (1983). It can be stated that psychological safety has a negative contribution on the pressure level for displaying compulsory conscientiousness behavior and it affects the conscientiousness of the employees positively.

According to the results, it can be concluded that employees in finance sector do not feel much pressure for displaying compulsory citizenship behaviors. However, the highest pressure level that the employees felt is self pressure. It means that employees put pressure on themselves for displaying CCB. It is interesting that family responsibility pressure is the second most felt pressure by employees for displaying CCB. It may mean that employees try to be distinguished at work in order to continue earning money. We all hear from around that people are working for giving their children a good future,

increasing their quality of life, etc. We can assert that people are reflecting these thoughts about their family responsibilities to their work and maybe they think that they have to exhibit CCB in order to survive at work and continue to make a living. The third most felt pressure by employees is the organizational climate pressure. Organizational climate consists of norms, behaviors, rules, work and role definitions, etc. so these all generate employees' behavioral patterns at work. It means that employees display CCB by regarding these behavioral patterns. The fourth most felt pressure by employees is the manager pressure. This result is in line with Gadot's (2006) and Zhao's (2014) interferences about the immediate supervisor and abusive supervision. The least felt pressure by employees is the successful coworker pressure.

In the regression analysis, successful coworker, manager and organizational climate pressures make contribution to CCB and compulsory devotion. However, successful coworker pressure is the only pressure for making contribution on compulsory harmony despite its lower mean among other pressure sources. It has also contribution to compulsory devotion and compulsory conscientiousness. These results give us the clue that a low level of successful coworker pressure is enough for shaping the behaviors. Coworker pressure is an indirect pressure on employees, not such a direct pressure with giving orders by successful employees. Employees always compare themselves with coworkers and try to take actions according to these comparisons. When we analyze it from another point of view, coworkers are likely to be jealous of the relationship and threatened by the positive outcomes that OCB can bring about for the employee when they recognize that some of their coworkers are in high-quality LMX relationships with their supervisors (Bowler et al., 2010). Therefore, employees would like to engage in extra-role activities with the pressure of "catching-up" their coworkers. For example, the items in compulsory devotion and compulsory conscientiousness such as "Working without taking a break" , "Going into the office and starting to work before the formal business hour", "Investing more effort in my job beyond my formal job requirements" or "Engaging in extra job tasks beside my own tasks" are drawing a picture of a competitive working environment.

Manager pressure makes contribution to CCB, compulsory devotion and compulsory conscientiousness. Our study is in line with the phenomenon of abusive management suggested by Tepper (2000) and later developed by Zellars et al. (2002) and Tepper et al. (2004) but the managerial pressure in this study rather refers to excessive requests by the managers which the employees cannot refuse to comply (Gadot, 2007). Finance organizations are institutional organizations and the human resource management is professional so we do not expect that there can be a verbal or physical abuse on employees for engaging in CCB by the managers. We consider that manager pressure rather refers to indirect intervention in this study.

Organizational climate is another pressure for engaging in CCB. It covers the psychological relationships, the way the works are done, attributions, expectations and perceptions of the employees, etc. in the working environment. It has a contribution to CCB and compulsory devotion. It is meaningful that compulsory devotion includes several behaviors such as helping, managing conflicts, showing greater effort, taking responsibility

of extra tasks, working extra hours, supporting the changes and the organizational environment covers all the elements and behaviors in the workplace so it probably creates a social pressure on employees to perform these CCBs.

Family responsibility pressure and the pressure that is stemmed from the self are not significant predictors of CCB. Family responsibilities and the pressure that is stemmed from the self may not be considered as a pressure by participants because they are internal factors which depend on the employees' characters and family life. However; work–sourced (external) pressures such as successful coworkers, managers and organizational climate mostly put pressure on employees to perform CCB according to the results.

6. Limitations and Recommendations

The results of present study are based on a convenience sample so our results cannot be generalized. The data was collected in İstanbul / Turkey and from different finance institutions. Although the sample size is large enough, it may be implemented on a larger sample in further research for the results can be generalized. Also, our study is cross-sectional so we cannot conclude cause-effect relationships among the variables. It may be interesting to conduct this study in a longitudinal format in order to make cause-effect interpretations.

Our study is conducted in finance institutions with professional human resource implementations so low pressure level for displaying CCB is reasonable for our study. If a similar study is conducted in other sectors, in other organizational cultures or in family-owned businesses, higher level of pressure for displaying CCB might be revealed.

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COMPARATIVE ANALYSIS OF EU COUNTRIES AND TURKEY IN TERMS OF INNOVATION PERFORMANCE[*]

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Keywords

Innovation,
multidimension scaling,
cluster analysis,
European Union, Turkey.

ABSTRACT

The aim of this study is to compare European Union (EU) and Turkey in terms of innovation performance and to determine similar and dissimilar countries. To compare EU countries and Turkey, multidimensional scaling analysis and cluster analysis are employed. In this study, innovation performance of the countries is measured by basic indicators such as number of patents, trademarks, industrial designs and R&D density, R&D personnel and innovation scores of the countries. Findings obtained from analyses support each other and according to results it has been seen that Turkey is in the same performance group with countries that are called as Modest Innovators. The performance of the Modest Innovators is well below that of EU27 and they belong to upper-middle income level.

JEL Classification
O31,O32,O57

AB ÜLKELERİ VE TÜRKİYE'NİN İNOVASYON PERFORMANSI AÇISINDAN KARŞILAŞTIRMALI ANALİZİ

Anahtar Kelimeler

İnovasyon, çok boyutlu ölçekleme, kümeleme Analizi, Avrupa Birliği, Türkiye

ÖZET

Bu çalışmanın amacı, inovasyon performansı açısından Avrupa Birliği (AB) ile Türkiye'yi karşılaştırmak ve benzer ve farklı ülkeleri belirlemektir. AB ülkelerini ve Türkiye'yi karşılaştırmak için Çok Boyutlu Ölçekleme Analizi ve Kümeleme Analizi kullanılmıştır. Çalışmada, ülkelerin inovasyon performansı; patent, ticari marka, endüstriyel tasarım ve Ar-Ge yoğunluğu, Ar-Ge personeli ve AB inovasyon puanı gibi temel göstergelerle ölçülmüştür. Analiz sonucunda elde edilen bulgular birbirini desteklemektedir ve sonuçlara göre Türkiye'nin İddiasız Yenilikçiler adı verilen ülkeler ile aynı grupta olduğu görülmektedir. Bu grup AB27 ortalamasının oldukça altında kalan ve üst orta gelir seviyesine sahip olan ülkelerdir.

JEL Sınıflandırması
O31,O32,O57

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[*] Bu çalışma 16. Uluslararası Ekonometri, Yöneylem Araştırması ve İstatistik Sempozyumunda özet bildiri olarak sunulmuştur.

1. GİRİŞ

İnovasyon literatürde farklı tanımlara sahip olmakla birlikte, Oslo Kılavuzu'na göre, "işletme içi uygulamalarda, işyeri organizasyonunda veya dış ilişkilerde yeni veya önemli derecede iyileştirilmiş ürün (mal veya hizmet) veya süreç, yeni bir pazarlama yöntemi ya da yeni bir organizasyonel yöntemin gerçekleştirilmesi" biçiminde tanımlanmaktadır (OECD, 2005). İnovasyon faaliyetleri ise, yeniliklerin uygulanmasına yol açan veya yol açması öngörülen tüm bilimsel, teknolojik, organizasyonel, finansal ve ticari adımlardır. Günümüzde inovasyon faaliyetlerinin işletme düzeyinde etkinliği sağlayarak verimliliği, rekabet gücünü ve piyasa değerini artıran bir unsur olduğu yapılan çok sayıda çalışmayla ortaya konmuştur (Bremmer vd., 2008, Hall, 1999, Coad ve Rao, 2006, Feeny ve Rogers, 2001, Guan vd., 2006, Diaz-Balteiro vd., 2006, Griliches, 1980, Griliches ve Mairesse, 1984). İnovasyon faaliyetleri aynı zamanda, ülke ekonomisinde katma değer yaratarak sürdürülebilir büyüme ve kalkınmayı hızlandıran en önemli etkenlerden birisidir.

Dünyanın en güçlü ekonomilerini bünyesinde barındıran Avrupa Birliği'nin (AB) temeli, İkinci Dünya Savaşı sonrasında Avrupa'da barış ve huzurun sağlanması amacıyla 1951 yılında 6 Avrupa ülkesi tarafından atılmıştır. Birlik zaman içinde genişleyerek bugün, 28 ülkeden oluşan ekonomik ve siyasi açıdan güçlü bir topluluğa dönüşmüş ve Türkiye Avrupa Birliği'ne üye olmak için ilk resmi başvurusunu 1959 yılında yapmıştır. Dönem dönem kesintiye uğrayan ikili ilişkilere rağmen, Türkiye bugün tam üyelik için gerekli şartları sağlamak için çalışmalarını sürdürmektedir (T.C. AB Bakanlığı, 2015)

Bu çalışmanın amacı, Avrupa Birliği ülkeleri ile Türkiye'yi inovasyon performansı açısından karşılaştırmak ve benzer ve farklı ülkeleri belirlemektir.

Çalışmanın giriş bölümünden sonra, ikinci bölümde AB ve Türkiye'de yürütülen inovasyon faaliyetleri sonucu oluşan durum açıklanacak, ücüncü bölümde kullanılan veri ve yöntem hakkında bilgi verilecek, dördüncü bölümde ise elde edilen bulgular açıklanacaktır. Beşinci ve son bölümde ise, elde edilen sonuçlar yorumlanacaktır.

2. AVRUPA BİRLİĞİ VE TÜRKİYE'DE İNOVASYON FAALİYETLERİ

Avrupa Birliği'ne üye ülkelerin güçlü ekonomik yapıya sahip olmalarına paralel olarak, AB'ne üye ülkelerden bazıları dünyada inovasyon alanında üst sıralarda olan ülkelerdir. AB ülkelerinin Dünya Fikri Mülkiyet Teşkilatı (WIPO) ve INSEAD tarafından yayınlanan Küresel İnovasyon Endeksi'nde yıllar itibarıyla durumu incelendiğinde; 2014 yılında AB'nden 6 ülkenin; 2013 yılında 7 ülkenin; 2012 yılında 6 ülkenin ve 2011 yılında 5 ülkenin sıralamada ilk 10 ülke içinde bulunduğu görülmektedir. Aynı dönemde Türkiye'nin durumu incelendiğinde ise; 2014 yılında 143 ülke arasında 54., 2013 yılında 142 ülke arasında 68., 2012 yılında 141 ülke arasında 74., 2011 yılında 125 ülke arasında 65., 2010 yılında 132 ülke arasında 67. sırada olduğu görülmektedir (WIPO&INSEAD, 2014)

AB ülkelerinin inovasyon performansının belirlenmesi amacıyla her yıl "İnovasyon Birliği Puan Cetveli" hazırlanmaktadır. 3 ana bölüm, 8 boyut ve 25 kritere göre hazırlanan bu puan cetvelinde, AB ülkeleri inovasyon performanslarına göre 4 gruba ayrılmaktadır. Bu gruplar ve gruba dahil olan ülkeler aşağıda belirtildiği gibidir. (EU, 2013)

İnovasyon Liderleri: İnovasyon performansı AB27[1] ortalamasının üstünde olan ülkelerdir. Almanya, Finlandiya, İsveç, Danimarka bu gruba dahildir.

İnovasyon Takipçileri: İnovasyon performansı AB27 ortalamasına yakın olan ülkelerdir. Kıbrıs, Slovenya, Fransa, Avusturya, Lüksemburg, İngiltere, Belçika, İrlanda, Estonya, Hollanda bu gruba dahildir.

Orta Seviye Yenilikçiler: İnovasyon performansı AB27 ortalamasının altında olan ülkelerdir. Portekiz, Malta, Yunanistan, Macaristan, İtalya, İspanya, Çek Cumhuriyeti, Slovakya, Litvanya bu gruba dahildir. İddiasız Yenilikçiler: İnovasyon performansı AB27 ortalamasının oldukça altında olan ülkelerdir. Bulgaristan, Romanya, Letonya, Polonya bu gruba dahildir.

İnovasyon Birliği Puan Cetveli'ne göre AB ülkelerinin inovasyon performansı 2008-2012 döneminde ortalama olarak %1,6 oranında artmıştır. AB27'nin inovasyon performans ortalaması dünyadaki diğer inovasyon liderleri ile karşılaştırıldığında; Amerika, Japonya ve Güney Kore'dan sonra gelmekte, Kanada ve Avustralya ve BRICS (Brezilya,Rusya, Hindistan, Çin, Güney Afrika) ülkelerinin önünde yer aldığı görülmektedir. (EU, 2013).

Türkiye'de son yıllarda inovasyon alanında yapılan çalışmalar hız kazanmıştır. Bununla birlikte, gelinen nokta belirlenen hedefe ulaşılamadığını göstermektedir. 2007-2013 yılları arasında uygulanan Dokuzuncu Kalkınma Planı'nda Araştırma-Geliştirme (Ar-Ge) harcamalarının Gayri Safi Yurtiçi Hasıla (GSYİH) içindeki payı (Ar-Ge Yoğunluğu) %2 olarak hedeflenmesine rağmen 2013 sonunda bu oran %0,95 olarak gerçekleşmiştir. Bir sonraki kalkınma planı olan Onuncu Kalkınma Planı'nda (2014-2018) ise, Ar-Ge yoğunluğu için dönem sonu hedefi %1,8 olarak belirlenmiştir (T.C. Kalkınma Bakanlığı, 2013).

## Şekil 1: Türkiye'de 1996-2013 Dönemi Ar-Ge Yoğunluğu
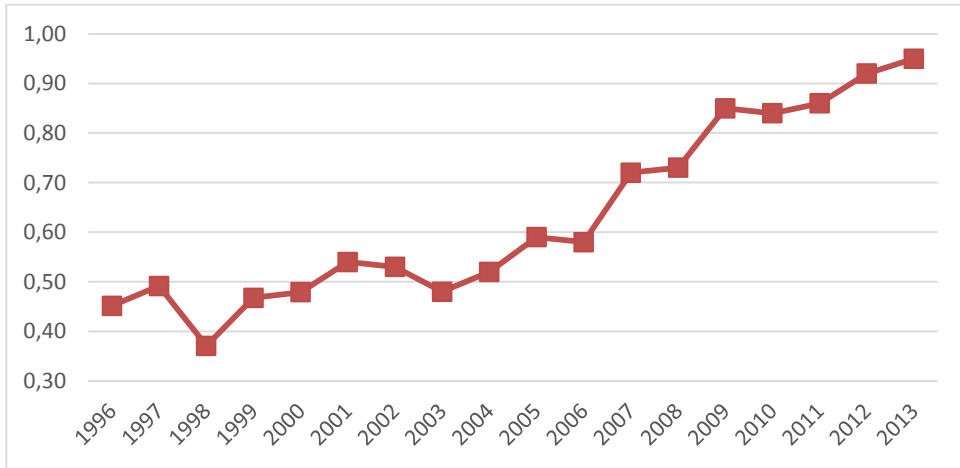
Kaynak: TÜİK, "Ar-Ge Faaliyetleri İstatistikleri"

Şekil 1'de, Türkiye'de 1996-2013 yılları arasında gerçekleşen Ar-Ge Yoğunluğuna ilişkin grafik verilmektedir. Buna göre, belli dönemlerde duraklamalar olsa da genel olarak artan

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[1] Hırvatistan hariç AB'ne üye 27 ülkeyi ifade etmektedir.

bir trendin varlığı görülmektedir. Bununla birlikte, Şekil 2'de 2012 yılı için, seçilmiş AB ülkeleri ile Türkiye'de gerçekleşen Ar-Ge yoğunluğu karşılaştırıldığında, Türkiye'nin %0,86 ile Malta ve Litvanya ile benzer seviyede olduğu, inovasyon alanında lider ülkeler olan İsveç, Finlandiya ve Almanya'nın oldukça gerisinde olduğu görülmektedir. Ayrıca, Türkiye'nin %1,70 olan AB ortalamasının çok altında olması, konu ile ilgili çalışmalara hız verilmesi gerektiğini göstermektedir.

Şekil 2: Seçilmiş AB Ülkelerinde ve Türkiye'de 2012 Yılı Ar-Ge Yoğunluğu
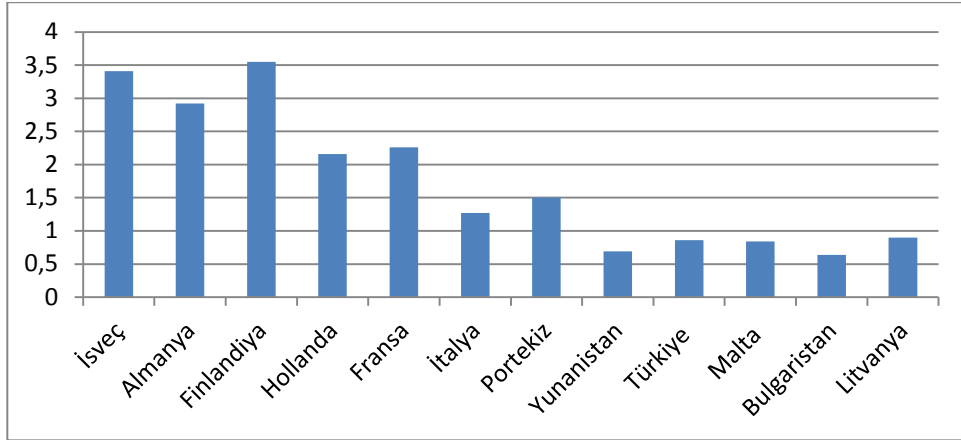
Kaynak: World Bank, World Development Indicators

Türkiye'de hazırlanan orta ve uzun vadeli planlar incelendiğinde, inovasyon faaliyetlerine önemli ölçüde yer verildiği görülmektedir. Türk Patent Enstitüsü (TPE) tarafından yayınlanan "2012-2016 Stratejik Planı"nda inovasyon faaliyetlerinin ekonomik faydaya dönüştürülmesi gerektiği belirtilmiştir. TÜBİTAK tarafından hazırlanan "Ulusal Bilim, Teknoloji ve Yenilik Stratejisi 2011-2016" da Ar-Ge yatırımlarının fazla ve inovasyon kapasitesinin güçlü olduğu alanlar belirtilerek teşvik ve desteklerin artması gerektiği vurgulanmaktadır (Aras v.d., 2014: 56). Ar-Ge harcamaları yanında, inovasyon faaliyetlerinin bir diğer göstergesi olan tescil edilen patent, ticari marka, faydalı model ve endüstriyel tasarım sayıları Türkiye'de son 20 yıllık dönemde artış eğilimi göstermektedir. 1995-2014 dönemindeki tescil sayılarını gösteren Tablo 1 incelendiğinde bu artış açıkça görülmektedir.

Tablo 1: Tescil Edilen Patent, Marka, Faydalı Model ve Endüstriyel Tasarım Sayıları

	Patent		Ticari Marka		Faydalı Model		Endüstriyel Tasarım	
	Yerli	Yabancı	Yerli	Yabancı	Yerli	Yabancı	Yerli	Yabancı
1995	58	705	5259	3241	0	0	0	0
2000	23	1113	10668	5706	145	4	2848	301
2005	95	3077	26963	7709	964	13	25473	1226
2010	642	4868	32397	11767	2022	27	28623	1061
2014	1251	7279	72334	15211	2474	77	40018	1717

Kaynak: TPE verilerinden oluşturulmuştur.

AB ile Türkiye'nin 2006-2013 döneminde İnovasyon Birliği Puan Cetveli'ne göre aldığı puanlar Şekil 3'de verilmektedir. AB ülkeleri ile Türkiye'nin ortalaması yıllar itibarıyla karşılaştırıldığında, Türkiye'nin ortalama puanında küçük bir artış meydana gelmekle birlikte, AB ortalamasının çok altında olduğu görülmektedir.

Şekil 3: AB ve Türkiye'nin İnovasyon Birliği Puanları
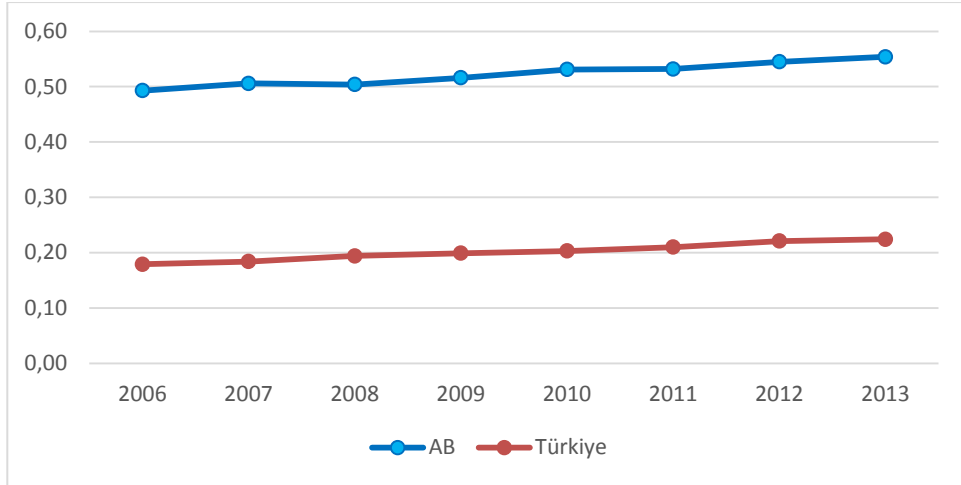
Kaynak: EU, "Innovation Union Scoreboard 2014"

3. VERİ VE YÖNTEM

Avrupa Birliği ile Türkiye'nin inovasyon performansı açısından karşılaştırılması amacıyla Çok Boyutlu Ölçekleme (ÇBÖ) ve Kümeleme Analizi (KA) kullanılmış ve elde edilen sonuçlar karşılaştırılmıştır.

3.1. Veri

Çalışmada, konu ile ilgili güncel verilerde çok sayıda kayıp gözlem değeri bulunmasından dolayı 2012 yılına ait veriler kullanılmıştır. Veri elde edilememesinden dolayı Slovenya analiz dışında bırakılmıştır. Sonuç olarak, analize dahil edilen ülke sayısı Türkiye dahil 27'dir. Literatürde inovasyon performansı ile ilgili en çok kullanılan göstergeler tescil edilen patent, ticari marka, faydalı model ve endüstriyel tasarım sayıları ile Ar-Ge harcamalarının GSYİH'daki payıdır. Ayrıca, Ar-Ge personeline dair verilerde kullanılmaktadır. Bunların dışında farklı göstergelerin ağırlıklandırılarak tek bir gösterge olarak kullanıldığı birleşik göstergelerde oluşturulmaktadır. Avrupa İnovasyon Birliği tarafından 25 kritere göre oluşturulan İnovasyon Puan Cetveli bu birleşik göstergelerden biridir. Analizlerde kullanılan değişkenler, kısaltmaları ve alındıkları kaynaklar Tablo 2'de verilmektedir.

Tablo 2: Çalışmada Kullanılan Değişkenler, Kısaltmalar ve Veri Kaynağı

Değişkenler	Kısaltma	Veri Kaynağı
Patent Başvuru Sayısı	PBS	Dünya Fikri Mülkiyet Teşkilatı (WIPO)
Ticari Marka Başvuru Sayısı	TMBS	
Endüstriyel Tasarım Başvuru Sayısı	EDBS	
Ar-Ge Harcamalarının GSYİH'ya Oranı (%)	ARGEGSYİH	
Ar-Ge Personeli Sayısı (Bir milyon kişide)	ARGEPS	Dünya Bankası
İleri Teknoloji İhracatı (Üretilen ihracat %'si)	İTİ	
AB İnovasyon Birliği Puanı	İBP	AB İnovasyon Birliği Raporu

3.2. Çok Boyutlu Ölçekleme

Araştırmada ilk olarak ÇBÖ analizi kullanılmıştır. Bu yöntemin tercih edilmesinin nedeni, değişkenler arasındaki ilişkinin biçimi ve veri hakkında herhangi bir varsayımda bulunmaması ve böylece güçlü varsayımların sağlanmasını gerektirmemesidir. Araştırmada kullanılan ülke sayısının az olması çok sayıda gözleme ihtiyaç duyan analizlerin kullanımını engellemekte ve ÇBÖ analizi bu konuda avantaj sağlamaktadır.

ÇBÖ, şehirlerin ve ülkelerin konumlarını, bireylerin görüş ve tercihlerini veya ürünlerin çeşitli kalite standartlarına göre durumunu çok boyutlu uzayda uzaklıklara dönüştürme yöntemidir (Orhunbilge, 2010, s: 529). ÇBÖ analizinde veri matrisi yerine, n tane bireyin uzaklıklarından elde edilen nxn boyutlu D uzaklıklar matrisi kullanılmakta ve bu matrisin simetrik olması nedeniyle işlemler, ½ n(n-1) tane uzaklık değeri kullanılmaktadır (Tatlıdil, 1996, s: 353). Ayrıca ÇBÖ, kullanılan verinin ölçeğine göre, metrik olan ve metrik olmayan ÇBÖ olarak iki gruba ayrılmaktadır.

ÇBÖ analizinde boyut sayısına karar vermek için Kruskal-Stress İstatistiği kullanılmaktadır. Stress istatistiği aşağıda belirtilen formül ile hesaplanmaktadır.

$$S = \frac{\sum_{i \neq 1}^{n} (d_{ij} - \hat{d}_{ij})^2}{\sum_{i \neq 1}^{n} d_{ij}^2}$$

Burada, $\hat{d}_{ij}$'ler i ve j özellikleri arasındaki belirli bir iterasyon sonucu türetilmiş uzaydaki uzaklıkları, d_{ij}'ler ise uzaklıklara en yakın olan ve monotonik dönüşümlerle elde edilmiş farklılıkları ifade etmektedir. İterasyonun amacı, Stress ölçüsünü minimize etmektir (Orhunbilge, 2010, s:533). Stress İstatistiğinin değerleri ve uyumluluk dereceleri Tablo 3'de verilmiştir (Kalaycı vd., 2008, s:384).

Tablo 3: Stress Değerlerine Göre Uyumluluk Düzeyi

Stress Değeri	Uyumluluk Düzeyi
>0,20	Uyumsuz Gösterim
0,10-0,20	Düşük Uyum
0,05-0,10	İyi Uyum
0,025-0,05	Mükemmel Uyum
0,00-0,025	Tam Uyum

Tablo 3'de görüldüğü gibi, Stress İstatistiği sıfıra yaklaştıkça, uyumun derecesi artmaktadır. ÇBÖ Analizinde, verinin ÇBÖ ile elde edilen modele ne oranda uyduğunun ölçüsü "Uyum İndeksi" olarak adlandırılan R^2 ile belirlenmektedir. R^2 için 0,60'tan büyük değerler uygun kabul edilmekle birlikte, daha yüksek R^2 değerleri tercih edilmelidir. ÇBÖ analizinin kümeleme analizinden en önemli farkı her birim için bir çözüm elde etmesidir (Hair v.d., 2006, 638).

ÇBÖ analizinde ikili karşılaştırmalar genellikle, dalgalı en küçük kareler ölçeği (Alternating Least Square SCALing) olarak bilinen ALSCAL algoritması kullanılarak elde edilmektedir. Bu algoritma, nesneler ya da birimler arasında fark gözetmeden karşılaştırmalar yaparak grupları belirlemektedir (Bülbül ve Köse, 2010, s:83).

ÇBÖ analizinde, gözlemsel uzaklıklar (distances) ile farklılıkların (disparities) dağılımı arasında doğrusal ilişkinin varlığı, tahmini uzaklıkların gerçek değerlerle uyumlu olduğunu ve doğrusal model ile uygun çözümün elde edilebileceğini göstermektedir (Bülbül ve Köse, 2010, s:90).

3.3. Kümeleme Analizi

Kümeleme analizi (KA) birimlerin (bireylerin ve nesnelerin) anlamlı homojen alt gruplarda (kümeler) toplanması amacıyla kullanılan çok değişkenli istatistiki bir yöntemdir. Bağımlı ve bağımsız değişken ayrımı olmayan bu yöntemde, gözlenen tüm birimler, kendi kümeleri içinde homojen ancak diğer kümelerdeki birimlerden farklı biçimde kümelere ayrılmaktadır (Orhunbilge, 2010, s:473).

KA'nde, normallik, doğrusallık ve eşit varyans gibi varsayımların sağlanması gerekmediğinden uygulanması diğer çok değişkenli analizlere göre daha kolaydır. KA'de kümeleme süreci hiyerarşik veya hiyerarşik olmayan kümeleme yöntemi ile yürütülebilir. Hiyerarşik kümeleme analizinde küme sayısı önceden bilinmezken, hiyerarşik olmayan kümeleme yönteminde ise küme sayısı yaklaşık olarak bilinmektedir (Orhunbilge, 2010, s:473). Gözlem sayısının 250'den az olduğu durumlarda Hiyerarşik Kümeleme Analizi tercih edilmelidir (Garson, 2014:15)

Hiyerarşik kümeleme analizinde, birimler arasındaki uzaklığın hesaplanmasında genellikle Euclidean uzaklığının karesi kullanılmaktadır. Bu yöntemde, kümeleme algoritması için; merkezi yöntem, tek bağlantı yöntemi, tam bağlantı yöntemi, gruplariçi ve gruplararası

ortalama bağlantı yöntemi ve Ward yöntemlerinden biri kullanılabilir (Kalaycı vd., 2008, s:359). Ward yöntemi, varyans analizi yaklaşımını kullandığı için tercih edilmektedir. Kümeleme analizininin bir diğer özelliği ise, mevcut duruma ait sonuçlar elde edildiği için gelecekte kullanılamamasıdır (Tatlıdil, 1996, s:329).

4. BULGULAR

Analizlerde kullanılan değişkenlerin tanımlayıcı istatistikleri Tablo 4'te verilmektedir.

Tablo 4: Değişkenlere Ait Tanımlayıcı İstatistikler

	Ortalama	Medyan	Standart Sapma	Minimum Değer	Maksimum Değer	N
PBS	17563,41	4278	37111,51	196	183048	27
TMBS	105659,04	38338	157184,36	3020	668554	27
EDBS	18247,78	8667	27061,45	263	116406	27
ARGEGSYİH	1,63	1,44	0,92	0,47	3,55	27
ARGEPS	3291,90	3111,49	1751,78	792,74	7482,34	27
İTİ	13,24	10,74	8,70	1,83	45,73	27
İBP	0,46	0,45	0,18	0,19	0,75	27

ÇBÖ analizi ilk olarak iki boyutlu çözüm uygulanmış sonuçların iyileştirilmesi amacıyla üç boyutlu çözüme geçilmiştir. İki ve üç boyutlu çözüm için Kruskal-Stress İstatistiği ve R^2 değerleri Tablo 5'de verilmiştir.

Tablo 5: Kruskal-Stress İstatistiği ve R^2 Değerleri

Boyut Sayısı	Stress İstatistiği	R^2
k=2	0,14001	0,94711
k=3	0,04920	0,99291

İki ve üç boyutlu çözüm değerleri incelendiğinde üç boyutlu çözümde Stress İstatistiğinin değeri 0,04920 olup, iki boyutlu çözümden elde edilen değerden daha küçüktür ve ayrıca R^2 değeri daha yüksektir. Sonuç olarak, üç boyutlu çözümün daha uygun olduğuna karar verilmiştir. Üç boyutlu Euclidean Uzaklık Modeli EK 1'de verilmektedir.

Tablo 6: Ülkelerin Üç Boyutlu Gösterimine Ait Koordinat Değerleri

Sıra No	Ülkeler	Kısaltma	Boyut I	Boyut II	Boyut III
1	Avusturya	VAR1	.6300	.9279	.0660
2	Belçika	VAR2	.2891	.7641	.1166
3	Bulgaristan	VAR3	-1.4333	-.6339	.3009
4	Kıbrıs	VAR4	-1.1889	-.4784	-.3594
5	Çek Cumhuriyeti	VAR5	-.3690	.2574	-.3014
6	Danimarka	VAR6	1.0031	1.6523	-.0003
7	Estonya	VAR7	-.2748	.7308	.1177
8	Finlandiya	VAR8	1.0449	2.0704	.4736
9	Fransa	VAR9	1.8919	-.7281	-.6856
10	Almanya	VAR10	4.3205	-1.9831	.3862
11	Yunanistan	VAR11	-1.1178	-.2645	.1817
12	Macaristan	VAR12	-.8408	-.0856	-.5007
13	İrlanda	VAR13	-.0639	.6043	-.8487
14	İtalya	VAR14	.4444	-1.1879	.6176
15	Letonya	VAR15	-1.3696	-.4576	.1361
16	Litvanya	VAR16	-1.1132	-.1597	.1168
17	Lüksemburg	VAR17	.0745	1.2970	.5101
18	Malta	VAR18	-.8732	-.4066	-2.6389
19	Hollanda	VAR19	.8252	.2103	-.5363
20	Polonya	VAR20	-.7591	-.8343	.4879
21	Portekiz	VAR21	-.4244	.5654	.7648
22	Romanya	VAR22	-1.5231	-.7759	.3640
23	Slovakya	VAR23	-1.0278	-.0780	.2007
24	İspanya	VAR24	.0644	-.6921	.6353
25	İsveç	VAR25	1.2058	1.3674	.0417
26	Türkiye	VAR26	-1.1373	-.9226	.8130
27	İngiltere	VAR27	1.7221	-.7591	-.4594

Tablo 6'de verilen ülkelerin üç boyutlu gösterimine ait koordinat değerleri incelendiğinde; Birinci boyutta; Danimarka, Finlandiya, Fransa, Almanya, İsveç ve İngiltere birbirlerine benzer ülkelerdir ve bu boyutta en önemli ayrıştırıcılardır. Bulgaristan, Kıbrıs, Yunanistan, Letonya, Litvanya Romanya, Slovakya ve Türkiye en farklı ülkelerdir.

İkinci boyutta; Danimarka, Finlandiya, Lüksemburg ve İsveç birbirlerine benzer ülkelerdir ve bu boyutta en önemli ayrıştırıcılardır. Almanya ve İtalya en farklı ülkelerdir.

Üçüncü boyutta;   Malta en farklı ülkedir.

EK 2'de verilen Farklılıklar Matrisi incelendiğinde;

Bulgaristan, Çek Cumhuriyeti ve Romanya'nın ayrıca Yunanistan, Slovakya, Letonya ve Litvanya'nın benzer ülkeler olduğu görülmektedir. Almanya'nın ise diğer ülkelerden oldukça farklı olduğu belirlenmiştir.

Türkiye'nin durumu incelendiğinde ise; Bulgaristan, Polonya ve Romanya ile benzer, ayrıca Almanya, Malta ve İsveç'ten farklı olduğu görülmektedir.

Gözlemsel uzaklıklar (distances) ile farklılıkların (disparities) dağılımı arasında doğrusal ilişkinin varlığı Şekil 4'de görülmektedir. Buna göre; tahmini uzaklıkların gerçek değerlerle uyumlu olduğu ve doğrusal model ile uygun çözümün elde edilebileceği söylenebilir.

Şekil 4: Uzaklıklar İle Farklılıklar Arasındaki Doğrusal İlişki
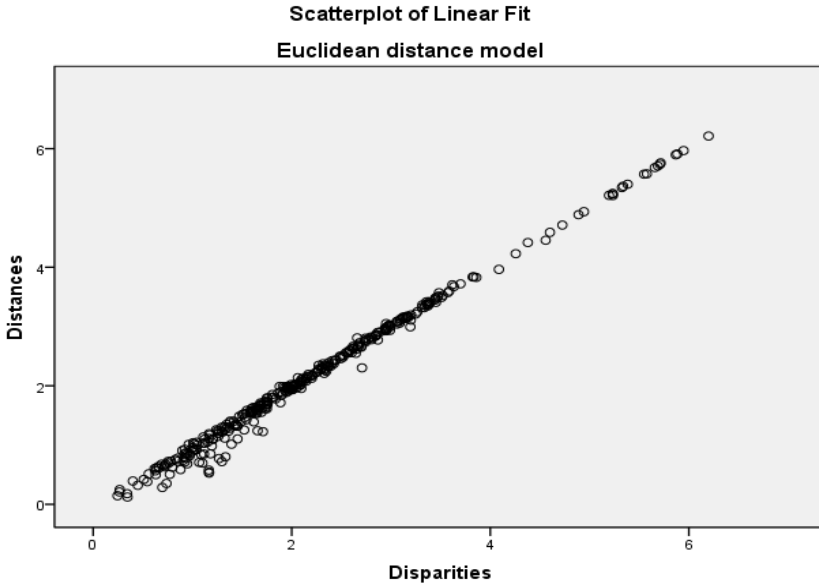
Kümeleme analizi sonucu elde edilen Dendogram EK 3'de verilmiştir.   Dendogram incelendiğinde ülkelerin 6 kümeye ayrılabileceği görülmüştür. Kümeleme analizinin sonuçları Tablo 7'de verilmektedir.

Tablo 7: **Kümeleme Analizine Göre Ülkelerden Oluşan Kümeler**

Kümeler	Ülkeler
1. Küme	Litvanya, Slovakya, Yunanistan, Bulgaristan, Letonya, Romanya, Polonya, Türkiye, Çek Cumhuriyeti, Macaristan, Kıbrıs
2. Küme	Malta
3. Küme	Danimarka, Finlandiya, İsveç
4. Küme	Lüksemburg, Portekiz, Avusturya, Belçika, Estonya, İrlanda, Hollanda
5. Küme	Fransa, İngiltere, İtalya, İspanya
6. Küme	Almanya

Elde edilen kümeler incelendiğinde, Türkiye'nin "Orta Seviye Yenilikçiler" ve "İddiasız Yenilikçiler" adı verilen ülkeler ile 1. kümede olduğu görülmektedir.   İnovason liderleri Almanya haricinde 3.kümede yer almaktadır. Malta ve Almanya 2. ve 6. kümelerde yer almakta, 4. Küme "İnovasyon Takipçileri'nden oluşmaktadır. Diğer Avrupa ülkeleri 5. Kümede sınıflandırılmaktadır.

ÇBÖ ile KA'nden elde edilen sonuçlar karşılaştırıldığında, her iki analizde Türkiye'nin "Orta Seviye Yenilikçiler" ve "İddiasız Yenilikçiler" adı verilen ülkeler ile inovasyon performansı açısından benzer olduğu ve aynı grupta sınıflandırıldığı görülmektedir.

5. SONUÇ

Yeni veya önemli derecede iyileştirilmiş ürün (mal veya hizmet) veya süreç, yeni bir pazarlama yöntemi yada yeni bir organizasyonel yöntemin gerçekleştirilmesi biçiminde tanımlanan inovasyon, sürdürülebilir büyüme ve kalkınmanın temel gereklerinden birisidir. AB'ne tam üyelik konusunda çalışmalarına devam eden Türkiye'de son dönemlerde inovasyon alanında ilerlemeler kaydetmektedir. Bu çalışmanın amacı, AB ülkeleri ile Türkiye'yi inovasyon performansı açısından karşılaştırmak ve benzer ve farklı ülkeleri belirlemektir. Bu amaçla ÇBÖ ve KA kullanılmış ve sonuçlar karşılaştırılmıştır.

ÇBÖ Analizine göre, Türkiye inovasyon konusunda AB'nde performansı en düşük olan ve "İddiasız Yenilikçiler" adı verilen ülkeler ile (Bulgaristan, Romanya, Letonya ve Polonya) benzerlik göstermektedir. Adı geçen ülkeler inovasyon puanı açısından AB ortalamasının oldukça altında olan ve AB'ne 2004 yılı ve sonrası üye olmuş, üst orta gelir seviyesine sahip ülkelerdir.

Kümeleme analizinin sonuçlarına göre, Türkiye'nin AB'nde "İddiasız Yenilikçiler ile Orta Seviye Yenilikçiler" adı verilen ülkeler ile aynı kümede yer aldığı görülmektedir. Her iki analiz sonucu elde edilen bulguların birbirini desteklediği görülmektedir.

Analizler sonucu elde edilen bir diğer bulgu, "İnovasyon Liderleri" adı verilen ülkelerin (İsveç, Finlandiya, Danimarka, Almanya) aynı boyut veya kümede toplanarak diğer ülkelerden ayrışmasıdır. AB'nde inovasyon puanına göre üst sıralarda yer alan İnovasyon Liderleri'nin özellikleri incelendiğinde, bu ülkelerin inovasyon performansı açısından aynı zamanda dünyanın önde gelen ülkeleri olduğu görülmektedir. Özellikle Almanya tescil edilen patent sayısı bakımından diğer ülkelerin oldukça önünde yer almaktadır. Adı geçen ülkelerde kişi başına düşen GSYİH oranı yüksek, Gini katsayısı ve işsizlik oranı düşüktür. Politik yönden istikrarın ve hayat standardının yüksekliği refah düzeyini arttırmaktadır. Üniversite ve sanayi arasındaki işbirliği üst seviyededir. Toplumsal hayatta hiyerarşi veya sınıf farkının olmaması ülke vatandaşlarının inovatif fikirler üretmesine zemin hazırlar niteliktedir. Ayrıca deneyimli ve yetişmiş Ar-Ge personelinin varlığı, inovasyon performansının artmasında önemli bir etkendir.

Çalışmanın bütün sonuçları değerlendirildiğinde, Türkiye'nin inovasyon ve Ar-Ge alanında son 10 yılda ilerlemeler kaydetmesine rağmen, henüz olması gereken seviyede olmadığı ve AB ortalamasının çok altında olduğu görülmektedir. İnovasyon faaliyetlerinin en önemli göstergelerinden biri olan Ar-Ge yoğunluğunun yirmi yıllık süreçte ancak %0,45'ten %0,95'e yükselmesi gelinen noktanın yetersizliğini açıkça ifade etmektedir. AB'nin 2020 hedefinin %3 olması, konu ile ilgili tedbirlerin acilen alınmasını zorunlu hale getirmektedir. Türkiye'nin AB ülkeleri ile rekabet edebilmesi ve AB sıralamasında üst sıralara çıkabilmesi için öncelikli olarak inovasyon bilincinin oluşturulması gerekmektedir. Bu alanda gerekli eğitimlerin verilerek, alanında uzman insan kaynağının yetiştirilmesi kaçınılmazdır. Ayrıca, inovasyon alanında gelişmeye açık sektörlere verilen teşviklerin arttırılması ve gerekli hukuki düzenlemelerin yapılması konu ile ilgili teşebbüslerin artmasına neden olacaktır.

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EKLER

EK 1: Üç Boyutlu Euclidean Uzaklık Modeli

Derived Stimulus Configuration
Euclidean distance model
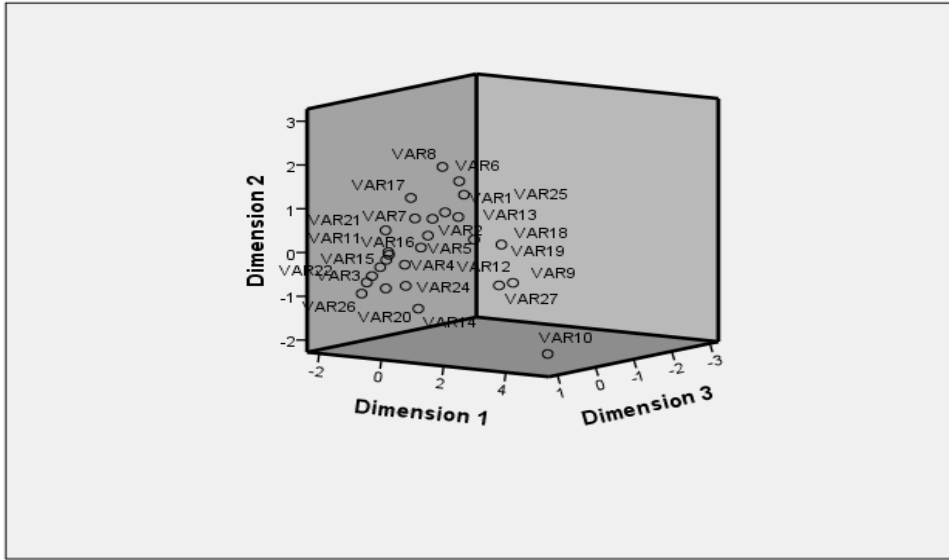
Kısaltma	Ülkeler	Kısaltma	Ülkeler	Kısaltma	Ülkeler
VAR1	Avusturya	VAR10	Almanya	VAR19	Hollanda
VAR2	Belçika	VAR11	Yunanistan	VAR20	Polonya
VAR3	Bulgaristan	VAR12	Macaristan	VAR21	Portekiz
VAR4	Kıbrıs	VAR13	İrlanda	VAR22	Romanya
VAR5	Çek Cumhuriyeti	VAR14	İtalya	VAR23	Slovakya
VAR6	Danimarka	VAR15	Letonya	VAR24	İspanya
VAR7	Estonya	VAR16	Litvanya	VAR25	İsveç
VAR8	Finlandiya	VAR17	Lüksemburg	VAR26	Türkiye
VAR9	Fransa	VAR18	Malta	VAR27	İngiltere

EK 2: ÇBÖ Analizi ile Elde Edilen Farklılıklar Matrisi

	1	2	3	4	5	6	7	8	9	10
1	.000									
2	.545	.000								
3	2.588	2.254	.000							
4	2.349	1.879	1.297	.000						
5	1.241	1.024	1.503	1.454	.000					
6	.973	1.260	3.343	3.060	2.010	.000				
7	.923	.626	1.810	1.646	.659	1.654	.000			
8	1.376	1.694	3.633	3.510	2.409	.719	1.967	.000		
9	2.232	2.373	3.449	3.199	2.493	2.625	2.740	3.121	.000	
10	4.725	4.888	5.884	5.716	5.231	4.943	5.326	5.196	2.990	.000
11	2.148	1.746	.630	.880	1.127	2.857	1.356	3.202	3.169	5.688
12	1.861	1.581	1.111	1.169	.637	2.586	1.172	2.991	2.811	5.549
13	1.262	1.008	2.204	1.613	.923	1.758	1.047	2.334	2.424	5.234
14	2.168	1.993	2.064	2.034	1.890	2.942	2.098	3.334	2.023	4.087
15	2.439	2.092	.267	1.167	1.324	3.165	1.643	3.476	3.359	5.868
16	2.082	1.741	.619	1.165	1.000	2.775	1.293	3.092	3.142	5.710
17	1.333	1.100	2.493	2.272	1.617	1.325	1.268	1.656	2.939	5.338
18	3.379	3.249	2.967	2.708	2.516	3.833	3.059	4.379	3.393	6.199
19	1.007	.962	2.568	2.062	1.303	1.610	1.376	2.202	1.544	4.257
20	2.269	1.971	.850	1.394	1.381	3.058	1.696	3.383	2.866	5.234
21	1.450	1.196	1.641	1.887	1.166	1.946	.949	2.141	2.978	5.384
22	2.742	2.373	.343	1.182	1.690	3.522	1.955	3.822	3.573	5.946
23	1.994	1.612	.761	1.068	.999	2.663	1.206	2.993	3.109	5.657
24	1.802	1.604	1.652	1.749	1.418	2.584	1.597	2.956	2.265	4.558
25	.755	1.123	3.311	2.951	1.953	.739	1.592	1.087	2.366	4.601
26	2.617	2.309	.721	1.521	1.751	3.444	1.955	3.700	3.376	5.577
27	2.145	2.207	3.266	2.946	2.392	2.547	2.603	3.088	.697	3.195

	11	12	13	14	15	16	17	18	19	20
11	.000									
12	.828	.000								
13	1.685	1.207	.000							
14	1.913	2.054	2.314	.000						
15	.450	.898	1.980	2.093	.000					
16	.346	.690	1.666	2.008	.400	.000				
17	1.962	2.008	1.538	2.523	2.310	1.931	.000			
18	2.841	2.180	2.327	3.587	2.792	2.748	3.617	.000		
19	2.111	1.747	1.019	1.805	2.412	2.117	1.757	2.868	.000	
20	.905	1.255	2.093	1.327	.916	.949	2.336	3.121	2.154	.000
21	1.264	1.470	1.685	2.043	1.517	1.167	1.041	3.483	1.896	1.528
22	.730	1.295	2.329	2.085	.510	.855	2.655	3.090	2.677	.940
23	.264	.784	1.587	1.949	.560	.245	1.758	2.848	2.031	.974
24	1.436	1.600	1.930	.797	1.644	1.488	2.008	3.358	1.669	1.117
25	2.849	2.561	1.753	2.683	3.159	2.803	1.710	3.859	1.343	2.955
26	1.016	1.549	2.485	1.699	.921	1.105	2.645	3.468	2.615	.772
27	2.943	2.700	2.295	1.720	3.178	2.958	2.660	3.452	1.455	2.674

	21	22	23	24	25	26	27
21	.000						
22	1.837	.000					
23	1.042	.937	.000				
24	1.435	1.734	1.421	.000			
25	2.096	3.448	2.701	2.440	.000		
26	1.740	.660	1.153	1.366	3.316	.000	
27	2.742	3.371	2.891	1.912	2.348	3.152	.000

EK 3: Kümeleme Analizi İle Elde Edilen Dendogram

Dendrogram using Ward Linkage

Rescaled Distance Cluster Combine