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Research Article

EVALUATION AND COMPARISON OF INNOVATION MANAGEMENT FACTORS IN AUTOMOTIVE AFTER-SALE SERVICES INDUSTRY IN IRAN

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ABSTRACT
The success of every organization is dependent on innovation. In competition and rivalry among organizations, those organizations which use innovatory methods in the production of products (including production of goods or offering services) and developments are in a better position to gain competitive advantage. Because of the importance of innovation in the development and organizational performance, the evaluation of innovatory potentials is the most important factor in the establishment of innovatory systems in organizations. In this article, we intend to evaluate and to compare factors of innovation management in ISACO Company (After-Sale Services of Iran Khodro Company) and Saipa Yadak Company (After-Sale Services of Saipa Company). These two companies will be compared in terms innovation management factors. Then, some suggestion will be offered to improve the current conditions.

***Keywords*:** *Technology; Innovation; Innovation Management; Innovation System*

INTRODUCTION
The continuous developments and changes in the world take place rapidly. These changes are very common in the life of humans. Therefore, those companies and organizations that want to be successful and gain competitive advantage have to adapt themselves to these rapid changes. In this situation, innovation is a vital issue for all organizations. Today, only those organizations which adapt themselves to the changes and employ innovatory measures are successful and can keep themselves in the completions (Salajegheh, 2008). Therefore, organizations have to be flexible and adaptive to the changes and developments in order to maintain their positions. Today, scientific and industrial societies have reached this conclusion that by reliance on innovation and modern methods, organizations can keep their superiority in long term competitions. In issues related to innovation, two factors have the greatest role: rapid technological changes in various industries, which have led to the shortening of products' life period; the growth of rivalry among organizations (Boyle *et al.*, 2003).
The role of innovation in the long-term success of organizations has become increasingly clearer. Those companies which employ innovatory measures are better equipped to address the environmental challenges (Jimens *et al.*, 2008).
The evaluation of innovatory capabilities can help managers of firms in investing, directing resources, and selecting suitable technological methods. For instance, low innovatory capability of a firm forces it to employ the technology of external resources. When the innovatory capability of a firm is high, employing internal capabilities is considered as a priority.
The evaluation of innovation potentials and factors of innovation management enables us to analyze the situations and to compare the potentialities of a firm with those of other organizations. In this way, the best strategic decisions can be made. The innovatory capabilities are the necessary factors in the realization of innovatory objectives in a firm.

Review of Literature
In the past studies, innovation has been viewed from various perspectives. Various definitions of innovation have been offered by authors. Based on the definition presented by Organization for Economic

Cooperation and Development (OCDE, 2005), innovation is the creation of a new product (goods or services), a new process or a previous process that has been completely improved, a new marketing method, a new organizational method in trade activities, or new methods in external relations. Afuah (1998), states that innovation is the use of modern technological tools and marketing knowledge in order to offer new products or services. It seems that this definition considers innovation as an obligatory issue.

Innovation is the transfer of new ideas into practice. Innovation in all aspects is reliant on having new ideas (Wonglimpiyarat, 2004).

Innovations are mainly the result of objective search for new opportunities. This process starts with an analysis of these opportunities (Kuratko *et al.*, 2001).

Innovation refers to slight changes in the ways of thinking, objects, processes, or services (McKeown, 2008).

Kim and Nelson (2008) define scientific innovation as the creating, evaluating, exchanging, and employing new ideas and plans in order to gain economic superiority and to achieve social and economic boom. This definition refers to acquiring new scientific knowledge through research activities, processes of acquiring new knowledge in order to achieve economic and social benefits, scientific innovations in production processes, employing modern knowledge and regulations in order to gain economic and social benefits, and scientific innovation in production processes (Kim and Nelson, 2008).

Gopalarkrishnan and Birely (2001) divided innovations into three categories: technical and management innovations, product and process innovations, fundamental and gradual innovations.

According to the findings of Johnnessen *et al.*, (2001), innovation activities are divided into six different categories:

1. New products; 2. New services; 3. New production methods; 4. Finding new markets; 5. New supply sources 6. New organizational methods

In terms of processes, innovation is the collection of operations that begins with the processing of ideas, and ends with the production and offering of new products in the market (Morel & Boyle, 2006; Tidd, 2009; Khalil, 2000). However, innovation does not end only with the offering of new products or services; it includes some changes in organizational processes (Boyle, 2003). Innovation includes not only technical aspects, but also organizational aspects (Khalil, 2000).

In discussions on competitive advantage, articles mainly refer to the innovative abilities of firms. Innovation is similar to the riding of a bicycle; you fall down unless you pedal (Grant, 2003).

Being open and receptive to new ideas and concepts is the first step in innovation. The "open organization" can be identified in two respects: A) the amount of information or the amount of prediction that can be made on the basis of information; B) execution or the amount of experience that can be relied on in current organizational operations (Lumpkin & Lichtenstein, 2005; Cokins, 2009).

In a knowledge-based economy, creativity is essential. In such an economy, people are the most important assets. The management should find new ways to create an organization which is open and receptive to innovation.

An innovative organization is more regulated. Such an organization employs all elements that contribute to innovation and creativity. However, organizations differ from each other and these elements can be identified throughout the time. These elements include: the structure of organization, the role that is played by key figures, the education of employees, the methods by which the jobs are organized, the amount of personnel's participation in an innovation, and the level of education and participation (Bagheri & Baharanchi, 2011).

There are a lot of articles that have elaborated on innovative processes from the beginning stage of idea to the final stage of production. The innovation process models have developed in six generations and have become increasingly complex, from simple linear model to developed complex interactive models. The features of each generation of process models have been presented in table 1.

Table 1: The developments of innovative models (Nike *et al.*, 2007)

Model	Generation	Features
Technology push	first	Simple linear order process; it emphasizes research, development, and science (knowledge)
Market pull	second	Simple consecutive linear process; it emphasizes marketing; there are new ideas for research and development in the market
Coupling model	third	Identifying the interactions between elements and various feedbacks of these interactions; it emphasizes the integration of research, development, and marketing
Interactive models	fourth	It is a combination of push and pull models; integration within the company; it emphasizes external relations
Network model	fifth	It emphasizes the gathering of knowledge (information) and external relations; integration of systems and networks
Open innovation	sixth	Internal and external ideas as well as internal and external paths leading to market can be combined in order to enhance new technological developments

Introducing the Model of the Research

Figure 1 shows the conceptual model of this research. The innovative capabilities have been categorized in this figure. A questionnaire was developed on the basis of this model. This questionnaire was used to collect data. The reliability of this questionnaire was calculated by Cronbach alpha method (α=0.87). In order to ensure the validity, a number of experts were consulted.

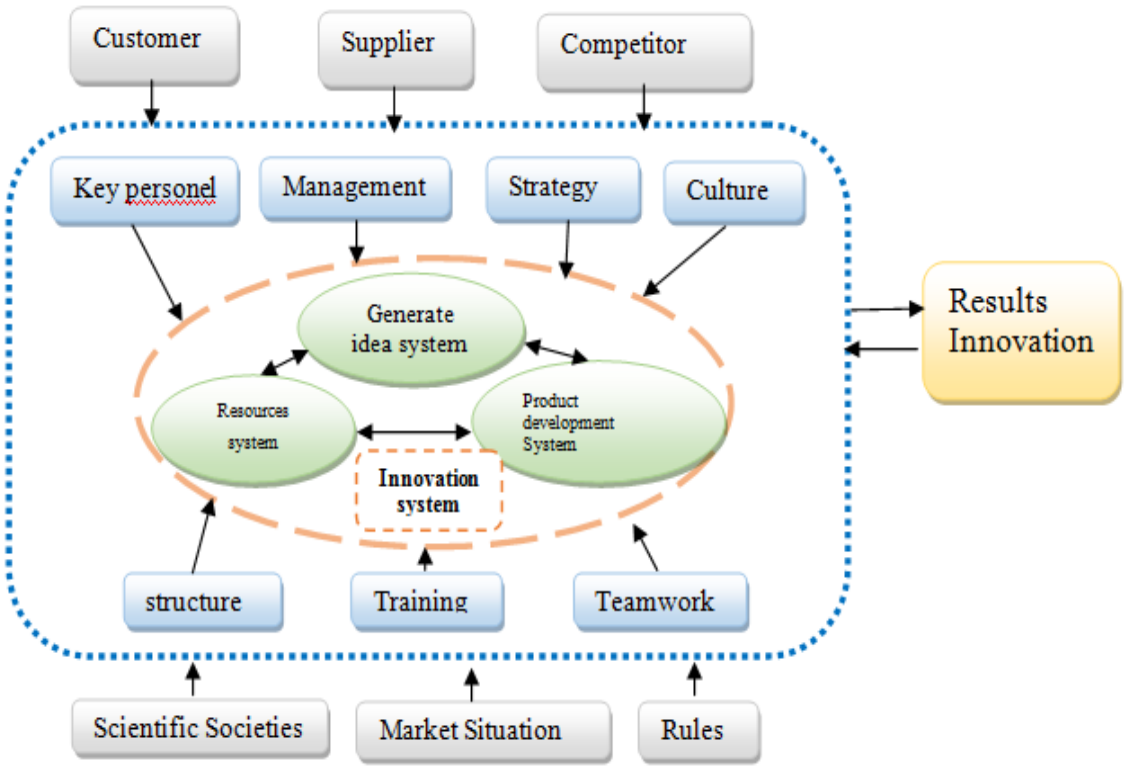

Figure 1: The conceptual model of innovation evaluation (Bushehri *et al.*, 2003)

Objectives and Research Question S

This research aims to measure and to compare those factors which might have an influence on innovation management in ISACO and Saipa Yadak companies. In terms of objective, this study is an applied research and in terms of method, it is a survey. This study intends to answer the following questions:

1. What are the levels of effective indices which have an influence on innovation management in ISACO and Saipa Yadak companies?

2. What are the levels of effective factors which have an influence on innovation management in ISACO and Saipa Yadak companies?

3. How can effective factors which have an influence on innovation management in ISACO and Saipa Yadak companies be improved?

A Brief Introduction of the Companies

ISACO Company

This company distributes automobile spare parts manufactured by Iran Khodro Company. It was established in 1977 as a private joint stock company. In 1992, this company began to offer after-sale services to the customers of Iran Khodro Company (official website of ISACO Company).

In order to offer after-sale services, this company has established a vast network across the country that includes 800 licensed representatives and 1000 selling branches (The model of ISACO business activities, 2014).

Saipa Yadak

This company was established in 1991. The main job of this company is to offer after-sale services to the customers of Saipa Company.

This company sells automobile spare parts manufactured by Saipa Company. In addition, it has a number of technical experts in its authorized representative centers. Training repairmen is another activity of this company (official website of Saipa Yadak Company).

Characteristics of Statistical Population

The statistical population of this study consisted of middle managers and chief experts of ISACO and Saipa Yadak companies. These people had a BS or MS and over three years of working experience. According to the conditions of the company at the time of research, the statistical population was determined (table 2).

Table 2: Education level of those who answered the questions of the questionnaire

Level of Education	Number (ISACO)	Number (Saipa Yadak)
BS	26	20
MS	26	8
Total	52	28

RESULTS AND DISCUSSION

Results and Findings of the Study

The First Research Question: What are the levels of effective indices which have an influence on innovation management in ISACO and Saipa Yadak companies?

According to the data collected by the questionnaire, the positions (levels) of the factors which have an influence on innovation management in these companies have been shown in table 3.

Table 3: The position (level) of the factors which have an influence on innovation management in each index

Factors	Question/index	The current conditions in ISACO (%)	The current conditions in Saipa Yadak (%)
Strategy	To what extent has any attention been paid to innovation in the strategies of your company?	50.77	55.00
	To what extent do the levels of management are aware of the position of innovation in organizational strategies?	51.54	51.43
	To what extent do the employees of the organization are aware of the position of innovation in organizational strategies?	42.69	46.43
Structure	To what extent does the current organizational structure contribute to the development of innovative measures?	43.65	45.00
	To what extent does the current organizational structure facilitate team work and grouping solutions?	50.19	41.43
Culture	To what extent are the failures and mistakes of employees in innovative measures are tolerated by the organization?	45.38	50.71
	To what extent doest the organization environment encourage people to be innovative?	40.58	42.86
Management	To what extent do the mangers of the organization support innovative activities?	41.35	46.43
	To what extent do the employees who take the risk to be innovative are viewed positively and are supported by organization managers?	43.85	48.57
	To what extent do the managers try to produce ideas about the current and future demands of customers?	47.12	47.86
	To what extent do managers try to speed up the process of idea production?	42.88	44.64
	To what extent do the mangers try to provide the necessary budget for new ideas?	39.23	37.14
Education	To what extent has any attention been paid to innovative measures in technology and innovation management, entrepreneurship, marketing, techniques of creating good relationship with customers, etc in educational programs of your company?	51.92	43.21
	To what extent have the educational programs been effective to promote innovation?	46.35	38.57
	To what extent are the educational tools and	49.23	41.43

	opportunities such as library, internet, and specialty seminars offered to the employees in order to achieve organizational objectives?		
Team work	To what extent are working teams and inter-sectional teams common in order to promote innovation in the organization?	44.04	42.50
	To what extent does the organization employ the mechanisms of team work in innovatory issues?	42.69	38.21
Employees	To what extent has the organization tried to employ and keep innovative people in needed areas?	36.73	36.07
	To what extent have the supporting policies (job promotion, award, etc) been used to support innovative employees?	39.42	36.07
	To what extent have the innovations been made by the employees within the organization?	50.38	45.00
	To what extent are the new ideas of employees used in your organization?	42.31	40.36
Regulations	To what extent do the regulations of the organization facilitate and promote innovation?	41.15	35.36
	To what extent do the state regulations encourage the organization to be innovative?	35.77	37.50
Innovation System	To what extent are special mechanisms (participation regulations, the mechanism for defining and approving projects, etc) used to promote the innovative ideas of the employees?	41.35	42.86
	To what extent are various techniques (methods of problem solution, simultaneous/concurrent engineering, intermediate teams, QFD, etc) employed to create new ideas?	36.73	35.00
	To what extent do various organizational sections communicate and interact in order to promote innovation?	39.62	33.57
	To what extent has the time spent for the provision of necessary resources in innovatory projects been enough and suitable?	33.65	39.64
	To what extent have the innovatory projects enjoyed suitable speed to achieve results?	35.77	36.07
Market and External Beneficiaries	To what extent do the decisions on innovations in your organization are based on marketing studies and having information about the other competitors?	45.58	41.79

	To what extent have the innovations been based on communicating with customers and having knowledge of their demands?	47.50	46.79
	To what extent has the selling unit been involved in organizational innovations?	46.15	42.86
	To what extent have the innovations been based on information about rivals' products and processes?	47.69	49.29
	To what extent have the innovations been based on communicating with suppliers?	44.04	46.07
	To what extent is the organization able to create technology or to improve the current technology?	51.35	48.93
	To what extent have the quality and standards been effective in the success of new products (innovations)?	51.35	48.21
	To what extent are the past innovatory experiences used in current and future innovations?	47.88	46.43
Organizational Capabilities	To what extent have the presented ideas been suitable and applicable in innovations?	43.65	49.29
	To what extent have the innovatory projects been completed and presented in the market on time?	39.04	38.57
	To what extent has the organization been able in innovatory processes in order to reduce organizational expenses and to enhance outputs?	55.58	41.79

The Second Research Question: What are the levels of effective factors which have an influence on innovation management in ISACO and Saipa Yadak companies?
The positions of all factors which have an influence on innovation management have been presented in table 4 and diagram 1.

Table 4: A comparison between the positions of all factors which have an influence on innovation management in ISACO and Saipa Yadak companies

Factors of innovation management	Current conditions ISACO(%)	Current conditions Saipa Yadak (%)
Strategy	48.33	50.95
Structure	46.92	43.21
Culture	42.98	46.79
Management	42.88	44.93
Education	49.17	41.07
Team Work	43.37	40.36
Employees	42.21	39.38
Regulations	38.46	36.43
Innovation System	37.42	37.43
Market and External Beneficiaries	46.19	45.36
Organizational Capabilities	48.14	45.54
Total mean	44.26	43.05

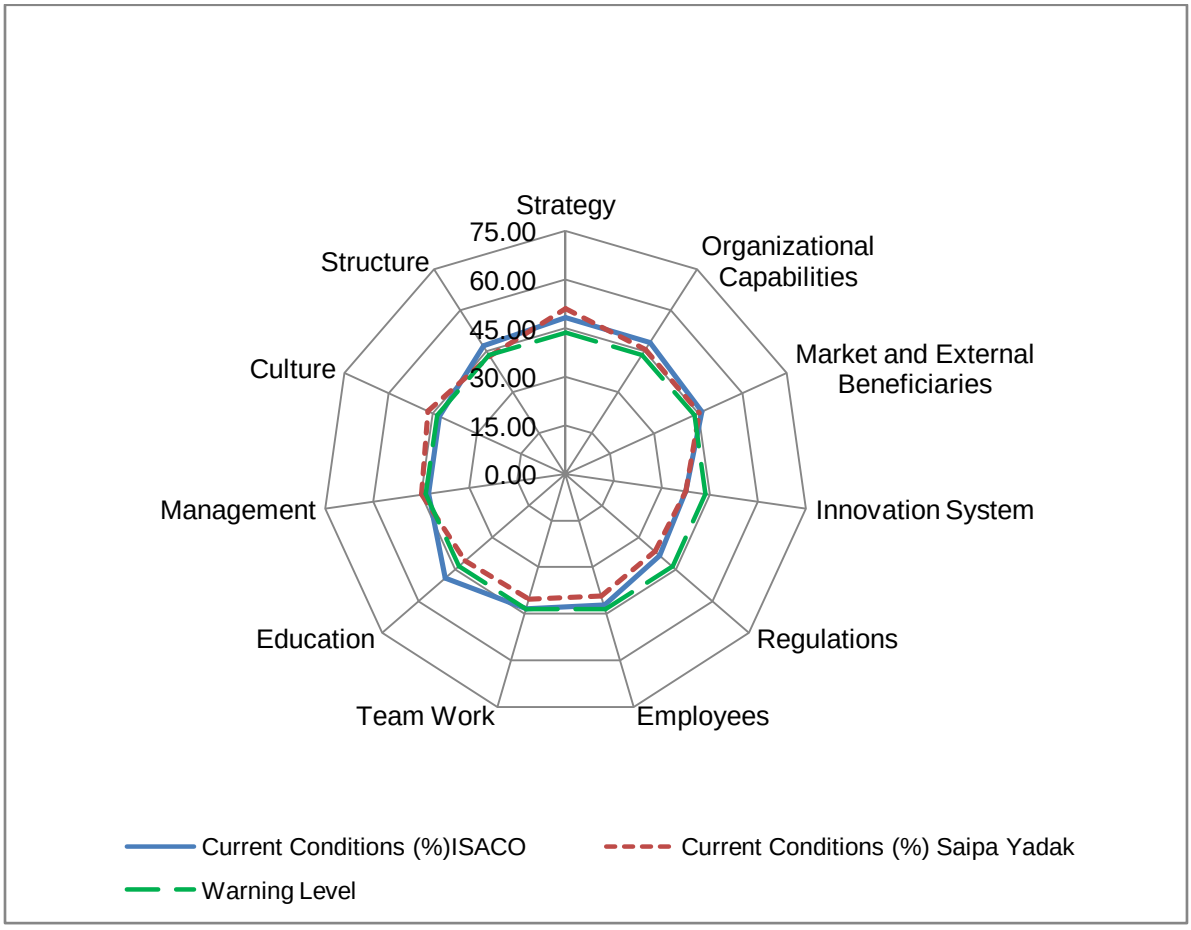

Diagram 1: A comparison between those Factors which have an influence on innovation management with warning level (Total industry mean)

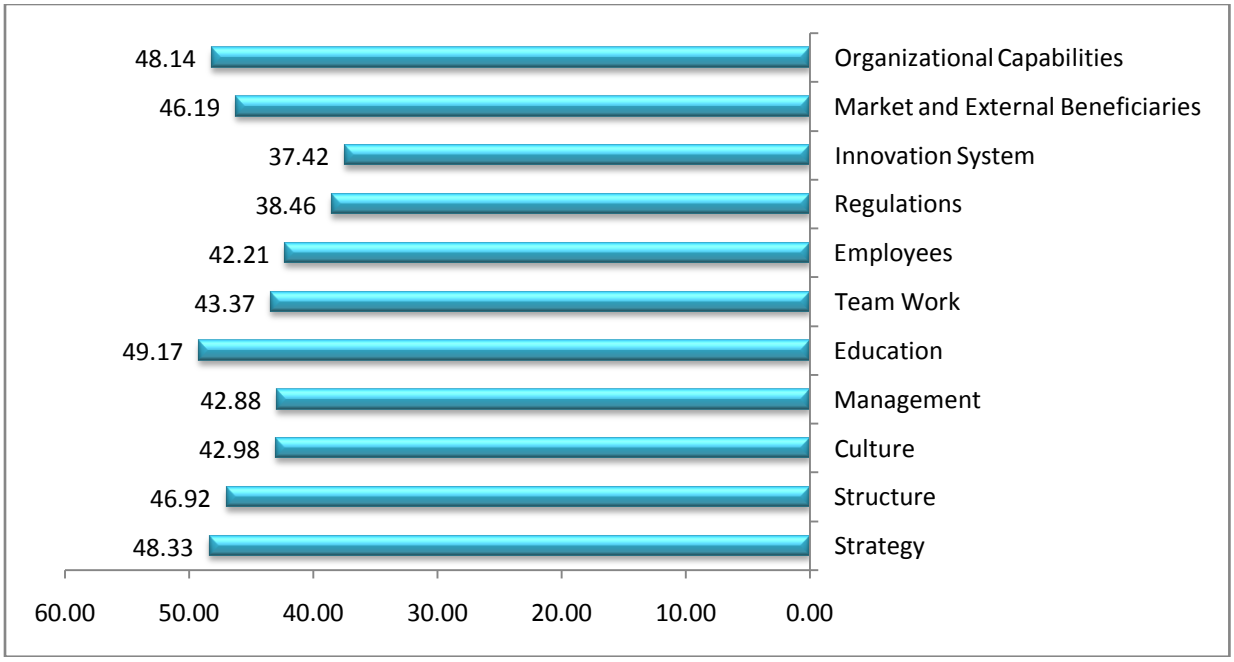

Diagram 2: The diagram of capability ranking of innovation management Factors in ISACO

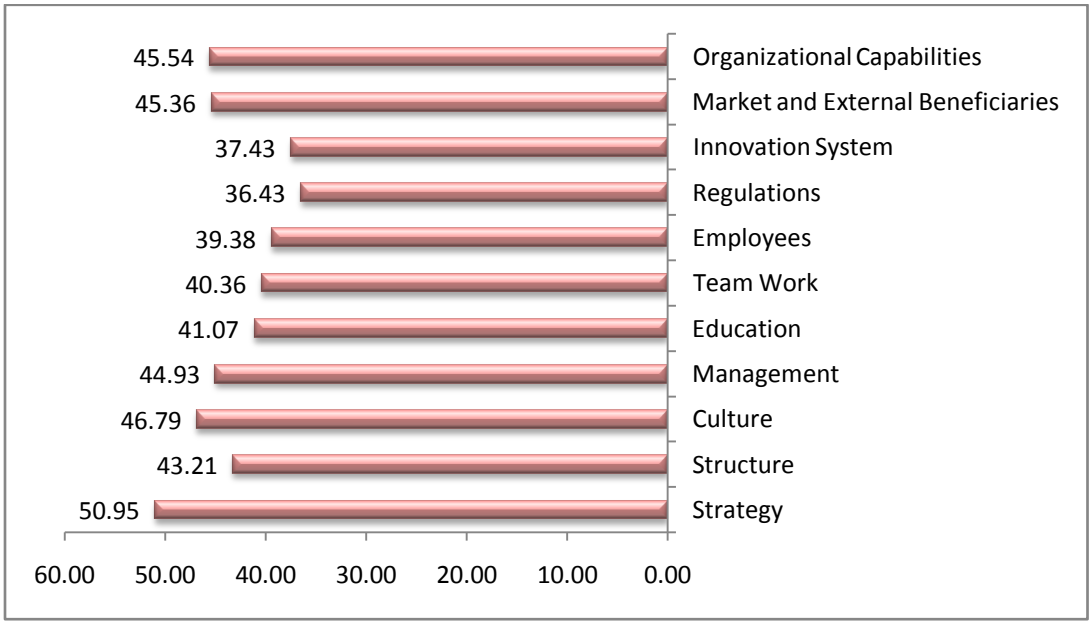

Diagram 3: The diagram of capability ranking of innovation management Factors in Saipa Yadak

The Third Research Question: How can effective factors which have an influence on innovation management in ISACO and Saipa Yadak companies be improved?

Some possible solutions suggested by the researchers of the current study in order to improve the influence of effective factors on innovation management have been presented in table 5.

Table 5: The suggested solutions for improving the influence of effective Factors on innovation management in ISACO and Saipa Yadak companies

Factors	The suggested solution for improvement
Structure	Holding general meetings for organization personnel in order to give them the necessary information and to make them aware of the importance of innovation in organizational strategies (for example, presenting a lecture by chief executive or high-ranking managers) Reviewing and making the necessary changes in organizational structure and employing organic structure. Organic structure is suitable for promoting creativity and innovation in the organization
Culture	Holding seminars and educational workshops in the organization. Creating think tank, using posters that encourages people to be creative and innovative in the organization. Creating an atmosphere in the organization that promotes a culture of activity and participation, respecting the ideas of others and acknowledging their positive actions
Management	Employing creative managers. Training creative managers by holding meetings in order to make them aware of the importance of innovation in the organization and to teach them how to create a secure environment in the organization in which the new ideas are supported. They can be taught how to respect and to acknowledge people's new ideas. The evaluation of managers performance on the basis of the employees' creativity and innovation Preparing the ground for easy access to managers in order to present new ideas to them directly without any obstacle, managers should be receptive to changing elements and should not resist against them, holding educational workshops and seminars for chief and middle mangers to teach them how to use applied techniques for the creation of new ideas. Facilitating the process of expressing new ideas. Paying

	attention to the economic needs of the personnel by the managers, supporting the ideas and preparing the ground for the realization of ideas. Estimating the possible budget that might be needed for new ideas and allocating a portion of the budget to these new ideas. Allocating the profits gained from new ideas to fulfilling new ideas
Education	Holding objective educational courses and evaluating these educational courses, indentifying those points which can be improved and planning for the improvement of new educational courses
Team Work	In order to establish team work in the organization, the structures and the ways that people work together should change, the ways in which the information is shared should change
	Techniques of finding and solving the problem, the applied means of middle managers and experts for achieving organizational objectives. Therefore, it is necessary to enhance their knowledge in this field. Holding educational courses in this area is recommended.
Employees	Identifying innovative people in the industry and trying to employ them, making connections with universities and scientific centers in order to employ talented and creative people. using employment examinations and scientific interviews and standard personality tests under the supervision of experts committee in order to identify creative people. Using systematic mechanisms for offering rewards to innovative people. Using effective and clearly-defined mechanisms for determining the levels of creativity in the evaluation system of employees, finding an effective process to collect the views of employees, evaluating the system of investigating suggestions and critiques and presenting a clear definition of the process by which the new ideas are accepted. Controlling and evaluating the work of committees that investigate suggestions
Regulations	Holding systematic meetings in order to review laws and regulations and using the methods of successful companies, reconsidering internal regulations and paying special attention to innovation, removing unnecessary legal obstacles
Innovation System	The role of creativity degree in selecting the best workers and office employees Forming working groups to revise and improve the current mechanisms Holding educational workshops and seminars for chief and middle managers in order to teach them how to use applied techniques for the creation of new idaes Holding meetings in order to coordinate the activities of various units Estimating the possible budget that might be needed for new ideas. Presenting a definition of project and management and project control Using digital engines in order to speed up innovation, presenting a clear picture of the processes through which the accepted ideas are fulfilled and determining the person who is in charge of controlling and timing the execution of these ideas
Organizational Capabilities	Reconsidering the mechanisms through which the markets and their demands are identified, and offering servicing plans in the market by using modern methods and webs and digital engines

Results

According to the data presented in table 3, the following results regarding the eleven dimensions of effective factors in innovation management in ISACO and Saipa Yadak companies were obtained:

● *Strategy Dimension*: The maximum score of ISACO Company in this dimension (%51.54) was assigned to the index of "management's awareness of the importance of innovation in organizational strategies". The minimum score of this company (%42.69) was assigned to index of "employees' awareness of the importance of innovation in organizational strategies". In Saipa Yadak Company, the maximum score (%55) was assigned to index of "paying attention to innovation in organizational

strategies". The minimum score (%46.43) of this company was assigned to the index of "Employees' awareness of the importance of innovation in organizational strategies".

Generally, in terms of strategy, Saipa Yadak Company with a score of %50.59 was in a better position compared to ISACO Company with a score of %48.33. In Saipa Yadak Company, the strategy dimension was the first in the ranking. On the other hand, in ISACO Company, the strategy dimension was the second in the ranking.

● *Structure Dimension:* The maximum score of ISACO Company in this dimension (%50.19) was assigned to the index of "facilitating team work". The minimum score of this company (%43.65) was assigned to the index of "promoting innovation". The reverse happened for Saipa Yadak Company. In this company, the maximum score (%45) was assigned to the index of "promoting innovation" and the minimum score (%41.43) was assigned to the index of "facilitating team work". Generally, in terms of structure dimension, ISACO Company with a mean of %46.92 was in a better position compared to Saipa Yadak Company with a score of %43.21.

● *Culture Dimension:* The maximum score of ISACO Company (%45.38) was assigned to the index of "tolerating failures and mistakes of employees". The minimum score of this company (%40.58) was assigned to the index of "the environment that encourages innovation". The same was true of Saipa Company. In this company, the score of "tolerating failures and mistakes of employees" index was %50.71 and the score of "the environment that encourages innovation" index was %42.86. Generally, in terms of culture dimension, Saipa Yadak Company with a mean score of %46.79 was in a better position compared to ISACO with a mean of %42.98.

● *Management Dimension:* The maximum score (%47.12) of ISACO Company in management dimension was assigned the index of "degree of attempts made by managers to promote ideas concerning the current and future demands of customers". The minimum score (%39.23) of this company was assigned to the index of "trying to provide the necessary budget for new ideas". The maximum score of Saipa Yadak (%48.57) was assigned to the index of "positive view of managers toward innovative people". The minimum score of this company (%37.14) was assigned to the index of "trying to provide the necessary budget". Generally, in terms of management dimension, Saipa Yadak Company with a score of %44.93 was in a better position compared to ISACO Company with a mean score of %42.88.

● *Education Dimension:* The maximum score of ISACO Company (%51.92) was assigned to the index of "paying attention to innovation issues in educational programs". The minimum score of this company (%46.35) was assigned to the index of "the positive impact of education on innovation". These two indices were assigned the maximum and minimum scores in Saipa Yadak Company. The maximum score of Saipa Yadak Company was %43.21 and the minimum score was %38.57. Generally, in terms of education dimension, ISACO Company with a mean score of %49.17 was in a better position compared to Saipa Yadak Company with a mean score of %41.07. In ISACO Company, education dimension was the first in the ranking of all aspects. In Saipa Yadak Company, education dimension was the seventh in the ranking.

● *Team Work Dimension:* The maximum scores of ISACO (%44.04) and Saipa Yadak (%42.5) were assigned to the index of "promoting team work and forming inter-sectional teams". The minimum scores of ISACO (%42.69) and Saipa Yadak (%38.21) were assigned to the index of "mechanisms and creating groups for the solution of problems". Generally, ISACO Company with a mean score of %43.37 was in a better position compared to Saipa Yadak Company with a mean score of %40.36. In ISACO Company, team work dimension was in the sixth position in the ranking of all aspects. In Saipa Yadak Company, team work dimension was in the eighth position in the ranking.

● *Employees Dimension*: The maximum scores of ISACO (%50.38) and Saipa Yadak (%45) were assigned to the index of "the level of employees' innovation". The minimum scores of ISACO (%36.73) and Saipa Yadak (%36.07) were assigned to the index of "the level of success of organization to employ and to keep the innovator people". "Employees dimension" was in the ninth position (out of 11 positions) in the ranking in both companies. The mean score of ISACO Company was %42.21 and that of Saipa Yadak was %39.38.

● *Regulations Dimension*: The maximum score of ISACO (%41.15) was assigned to the index of "the facilitating role of organizational regulations". The minimum score (%35.77) of this company was assigned to the index of "the encouraging role of state regulations and laws". The reverse was true of Saipa Yadak Company. The maximum score (%37.5) of this company was assigned to the index of "the encouraging role of state regulations and laws" and the minimum score (%35.36) was assigned to the index of "the facilitating role of organizational regulations". Generally, the mean score of ISACO in this dimension was %38.46 and that of Saipa Yadak was %36.43.

● *Innovation Systems Dimension*: The maximum scores of the two companies were assigned to the index of "using special mechanisms to promote innovation among employees (participation regulations and mechanisms for defining and approving projects, etc)". The score of ISACO in this index was %41.35 and the score of Saipa Yadak was %42.86. The minimum score of ISACO in this aspect (%33.65) was assigned to the index of "the suitability and sufficiency of the spent time for providing the necessary resources". The minimum score of Saipa Yadak in this aspect (%33.57) was assigned to the index of "the level of communication and interaction among various sections of organization". Generally, in terms of innovation systems, the mean score of ISACO Company was %37.42 and the mean score of Saipa Yadak was %37.43. This dimension was in the eleventh position of the ranking in ISACO. In Saipa Yadak Company, this dimension was in the tenth position of the ranking.

● *Market and External Beneficiaries Dimension:* The maximum score of ISACO in this dimension (%47.69) was assigned to the index of "innovations that result from having information about the products and processes of rivals". The minimum score of this company in this dimension (%44.04) was assigned to the index of "innovations that result from communication and connection with the suppliers". The maximum score of Saipa Yadak Company in this dimension (%49.29) was assigned to the index of "innovations that result from having information about the products and processes of rivals". The minimum score of this company (%41.79) was assigned to the index of "making innovative decisions on the basis of research in the market and having information about the rivals". Generally, the mean score of ISACO was %46.19 and that of Saipa Yadak was %45.36.

● *Organizational Capabilities Dimension:* The maximum score of ISACO Company in this dimension (%55.58) was assigned to the index of "the capability of organization in processing innovation in order to reduce the expenses and to increase outputs. The minimum score of this company in this dimension (%39.04) was assigned to the index of "the completion of innovation and presenting it in the market at the right time". The maximum score of Saipa Company (%49.29) was assigned to the index of "suitability and applicability of innovations" and the minimum score (%38.57) was assigned to the index of "the completion of innovation and presenting it in the market at the right time". Generally, the mean score of ISACO in this dimension was %48.14 and that of Saipa Yadak was %45.54.

According to the results presented in table 4, among the factors which have an influence on innovation management, the strongest and the weakest dimension in these two companies are as following:

In ISACO Company, "Education" dimension with a score of %49.17 is the strongest dimension and "innovation system" dimension with a score of %37.42 is the weakest.

In Saipa Yadak Company, "Strategy" dimension with a score of %50.95 is the strongest dimension and "regulation" dimension with a score of %36.43 is the weakest.

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