



Uluslararası Sosyal Araştırmalar Dergisi

The Journal of International Social Research

Cilt: 8 Sayı: 37 Volume: 8 Issue: 37

Nisan 2015 April 2015

www.sosyalarastirmalar.com Issn: 1307-9581

THE IMPACTS OF EMPLOYEE EMPOWERMENT ON INNOVATION: A SURVEY ON ISPARTA AND BURDUR ORGANIZED INDUSTRIAL ZONES*

Hasan Hüseyin UZUNBACAK**

Abstract

This study has analyzed, by examining the relationship between empowerment and innovativeness which are significant concepts for organizations, how empowerment efforts affect innovativeness, and how behavioural, psychological, and social and structural dimensions of empowerment affects innovativeness. As a result of these examinations, all the hypotheses which comprised our research have been accepted. In other words, it has been concluded that the behavioural, psychological, and social and structural empowerment efforts concerning the employees have a highly positive impact on innovativeness, and that the simultaneous application of behavioural, psychological, and social and structural empowerment has an impact of high degree on innovativeness.

Keywords: Empowerment, Behavioural Empowerment, Psychological Empowerment, Social And Structural Empowerment, Innovation, Innovativeness.

1. INTRODUCTION

The competitive conditions, which have increased due to industrialization and globalization, have rapidly attributed more significance to human resources from the point of organizations. Organizations have placed humans at the centre of their structures, and more effective and efficient ways of benefitting from human resources have been sought by developing various strategies. Organizations have felt the need to follow modern management approaches such as "empowerment" closely.

Of course it will not be possible for organizations to reach their objectives and aims at the desired levels. Those who fail to adapt themselves to technological advancement, changes in market and sector, the demands and expectations of customers will be doomed to fall prey to the natural selection or fail to enlarge. At this point, innovation steps on the stage as so essential a concept, even to the extent of saying "Innovate, or perish!" Finding human resources which are eager to innovate or able to adapt to innovative organizations will prove effective and yield positive results for organizations in the medium or long term. That organizations seek to find new products and services, new marketing, distribution, provision channels, new production processes, new strategies and technologies will maintain profitability, help build sustainable success as well as increase resistance against crises, risks, and threats.

In this study, building on the assumption that Burdur Organized Industrial Zone and Isparta Suleyman Demirel Organized Industrial Zone affect each other, the relationship between empowerment and innovativeness has been studied on the basis of the perceptions of those who work in these areas.

2. THEORETICAL FRAMEWORK

2.1. Empowerment

The concept of empowerment, although it has begun to be used since the early 1980's, the studies by Kurt Lewin who made observations that employees are to make the expected changes according to their own decisions (Doğan, 2006: 23) and Human Relations Approach which has been led by Elton Mayo and Hawthorne are acknowledged as the beginning. It has been suggested especially through Human Relations Approach that the employee can perform his duties on his own accord and without being motivated or close

* This article based on the doctoral dissertation (Sup. H.İBİCİOĞLU) "The Effects Of Employee Empowerment Studies In Organizations On Innovation Behaviour Of Employee : A Research" completed at Suleyman Demirel University, in 2013.

** Dr., hhuzunbacak@gmail.com

monitoring, and the participation of employees and organizational behaviour studies have become popular studies of management (Murat, 2001: 113).

In the 1960's, Douglas McGregor and Likert stated that self-management of employees and their participation in decision-making processes would help empower the employees who take on responsibilities. With these studies, the consideration of personnel's demands, the identifying of their skills and interests, and the re-organization of their cooperation and communication with management have caused employees to take courage (Doğan, 2006: 23). Whereas between 1960 and 1970, asking employees for suggestions, encouraging them to participate by asking their opinions, motivating them with a humanitarian approach, preventing leave of employment and similar subjects had been considered among the aims of managers, in the 1980's the escalation of competition and the desire to come out of this competition as victorious had foregrounded the existence of the employee who has the authority necessary to ensure customer commitment and to ensure that customers' demands are met quickly and on time (Özveren, 2006: 64). This notion has revealed the need to empower the personnel even more (Akin, 2010: 222).

The studies conducted by Harrison and Kanter in 1983, Bennis and Naus in 1985, Burke and Neilsen in 1986, Block in 1987, and House in 1988 have given the concept of empowerment its modern usage. Furthermore, due to the quality circles which appeared after the year 1980, the improvement of work life's quality, and the studies of total quality management, the significance of empowering the personnel has started to increase (Doğan, 2006: 24). Especially Block has emphasized in his studies that employees' mood is significant in management alongside circumstances, conditions, policy and practice; this emphasis has led empowerment to be considered as a new management method in the sense we know today (Doğan, 2003: 6). In 1988 Conger and Kanungo, who have studied empowerment, defined empowerment as "motivational processes"; and in 1990 Thomas and Velthouse have introduced a new perspective and defined it as giving energy, capacity, and authority to others alongside motivation. The authors who have attributed empowerment a sense outside of its traditional meaning have claimed that the performance will be affected by the individual differences in the interpretation process and have made contributions through some corrections on Conger and Kanungo's motivational processes view (Doğan, 2006: 25-26).

The existence of different perspectives and approaches concerning empowerment has resulted in the different naming of this concept as *empowerment*, *employee empowerment*, *psychological empowerment*, *organizational empowerment* (Bolat et al, 2009: 216). This term, which is commonly expressed as "empowerment," has come into use in Turkish as "authority empowerment", "empowerment", and "employee empowerment". However, in literature it has been more commonly referred to as *employee empowerment*.

As is with the definition of many other concepts, the definition of empowerment has been done in quite different ways. Some researchers have considered empowerment studies as managers' authority and responsibility, while others have suggested that empowerment is the internalized emotions and opinions, and that their motivation and their confidence in themselves, their knowledge and skills encourage their desire to take action (Peccei & Rosenthal, 2001: 883).

Broadly speaking, empowerment is the reinforcement of employee's self-confidence, the distancing of decision-making process from the centre and thus giving employees more autonomy, responsibility and discretion (Sahoo et al, 2010: 41), the sharing of knowledge and resources, the redistribution of the power of decision-making so as to cover those who lack this power, the action of giving employees by means of cooperation, sharing, training and teamwork the right to make decisions. The definitions of empowerment can be summarized as providing employees with a milieu where they are motivated enough, trust in their knowledge and expertise, use initiative while taking action, solve problems, have the will and faith to control events, and perform their duties in accordance with the aims of the organization (Doğan, 2006: 35).

2.1.1. Behavioural Empowerment

Behavioural approach not only explains the duties and responsibilities that need to be performed by managers in terms of employee empowerment, but also attempts at pointing out what needs to be done in order to eliminate the handicaps in the way of empowerment. From a behavioural perspective, empowerment is the process through which power is shared with employees, participation in decision-making is ensured, and employees are encouraged to demonstrate their knowledge, skill and experiences (Bolat, 2003: 201). Bolat lists the duties and responsibilities -which have been asserted by many researchers- that need to be performed by managers in order to achieve behavioural empowerment as follows (Bolat, 2003: 201):

- To create a vision shared within the organization,

- To create an organizational culture with a view to empower,
- To make it possible to share knowledge about issues such as organizational objectives and aims, organizational and individual performance,
 - To create confidence and commitment in the organization and to reduce alienation,
 - To increase participation and the circulation of authority within the organization,
 - To enrich the processes of planning, decision-making and controlling in a vertical way,
 - To create a learning atmosphere by encouraging employees about the decisions they make and the methods they follow while performing their duties,
 - To educate and improve employees constantly,
 - To establish a two-way communication system within the organization and to make sure that it is applied,
 - To define the organization's objectives and aims clearly and to convey them to employees,
 - To establish an effective reward system and to focus on employees' work satisfaction,
 - To improve coaching, mentoring, and consulting,
 - To define the borders within the organization and to improve free movement within these borders.

That said, it is necessary that facilities such as managers' sharing resources and knowledge with employees, transferring authority and responsibility, emphasizing participation, trusting and supporting, work enrichment, taking motivation-increasing precautions, establishing a healthy communication atmosphere, encouraging teamwork, supporting training and learning, rewarding and giving feedback should be provided. Focusing on what needs to be done by management in order to empower personnel in terms of behavioural approach, they attempt to explain empowerment from the perspective of what conditions are required.

2.1.2. Psychological Empowerment

The most significant indication of empowerment efforts is that those who are empowered are more active and more efficient than those who are not empowered. Indeed, empowered employees not only hold much more information about the duties they do, but also make a plan, by analysis, of the duties they will do and find solutions to impediments marring their performance (Indra, 2011: 23-24). Especially Spreitzer, Conger, and Kanungo have emphasized, by considering factors such as the objectives and aims of organizations, the perceived control feeling, the perception of authority, and internalization from the individual perspective of employees, that the concept of empowerment is a process that addresses employees' emotions and inner worlds. With this outlook, they made analyses on psychological level. (Choong et al, 2011: 238).

Conger and Kanungo (1988) have suggested that the implementations carried out by management with a view to empower would not suffice, and that employees are required to be included in the empowerment process. Thomas and Velthouse, in their 1990 study, have stated that psychological empowerment is a model which increases motivation, that this model has four elements, namely effect, competence, meaningfulness, and choice, and that these elements, when combined, will lead to employees' more efficient performance. Furthermore, they have contended that the lack of one of these elements will have a negative effect on empowerment. Spreitzer (1995), in his 1995 study, has improved Thomas and Velthouse's four elements, and showed in a similar way that the psychological dimension of empowerment should not be neglected. She has underlined that the individual is at the centre of the studies on empowerment, that organizational conditions will not suffice for the empowerment of employees, and that the way employees perceive empowerment is of greater significance. She has further stated that employees will have impact on the system they are part of, the strategy within the organization, the ways in which duties are performed, and the results of the actions carried out by the organization. Explaining that the degree of this impact can differ in accordance with the employee's position within the organization and his performance, she has highlighted that managers should provide opportunities where employees can articulate their opinions and suggestions freely (Choong et al, 2011: 238-239).

2.1.3. Social and Structural Empowerment

Spreitzer has concluded in his studies that the social and structural features and elements of empowerment have a significant impact on employee empowerment. He has reached to the conclusion that socio-structural features such as work environment, organizational culture, and the performance of leaders are closely related to employee empowerment, and that some structural factors like control, information-

sharing, and rewarding are important in terms of managerial effectiveness and innovation (Samad, 2007: 255). Social and structural empowerment, which is closely related to social change and social power theories, is intertwined with the society's, of which the individuals are a part, notions on and values about democracy. Presenting opportunities to employees from every level, eliminating the obstacles that bar access to information and sources, providing socio-political support, minimizing organizational hierarchy, and promoting participation can be regarded as the essential elements of social and structural empowerment. The essence of social and structural empowerment consists of ensuring employees' participation in the decision-making processes and minimizing hierarchical order by transferring responsibility to the subaltern. As a result, the sharing of authority and responsibility provide more space for the management to improve the organization and to ponder creative and innovative ideas. That being said, the focal point of social and structural empowerment is the elimination of the circumstances that weaken employees on organizational, institutional, social, economic, political, and cultural grounds (Spreitzer, 1996: 486-88).

In order for empowerment efforts to materialize their objectives there are some works to be done. These are: to minimize ambiguities about roles in order that employees can know what is expected of them; to re-organize control areas so that managers can be more efficient; to provide the socio-political support that makes it possible that the decisions made by employees are acknowledged; to establish a system which makes it possible to access information and sources and share them in a healthy manner; and to create an atmosphere which promotes participation (Spreitzer, 1996: 488-490).

2.2. Innovativeness

From Adam Smith to Alfred Marshall, many scientists have studied the concept of innovation, and discussed the impact of innovation on products and product methods and its economic importance (Barutçugil, 2009: 34). For instance, in the years 1994 and 1995, in the US only, 275 books which had the word "innovation" in their title were published (Akyos, 2010).

One of these scientists, Thorstein Veblen, in his *The Theory of Business Enterprise* which was published in 1904 and in *The Engineers and the Price System* which was published in 1921, dealt with the relationships between man-made production and the institutions where the production takes place, and with efficiency (O'hara, 2002: 82). Joseph Schumpeter, with his book *Die Theorie der wirtschaftlichen Entwicklung*, has become the scientist who systematically introduced the concept of innovation into the economics theory. Schumpeter, who was highly influenced by Karl Marx, Max Weber, and Walras, considered innovation as an element that promoted economic development, distinguished between invention and innovation, and argued that, considering innovation as a process, this process would be complete by making the invented product commercial and promoting its commerciality (Oğuztürk, 2003: 255). According to Schumpeter, "who argued that competition relying on new products are more important than the marginal changes on the existing products' prices" (Akyos, 2010), alongside the fact that innovativeness is the essential element of economic development and competition, in order for the new product to be valuable, it is necessary that the new product should be turned into the production process (Hagedoorn, 1996: 885).

After the WWII, economists such as Mills (1952), Schmookler (1952), Fabricant (1959), Abromowitz (1956), Solow (1957), and Kendrick (1961), who analyzed the impact of the change in the capital and labour input, focused on measuring the speed of technological advancement, considering technological innovation as a growing factor (Roseboom, 2002: 8). Solow, who worked on Exogenous Technological Growth Model, stated that economic growth cannot be explained through only labour and capital, and that, apart from labour and capital, the other unexplained element is technology, which he called "Solow residual" (Karaöz & Albeni, 2003: 33). Assuming that technological change has no adaptation problem, he showed that technological growth is the only way of economic growth in the long term, and stated that the fluctuations in the supply-demand may cause shifts in functions (Solow, 1957: 512).

By the 1980s, Internal Growth Model (New Growth Model), which argues that economic growth in the long term will take place not only in accordance with the exogenous technological growth, appeared (Mytelka & Smith, 2001: 10). In this model, the assumption of decreasing returns to scale has lost its significance, and technological growth came to be considered as the model's variable. With the help of Internal Growth Model, Romer and Lucas adapted technology to neoclassical models (Karaöz & Albeni, 2003: 33). Again in this period, Arrow studied on neoclassical innovation theory, focusing on the concept of "learning by doing," and stated that, assuming man knows everything, innovations and changes occur within companies, and that learning and innovation are a natural result of producing (Oğuztürk, 2003: 262). It has been emphasized that information models based on the assumption that information is accessed equally by everyone and there can be no asymmetrical information or Research-Development based internal growth models and human resources contribute positively to economic growth, that information is public

and everyone can access it, that information will bring about a raise in income, and that the market should be evaluated according to the lacking competition conditions (Zaman & Goschin, 2010: 34).

Another progress in the 1980s occurred when evolutionary economy theorists stated that innovation was not a simple and insignificant point. Evolutionary economy theorists argued that in every stage of innovation, from the invention to the propagation, there is an intertwined feedback process, that events occurring in this process have some systematic qualities, and that there is a constant flow of information (Laranja et al, 2008: 831). They also developed the stock model which explains that the increase in the number of users using the newly developed technologies will reduce the extra income to be gained by this new technology, and the order model which argues that the profit to be made from the product or the technology depends on which order the consumer who will buy the new technology is in (Uzpeder, 2008: 1-2). By the end of the 1980s, with the studies conducted by Freeman and Lundvall, it was emphasized that innovation should be regarded as a system, and Fredrich List's "Innovation System Theory" was propounded (Oğuztürk, 2006: 123). According to this approach, it is stated that all economic actors who produce innovation should be in touch, and that there should be a dialogue between physical and labour infrastructure, socio-cultural environment, state and government (Oğuztürk, 2006: 136-37).

Michael Porter's studies, which appeared in 1990 and are still accepted today, argued that the quantitative multiplicity of the firms located in a region would quicken economic growth by spreading information, that innovativeness and enterprise would promote competitive advantage and these would not come into being by themselves, that economic system had a dynamic structure, and that innovation will appear as a result of the structure comprised by aggregation (Oğuztürk, 2003: 269-70).

Innovation, in its modern sense, has claimed its place within the literature as innovativeness (Eraslan et al, 2008: 24) and the word innovation, has its roots in the Latin word *innovatio*. This word, which means "to change," "to differ," and "to renew," consists of *in* meaning "inside" and *novare* meaning "renew, new." It was first used in English in 1588, and it is only in the 1990s that it came into use in Turkey (Akalin, 2007: 483).

Schumpeter, who made a lot of studies on innovativeness, defined innovation as new products introduced into the market, new production methods, new organizational structures and services. According to another definition, innovativeness is the different use of an idea, a tool, a system, a policy and program, a product or service for the first time, compared to its earlier uses and processes (Güleş & Bülbül, 2002: 125). Myers and Marguis define innovativeness as a new, social and economic value producing idea's loss of its conceptuality and the solution of a problem, whereas Zaltman considers anything new within the scope of innovation, Kanter, on the other hand, explains everything that is new and solves problems as innovativeness (Özçer, 2005: 14-5). Freeman considered innovativeness as designs, production, management or commercial activity done with a view to produce new products, processes or equipment and to enter the market (Bayındır, 2007: 242). Peter Drucker defined innovativeness as producing new ideas, processes and services, accepting production and its application, commercializing of creative ideas, and the effort of leading an enterprise to creating change (Drucker, 1985: 69). Innovativeness has come to mean ideas, products, services and processes which will be useful to all people or their organizations and the like of which has never been developed before (West & Farr, 1990: 252).

Other researchers who studied this subject defined it as follows:

- Innovativeness is the synthesis, or the concretization of information in order to serve with an original, new, and valuable product, and to create production process (Luecke, 2008: 3).
- Innovativeness is the force to make innovation and thus promote change, which aims to contribute to organizations and promises commercial profits in the end (Toraman, 2009: 94).
- Innovativeness is the application of a new idea by an organization (Basım et al, 2008: 123).
- Innovativeness is the innovative efforts which are made in every stage of a product or a service from its design to its introduction into the market and have the effect of increasing the organization's competitive power and profitability (Gümüş, 2009: 162).
- Innovativeness is to develop new products which will answer the market's needs and expectations to change and their introduction into the market, and to manage all resources in accordance with this aim (Szeto, 2000: 149).
- Innovativeness is that an organization develops a new product for itself, uses a new method or a new input and becomes the first to do it (Ersoy Açıköz & Muter Şengül, 2008: 60).

As we can understand from the definitions of scientists and researchers, each one of them approached the subject from their own perspective and attempted to define it accordingly. When we analyze these

definitions, we can notice some common points. Some of the remarkable common points are as follows (Uzkurt, 2008: 19-26):

- It is a social and organizational tool that improves living standards and causes changes in the lives of its users.
- It is a process and a method of problem-solving.
- It is a continuous process and value which provides economic and social benefits.
- It is a product of coordination within an organization's activities and functions.
- It is one of the foremost tools for competitiveness.
- It is the tool which promotes harmony and unification with the environment, it has an expansive quality.

2.3. The Relationship Between Empowerment And Innovativeness

The organizations which seek ways to empower their employees by means of factors such as competitive environment, the changes in customers' demands and globalization attempt to increase their profitability, making more use of enterprise, creativity, and innovativeness (Çuhadar, 2005:1). Furthermore, employee empowerment and innovativeness and similar efforts are of great importance for organizations to be successful in the long term, to enlarge, and to survive. For these reasons, empowerment, apart from being a philosophy which authorizes giving more responsibility and assigning them authority to make decisions, helps to create new research fields, new ideas, products and markets and thus contributes to economic and industrial growth (Al Zahrani, 2012: 7329-7330).

The fact that employees, thanks to the efforts of empowerment, participate in management, have the authority to make decisions and to produce new ideas and that managers attempt to create an organizational culture and environment which will facilitate employees' creativity and innovativeness encourages employees to behave innovatively. In such an environment, the employee will feel empowered and be able to produce new ideas (Köksal, 2011: 68). Indeed, Spreitzer described innovation as the most important outcome of the psychological empowerment model within which he included locus of control, self-esteem, information-sharing and rewarding (Spreitzer, 1995: 1445).

Employee empowerment not only has a positive impact on employees' efficiency, work satisfaction, quality, and customer satisfaction, but also helps to increase the demand and efforts to create innovation by authorizing employees and increasing their competence (Bolat, 2008: 113-115). Giving employees' enough time, education and resource makes a positive impact on the perception of employees' self-sufficiency, work satisfaction, confidence and the meaningfulness of work. The employees with this perception feel themselves more empowered, increase their efficiency and productivity within the organization, and become the source of new ideas and innovation (Kahre et al, 2011: 30). It is essential that organizations should use information in all their activities effectively and make it compatible with production processes, and adapt themselves to environmental innovations and changes. Also, it is necessary to create an organizational culture and environment open to innovation and creativity by making organizational and managerial regulations. The first step to be taken for this change to materialize is employee empowerment. The reason why organizations today focus on efforts to empower their employees is, as mentioned above, that they want to increase the level of quality, efficiency and customer satisfaction. Due to these reasons the transformations in organizational structures and the rapid change in environmental factors oblige organizations to create an innovative organizational culture and to focus on efforts to empower their employees (Öğüt et al, 2007: 164).

3. RESEARCH

3.1. Aim and Importance

The rules of global economy make it necessary for an organization either to follow innovations closely and adapt them into its own structure or to produce those innovations on its own, if it is to survive in competitive market conditions. Empowerment efforts are important because it is thanks to them that work efficiency increases, individuals take on their responsibility and thus works are performed within a certain period of time, employees take initiative and know their responsibilities, employees' innovative and creative ideas are revealed, the level of cooperation and teamwork increases, work satisfaction increases, managers have more time to deal with more important issues, costs are reduced, and competitive advantage is created.

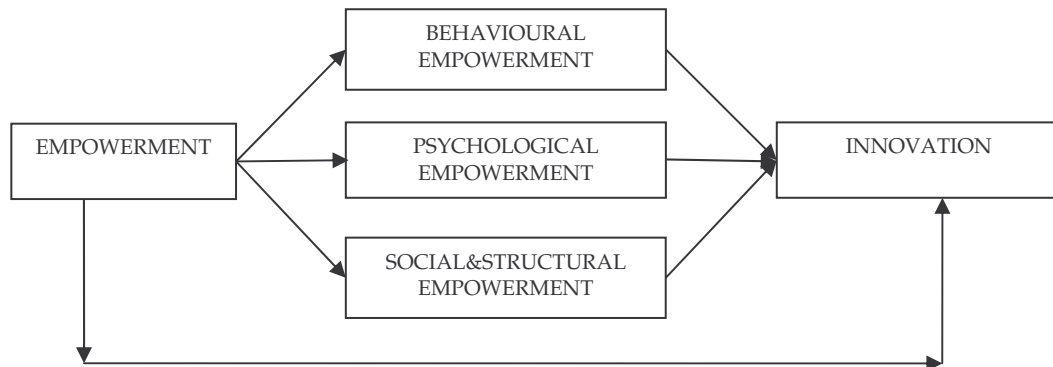
This study is significant in that it deals with the relationship between innovativeness and empowerment, including behavioural, psychological, and social dimensions which are considered a part of the literature.

3.2. Model and Hypotheses

The study attempts to explain the empowerment efforts within the organizations on the basis of the subjects' perspective and perception. As mentioned in the previous sections, empowerment efforts are a tool by which employees' innovative and creative talents are revealed. Therefore, it is argued that there can be a relationship between empowerment and innovativeness.

In the analysis of the literature, it is observed that empowerment is analyzed in three dimensions, namely behavioural, psychological, and social and structural. Accordingly, the research model is designed as in the following figure.

Figure 1. The Model of the Research



According to the model, 4 hypotheses have been identified:

Hypothesis 1: The behavioural empowerment efforts concerning employees have a positive impact on the perception of innovativeness.

Hypothesis 2: The psychological empowerment efforts concerning employees have a positive impact on the perception of innovativeness.

Hypothesis 3: The social and structural empowerment efforts concerning employees have a positive impact on the perception of innovativeness.

Hypothesis 4: The empowerment efforts concerning employees have a positive impact on the perception of innovativeness.

3.3. Scope and Limitations

In the scope of the study, every department of the organizations which operate in Burdur Organized Industrial Zone (BOIZ) and Isparta Suleyman Demirel Organized Industrial Zone (ISDOIZ) and employees from all positions have been included.

The fact that the study's scope consists of BOIZ and ISDOIZ is one of the limitations of it. Even though there are many factors which independently affect empowerment and innovativeness (such as organizational culture, organizational structure, management style, sector features, and demographic features) in the relationship to be established between empowerment and innovativeness, the focus in this study is on the impact of empowerment efforts within organizations and the perception of employees on the perception of innovativeness. In other words, empowerment has been discussed as a factor affecting innovativeness, and all the other factors have been excluded. Since this study was conducted between 10 July 2012 and 30 July 2012, it reflects the opinions held by employees during this period. Also, due to the fact that time was limited and that the research was costly, the research was restricted to two organized industrial zones, considering that they are geographically close. Moreover, the possibility, that there may be some lacking points due to the employees who took the surveys, is another limitation of the study.

3.4. Population and Sample

The population of the research consists of the employees working in BOIZ and ISDOIZ. In BOIZ 47 organizations and 1650 employees have been included, and in ISDOIZ 39 organizations and 1300 employees (OIZ Senior Council, 2012) have been included, with a total of 86 organizations and 2950 employees.

When the number of subjects is under 10,000, the population is considered a "limited population" (Özdamar, 2011: 257). Therefore, our research has been conducted within a limited population. In our research, level of confidence has been accepted as 95%, and significance level 5%. As mentioned above, the number of subjects has been taken as 2950. H value has been identified as $\pm 0,10$, and σ value as 1; and it is

estimated that a research should be conducted with at least 340 employees' participation. Because of factors such as error margin, wrong and incomplete coding, the survey has been applied to a higher number of employees.

Chart 1. The Numbers of Surveyed Organizations and Surveys

SECTOR	BOIZ	ISDOIZ	Number of Surveys	
Textile	1	5	136	30,6
Forest Industry (Wood-Furniture)	1	8	68	15,3
Food	7	4	85	19,1
Construction (Cement-Marble-Construction Material)	6	4	92	20,7
Machine	12	3	63	14,3
Total	27	24	444	100,0
SUM TOTAL	51			

Applying the convenience sampling method, the survey has been applied to 27 organizations out of the 47 in BOIZ, and to 24 out of 39 in ISDOIZ, amounting to 51 organizations out of 86 operating in 5 different sectors. However, due to several reasons, 465 out of 600 surveys have been returned, and 444 survey forms have been taken into consideration. The distribution of the forms in accordance with the sectors has been demonstrated in Chart 1.

3.5. Data Collection Technique and Tool

In this research data have been collected through survey method. In the survey, while deciding on which questions to ask, scales which have been found to have been used commonly in literature were used. In the survey form, five point likert scale was used to evaluate the relationship between empowerment and innovativeness (1=strongly disagree, 2=disagree, 3=agree in part, 4=agree, 5=strongly agree). The form comprises of 82 questions in total, 8 of which are dedicated to determine the demographic profile. The information concerning the rest of the questions (75) is as follows:

27 questions were concerned with **behavioural empowerment**, the scale was used in the studies conducted by Dobbs (1993), Kanter (1993), King and Ehrhard (1996), Cacioppe (1998), Niehoff et al (2001), Robbins et al (2002), and Laschinger (2004). 12 questions were concerned with **psychological empowerment**, the scale used was developed by Spreitzer (1995, 1996). 18 questions were concerned with **social and structural empowerment**, the scale used was developed by Spreitzer (1997). 18 questions were concerned with **innovativeness**, the scale used was compiled by and used by Çavuş after a literature review.

The analysis which was made with a view to determine the confidence level of the scales showed the following results: the reliability coefficient (Cronbach's Alpha) of behavioural empowerment scale is determined as $\alpha=0,939$; the reliability coefficient of psychological empowerment scale is determined as $\alpha=0,923$; the reliability coefficient of social and structural empowerment scale is determined as $\alpha=0,968$; and the reliability coefficient of innovativeness scale is determined as $\alpha=0,967$. These results shows that the scales used in this research are highly reliable. Indeed, a scale is considered reliable, when the reliability coefficient of the scales is around $\alpha=0,90$ (Şencan, 2005: 128).

3.6. Data Analysis and Findings

3.6.1. Findings Related to Defining Data

The demographic data about those who participated in the research have been given in Chart 2. When the data in Chart 2 are examined, it is observed that 73,2% of the participants are male, and 26,6% of them are female; 61,7% of the participants are married, while 38,3% are single. When the age groups are observed, 47,3% of the participants fall into the age group ranging from 20 to 30; 41% of them fall into the age group ranging from 31 to 41; and 11,7% of them are aged over 41.

The percentage of employees according to their employment period has been identified as follows: those who had working experience between 1 and 10 years comprised 83,4% of the participants; those who had an experience of between 11 and 20 years comprised 41,3%; and those with an experience of 21 years and over comprised 2,3%. In terms of education level, the most crowded group is the secondary education group, with 46,6%. Higher education graduates comprise 38,7% of the participants, whereas the percentage of primary education graduates is 14,6%. In terms of the department of employment, it is observed that the participants mainly belong to the production department, with 46,2%. Production department is followed by accounting and finance department (13,7%), marketing and distribution department (13,1%), security and secretary department and similar departments (8,8%), management department (6,8%), and Research & Development department and quality department (5,4%). Furthermore, 76,1% of the participants are

employees, 17,6% department manager or chief, 2,9% general manager or general manager assistant, and 3,6% company owner or partner.

Chart 2. Participants According to their Individual Data

Groups	n	%	Groups	n	%
Sex			Department of Employment		
Male	325	73,2	Management	30	6,8
Female	119	26,8	Production	205	46,2
Marital Status			Research & Development	27	6,1
Married	274	61,7	Accounting / Finance	61	13,7
Single	170	38,3	Marketing / Distribution	58	13,1
Age (in years)			Quality	24	5,4
20-30	210	47,3	Other	39	8,8
31-40	182	41,0	Position		
41 and over	52	11,7	Company owner / Partner	16	3,6
Employment period (in years)			General Director / Genel Director Assist.	13	2,9
1-10	370	83,3	Department Manager / Chief	77	17,3
11-20	64	14,4	Employee	338	76,1
21 and over	10	2,3	Sector		
Education			Textile	136	30,6
Primary Education	65	14,6	Forest Industry and Furniture	68	15,3
Secondary Education	207	46,6	Food	85	19,1
Higher Education	172	38,7	Construction	92	20,7
TOTAL			Machine and Equipment Production	63	14,2
			TOTAL	444	100,0

The survey was applied to 5 sectors. 30,6% of the 444 surveys taken into consideration was applied in textile sector; 15,3% was applied in forest industry and furniture sector; 19,1% was applied in food sector; 20,7% was applied in construction material sector; and 14,2% was applied in machine and equipment production sector.

The results of general satisfaction level of empowerment and innovativeness scales are given in Chart 3. In Chart 3, the arithmetic mean of the scales and the standard deviation values are given.

Chart 3. Arithmetic Mean of Scales and Standard Deviation Values

Scale	Number of Expression	\bar{X}	s.d.v.
Empowerment (General)	57	3,88	0,59
Behavioural empowerment	27	3,81	0,61
Psychological empowerment	12	3,97	0,73
Social and structural empowerment	18	3,87	0,64
Innovativeness	18	3,67	0,83

As observed above, the arithmetic mean of behavioural empowerment scale is determined as $3,81 \pm 0,61$. This value is determined as $3,97 \pm 0,73$ for psychological empowerment scale, as $3,87 \pm 0,63$ for social and structural empowerment scale, and as $3,88 \pm 0,59$ for general empowerment. Judging from the values related to the scales, it is observed that the perception level of employees for each scale is close and at a high level. The arithmetic mean of innovativeness scale is determined as a bit lower ($3,67 \pm 0,83$).

3.6.2. Regression and Correlation Analyses

The analysis of the relationship between variables in terms of the causal relation is possible through regression analysis (Eymen, 2007: 92). In the regression analysis, behavioural, psychological, and social and structural empowerment have been considered as independent variables; and innovativeness has been considered as dependent variable.

As seen from the results in Chart 4, it has been found that the model is significant ($F=178,619$; $p<0,001$), and that, according to coefficient of determination ($R^2= 0,549$), 54,9% of the dependent variable (innovativeness) can be accounted for by the independent variables (behavioural, psychological, and social and structural empowerment).

Therefore, it is observed that at least one of the regression coefficients is different from 0, and that this situation reveals the relationship between innovativeness and the three dimensions (behavioural, psychological, social and structural) of empowerment.

Chart 4. Multiple Linear Regression Analysis of the Relationship between the Dimensions of Empowerment and Innovativeness

Independent Variables	β_j	S(bj)	t	p	R ²	Significance
Constant	-0,342	0,180	-1,903	0,058	0,549	F=178,619 p=0,000
Behavioural Empowerment (BE)	0,265	0,078	3,387	0,001		
Psychological Empowerment (PE)	0,080	0,051	1,585	0,114		
Social and Structural Empowerment (SSE)	0,692	0,069	10,062	0,000		

In Chart 5, the three dimension of empowerment have been reduced to one, as general empowerment, and the relationship between general empowerment and innovativeness has been analysed with regression analysis. As a result of this analysis, it is found that the model is significant (F= 446,934; p=0,000<0,001), and that, according to the coefficient of determination (R²= 0,503), 50,3% of the dependent variable (innovativeness) can be accounted for by the independent variable (general empowerment).

Chart 5. The Simple Linear Regression Analysis of the Relationship between Empowerment (General) and Innovativeness

Independent Variables	β_j	S(bj)	t	P	R ²	Significance
Constant	-0,246	0,187	-1,316	0,189	0,503	F=446,934 p=0,000
Empowerment (General)	1,008	0,48	21,141	0,000		

Therefore, it is observed that at least one of the regression coefficients is different from 0, and that this situation reveals the relationship between innovativeness and general empowerment.

The correlation analysis, which is conducted to determine the intensity of the relationship between two variables, is indicated with the coefficient symbol of (r). The coefficient obtained at the end of the analysis takes values between -1 and +1. Moving from -1 to +1, the relationship between variables increases towards positive. In other words, the direction of the relationship is indicated by the sign of “r”, and its degree is determined by the value of coefficient. Negative values indicate that while one variable is on the rise, the other is on the decline; positive values indicate that both variables rise or decline together. When (r) coefficient takes the value of 0 (null), it indicates that there is no relationship between variables (Altunışık et al, 2005:175). Correlation coefficient indicates the intensity of the relationship: when it is between 0 and 0,20, the relationship is too weak; when it is between 0,20 and 0,40, the relationship is weak; when it is between 0,40 and 0,60, the relationship is average; when it is between 0,60 and 0,80, the relationship is strong; and when it is between 0,80 and 1, the relationship is very strong (Aziz and Çevik, 2005: 359).

In the study, Spearman correlation analysis was applied to determine the intensity of the relationship between the behavioural, psychological, and social and structural dimensions of empowerment and innovativeness, since the data were not parametric. As a result of the analysis, as seen in Chart 6 below, all variables have been found to be in a relevant relationship.

Chart 6. Correlation Matrix of the Relationship between Empowerment and Innovativeness

Variables		Innovativeness		
		r	p	R ²
Spearman’s rho	Behavioural Empowerment	0,723	0,000	0,435
	Psychological Empowerment	0,593		0,276
	Social and Structural Empowerment	0,762		0,526
	Empowerment (General)	0,770		0,503

As understood from Chart 6, it is observed that the relationship between innovativeness and the psychological dimension of empowerment (r=0,593) is positive and average; its relationship with behavioural dimension (r=0,723) and social and structural dimension (r=0,762) is positive and high. In the correlation analysis of the relationship between general empowerment and innovativeness (r=0,709) it is found that the relationship is positive and high.

The results have shown that the most important factor within the relationship between empowerment and innovativeness is the social and structural dimension of empowerment. It can be argued that the fact that the values obtained from the analyses conducted on behavioural, psychological, social and structural empowerment or on the relationship between empowerment and innovativeness are average and high demonstrates that all these dimensions can be evaluated together and empowerment efforts within organizations increase the perception of innovativeness.

The coefficient of determination (R²) is the coefficient which explains to what extent a variable is dependent on another and what percentage of it can be accounted for by other variables. This coefficient

takes on a value between 0 and 1 and is positive (Altunışık et al, 2005: 197). When (R^2) values in Chart 6 are examined, it is determined that the 43,5% of the total variance in innovativeness results from behavioural empowerment, while 27,6% results from psychological empowerment and 52,6% results from social and structural empowerment. According to the coefficient of determination (R^2) obtained as a result of considering empowerment as one dimension, it has been concluded that 50,3% of the total variance in innovativeness results from empowerment.

CONCLUSION AND EVALUATION

After analysing the obtained data, all the hypotheses of the research have been accepted. According to these results, the assumptions that the behavioural empowerment efforts concerning employees have a positive impact on the perception of innovativeness (H1), that the psychological empowerment efforts concerning employees have a positive impact on the perception of innovativeness (H2), that the social and structural empowerment efforts concerning employees have a positive impact on the perception of innovativeness (H3), and that the empowerment efforts concerning employees have a positive impact on the perception of innovativeness (H4), have been confirmed.

In the research, it has been determined that agreement on statements related to the scales has been over the average value, and that the perceptions concerned with the psychological empowerment scale have a higher level compared to the other empowerment scales. It is necessary to increase the level of perception concerned with the behavioural empowerment, which is relatively low compared to the other dimensions. Managers need to make efforts to rid of the obstacles which bar the empowerment of employees. Alongside the view that applying each dimension of empowerment separately has a positive impact on the activities of organizations, considering the behavioural, psychological, and social and structural dimensions as one will provide positive results for managers and employees.

In the organizations where employees are empowered, collective decision-making and the balanced distribution of authority and responsibility not only increase the employee's efficiency, work satisfaction and organizational commitment, but also improves the employee's capacity of meeting expectations and of adapting to change. Organizations should not neglect this case; they need to take steps to empower their employees. Apart from empowerment efforts, organizations should seek to improve the behavioural, psychological, and social and structural factors which cause employees to feel weak. By the empowerment of employees, it is possible to include the intellectual capital within the process of innovation; the employee who takes part in the innovation process is more productive and efficient, and organizations that have such employees are efficient, profitable, and can retain their competitive advantage. To benefit from these advantages and to reach the successful innovativeness, Research & Development investments should be supported, and it is necessary that enough source is invested in projects.

In organizations with an established innovation culture, the time required to react to changes and problems will shorten. Those which can adapt and find solutions in a short period of time will be successful, whereas those which are closed to change and innovation will be more likely to fail. Empowerment efforts, which have an impact on innovativeness and which were taken into consideration in other studies, will contribute to the organization's competitive advantage and financial performance as well as increase employees' skills and work satisfaction, their efficiency and commitment to the organization.

It has been concluded that individual characteristics are of importance in perceptions related to empowerment and innovativeness. Extensive studies should be conducted to determine how empowerment efforts by managers are perceived by employees and, by determining the source of negative opinions resulting from individual characteristics, actions must be taken to get rid of these negativities. The main objective of managers should be to create a pro-innovation and encouraging organizational environment, to create an appropriate vision and decide on the strategies which will make it possible to benefit from the organizations' values as much as possible, and to plan tasks in a way that will empower employees and support innovation.

REFERENCES

- AÇIKGÖZ, E.B. & Muter Şengül, C. (2008), "Yenilikçiliğe Yönelik Devlet Uygulamaları ve AB Karşılaştırması", *Celal Bayar Üniversitesi İİBF Yönetim ve Ekonomi Dergisi*, 15(1), 59-74.
- AKALIN, Ş.H. (2007), "Innovation, İnovasyon: Yenileşim", *Türk Dili Dil ve Edebiyat Dergisi*, 93(666), 483-486.
- AKGÜL, A. & Çevik, O. (2005), *İstatistiksel Analiz Teknikleri – SPSS'te İşletme Yönetimi Uygulamaları*, Ankara: Emek Ofset Ltd.Şti.
- AKIN, M. (2010), "Personeli Güçlendirme Algılaması, Örgüt İklimi Algılaması ve Yaratıcı Kişilik Özelliklerinin Örgüt Düzeyinde Yaratıcı Çıktılar Üzerindeki Doğrudan ve Dolaylı Etkileri", *Erciyes Ü. Sosyal Bilimler Enstitüsü Dergisi*, 29(2), 211-238.
- AKYOS, M. (2010), "Firma Düzeyinde Yenilikçilik (Yenilik) ve Bilgi Yönetimi", Erişim Tarihi:17.08.2010, http://www.sistems.org/know_info1.htm,

- AL ZAHIRANI, A.A. et.al. (2012), "The Impact of Antecedents Supporting Organizational Innovation on Employees' Psychological Empowerment: An Empirical Study of Saudi and Jordanian Industrial Corporations", *African Journal of Business Management*, 6(24), 7329-7343.
- ALTUNIŞIK, R. vd. (2005), *Sosyal Bilimlerde Araştırma Yöntemleri*, 5. Baskı, Sakarya: Sakarya Kitabevi.
- BARUTÇUGİL, İ. (2009), *ARGE*, İstanbul: Kariyer Yayınları.
- BASIM, H.N. vd. (2008), "Çalışanların Öz Yeterlilik Algılarının Yenilikçilik ve Rist Alma Üzerine Etkisi: Kamu Sektöründe Bir Araştırma", *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 19, 121-130.
- BAYINDIR, S. (2007), "Yenilik Çalışmalarında Dış Kaynak Kullanımı", *Selçuk Üniversitesi Karaman İİBF Dergisi*, Yerel Ekonomiler Özel Sayısı, 241-250.
- BOLAT, O.İ. vd. (2009), "Güçlendirici Lider Davranışları ve Örgütsel Vatandaşlık Davranışı Arasındaki İlişkinin Sosyal Mübadele Kuramından Hareketle İncelenmesi", *Balıkesir Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 12(21), 215-239.
- BOLAT, T. (2003), "Personeli Güçlendirme: Davranışsal ve Bilişsel Boyutta İncelenmesi ve Benzer Yönetim Kavramlarıyla Karşılaştırılması", *Atatürk Üniversitesi İİBF Dergisi*, 17(3-4), 199-219.
- BOLAT, T. (2008), *Dönüşümcü Liderlik, Personeli Güçlendirme ve Örgütsel Vatandaşlık Davranışı İlişkisi*, 1.Baskı, Ankara: Detay Anatolia Yayıncılık.
- CHOONG, Y. et.al. (2011), "Psychological Empowerment And Organizational Commitment In The Malaysian Private Higher Educational Institution: A Review And Research Agenda", *Academic Research International*, 1(3), 236-245.
- ÇAVUŞ, M. F. (2006), "İşletmelerde Personel Güçlendirme Uygulamalarının Örgütsel Yaratıcılık ve Yenilikçiliğe Etkileri Üzerine İmalat Sanayinde Bir Uygulama", Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Yayınlanmamış Doktora Tezi, Konya.
- ÇUHADAR, M.T. (2005), "Türk Kamu Yönetiminde Personel Güçlendirme: Sorunlar ve Çözüm Önerileri", *Erciyes Üniversitesi İİBF Dergisi*, 25, 1-25.
- DOĞAN, S., (2003), *Personel Güçlendirme*, İstanbul: Sistem Yayıncılık.
- DOĞAN, S., (2006), *Personel Güçlendirme: Rekabette Başarının Anahtarı*, 2.Baskı, İstanbul: Kare Yayınları.
- DRUCKER, P.F. (1985), "The Discipline of Innovation", *Harvard Business Review*, 63(3), 68-71.
- ERASLAN, H. vd. (2008), "Kümelenmeler ve İnovasyona Etkisi: Türk Turizm Sektöründe Uygulamalar", *Seyahat ve Otel İşletmeciliği Dergisi (SOİD)*, 5(3), 15-50.
- EYMEK, U.E. (2007), *SPSS 15.0 Kullanma Klavuzu (Veri Analiz Yöntemleri)*, e-kitap, İstatistik Merkezi Yayın No:1.
- GÜLEŞ, H.K. & Bülbül, H. (2002), *Yenilikçilik: İşletmeler İçin Stratejik Rekabet Aracı*, Ankara: Nobel Yayın Dağıtım.
- GÜMÜŞ, R. (2009), "İnovasyon Kültürü Üzerine", *Çerçeve Dergisi*, 162-166.
- HAGEDOORN, J. (1996), "Innovation and Entrepreneurship: Schumpeter Revisited", *Industrial and Corporate Change*, 5(3), 883-896.
- INDRA, R.D. (2011), "Managing Day To Day, Employee Performance Through Psychological Empowerment", *Ganpat University Faculty of Management Studies Journal of Management Research (GFJMR)*, 3, ss.19-33.
- KAHREH, M.S. vd. (2011), "Achieving Competitive Advantage Through Empowering Employees: An Empirical Study", *Fast East Journal of Psychology and Business*, 3(2), 26-37.
- KARAÖZ, M. & Albeni, M. (2003), "Ekonomik Kalkınma ve Modern Yenilik Teorisi", *Süleyman Demirel Üniversitesi İİBF Dergisi*, 8(3), 27-48.
- KÖKSAL, O. (2011), "Organizasyonel Etkinliğin Sağlanmasının Yeni Yolu: Simbiyotik Liderlik", *Cumhuriyet Üniversitesi İİBF Dergisi*, 12(1), 55-72.
- LARANJA, M. vd. (2008), "Policies For Science, Technology And Innovation Translating Rationales Into Regional Policies In A Multi-Level Setting", *Research Policy*, 37, 823-835.
- Luecke, R. (2008), *İş Dünyasında Yenilik ve Yaratıcılık*, (Çev. T. Parlak), İstanbul: Türkiye İş Bankası Kültür Yayınları.
- LUTHANS, F. (2002), *Organizational Behaviour*, 9th Ed., New York: McGraw Hill Inc.
- MURAT, G. (2001), "Çağdaş Bir Yönetim Yaklaşımı: Personel Güçlendirme", *Öneri, Marmara Üniversitesi Sosyal Bilimler Enstitüsü Öneri Dergisi*, 4(16), 113-126.
- MYTELKA, L.K. & Smith, K. (2001), "Innovation Theory and Innovation Policy: Bridging The Gap", *Paper Presented to DRUID Conference*, Aalborg, Netherland, 1-25.
- O'HARA, P.A. (2002), "The Contemporary Relevance of Thorstein Veblen's Institutional-Evolutionary Political Economy", *History of Economic Thought Society of Australia*, 35 (Winter), 79-103.
- OĞUZTÜRK, B.S. (2003), "Yenilik Kavramı ve Teorik Temelleri", *Süleyman Demirel Üniversitesi İİBF Dergisi*, 8(2), 253-273.
- OĞUZTÜRK, B.S. (2006), "Yenilikte Sistem Yaklaşımı ve Temel Dinamikleri: Ekonomik Değişim ve Büyüme Temelli Bir Bakış", *Süleyman Demirel Üniversitesi İİBF Dergisi*, 11(1), 121-139.
- OSB Üst Kurumu, <http://osbbs.osbuk.org.tr>, 10.06.2012.
- ÖĞÜT, A. vd. (2007), "Personel Güçlendirme İnovasyonu Hızlandırır mı? Antalya İli Beş Yıldızlı Konaklama İşletmelerine Yönelik Görgül Bir Araştırma", *Selçuk Üniversitesi Karaman İİBF Dergisi*, Yerel Ekonomiler Özel Sayısı, 163-172.
- ÖZÇER, N. (2005), *Yönetimde Yaratıcılık ve Yenilikçilik*, İstanbul: Rota Yayınları.
- ÖZDAMAR, K. (2011), *Paket Programlar İle Veri Analizi (Çok Değişkenli Analizler-2)*, 5.Baskı, Eskişehir: Kaan Kitabevi.
- ÖZEVREN, Mina (2000), *Toplam Kalite Yönetimi: Temel Kavramlar ve Uygulamalar*, İstanbul: Alfa Yayınları.
- PECCEI, R. & Rosenthal, P., (2001), "Delivering Customer-Oriented Behaviour Through Empowerment: An Empirical Test of HRM Assumptions", *Journal of Management Studies*, 38(6), 831-857.
- ROSEBOOM, J., (2002), *Essays On Agricultural Research Investment*, Wageningen: Wageningen University.
- SAHOO, C.K. vd. (2010), "Employee Empowerment And Individual Commitment: An Analysis From Integrative Review of Research", *Employment Relation Record*, 10(1), 40-56.
- SAMAD, S. (2007), "Social Structural Characteristics and Employee Empowerment: The Role Of Proactive Personality", *International Review of Business Research Papers*, 3(4), 254-264.
- SARIALTIN, H. & Yılmaz, A., (2007), "Orta Kademe Yöneticilerin Güçlendirme Algıları Ve Güçlendirme Uygulamasında Üstlendikleri Roller: Adapazarı Ve Kocaeli Bölgesi Otomotiv Sektör Örneği", *Dumlupınar Ü. Sosyal Bilimler Dergisi*, 18, 208-226.
- SOLOW, R.M. (1957), "Technical Change And The Aggregate Production Function", *The Review of Economics and Statistics*, 39(3), 312-320.
- SPREITZER, G.M. (1995), "Psychological Empowerment In The Workplace: Dimensions, Measurement and Validation", *Academy of Management Journal*, 38(5), 1442-1465.
- SPREITZER, G.M. (1996), "Social Structure Characteristics of Psychological Empowerment", *Academy of Management Journal*, 39(2), 483-504.

- SZETO, E. (2000), "Innovation Capacity: Working Towards A Mechanism For Improving Innovation Within An Inter-Organizational Network", *The TQM Magazine*, 12(2),149-157.
- ŞENCAN, H. (2005), *Sosyal ve Davranışsal Ölçümlerde Güvenirlilik ve Geçerlik*, Ankara: Seçkin Yayıncılık.
- TORAMAN, C. vd. (2009), "İşletmelerde İnovasyon Sürecinde Entelektüel Sermaye ve Yönetim Muhasebesi Kapsamında Değerlendirilmesi", *Afyon Kocatepe Üniversitesi İİBF Dergisi*, 11(1), 91-120.
- UZKURT, C. (2008), *Pazarlamada Değer Yaratma Aracı Olarak Yenilik Yönetimi ve Yenilikçi Örgüt Kültürü*, İstanbul: Beta Basım AŞ.
- UZPEDER, İ. (2008) "Yenilik Yayılma Teorileri", *Yeditepe Üniversitesi Yönetim Uygulama ve Araştırma Merkezi Araştırma Notu*, No.8, Erişim Tarihi: 22.08.2010, .http://yuvam.yeditepe.edu.tr/yuvam_arastirma_notu_0805.pdf,
- WEST, M.A. &Farr, J.L., (1990), *Innovation and Creativity*, England: John Wiley & Sons Ltd.
- ZAMAN G. & Goschin, Z., (2010), "Technical Change As Exogenous or Endogenous Factor In The Production Function Models: Empirical Evidence From Romania", *Romanian Journal of Economic Forecasting*, 2, 29-45.