

EXPLAINING THE NEW PRODUCT DEVELOPMENT STRATEGY USING AN OPEN INNOVATIVE APPROACH IN IRAN KHODRO

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ABSTRACT

The list of leading companies in automotive industry states that there is a macro strategy for benefits of dynamic business cycle and the utilization of science and innovation in existing technologies. Considering the advantages of any development strategy of successful global players' products in the automobile manufacturing area and the structure of accepting innovations in Iran Khodro Company are the groundwork of achieving to innovative strategies in this company which can eventually lead to the performance promotion of this company in the global arena. The main aim of this research is to explain the development strategy of new product using an open innovative approach in Iran Khodro Company. According to the literature and findings resulted from interviewing with experts, the results of this research for developing a new product in Iran Khodro Company is included of scientific empowerment, utilization of open organizational culture, using the marketing researches, networking and integration of activities, obligating to stakeholders and society needs, investigating the feasibility of production, designing an appropriate marketing strategy, organization agility in production, monitoring the activities inside the market network, utilization of intelligent technology network, optimal usage of knowledge from either inside or outside of company, and considering the outsourcing of activities.

KEYWORDS: innovation, open innovation, development of new product.

1. INTRODUCTION

Today, more than any other time, many organizations find that just relying on the traditional competitive levers such as increasing the quality, reduction in costs, and diversity in presentation of products and services is not enough. Instead, the concepts such as flexibility and innovation in competing and tendency towards the presentation of new productions and services into their markets become significant. Since the production development management is the source of obtaining the competitive advantage and in fact, it is the most important factor in reaching the success in current global markets, the consideration of this point and optimization of these processes become important. Till now, it is more than thirty years that the automobile manufacturing industry has been created in Iran. Apparently, the knowledge and technology of automobiles manufacturing has been imported to the country. Unfortunately, the automobile manufacturing have not been successful in attraction of knowledge, so that if the government eliminates his supports in the areas of custom, trading, and financial, they would fail even in the domestic market. It seems that it is the time for domestic automobile manufacturers to have an all-around transformation in their politics and planning regarding to the domestic and global situations and instead of duplicating the foreign dictated patterns they should start their new patterns based on realities, opportunities, difficulties, and their characteristics.

2. Theoretical framework

The purpose of new product development can be a response to the customers' needs, compliance with market situation and environmental changes, increasing the profits, customer satisfaction, and coping with competitors' policies. The development of a new product could not happen in a close system. The implementation of product development process based on the open innovation is a creative and cooperative effort which requires the cooperation of all organization levels and outside important elements such as customers, partners, and suppliers. Also, it can be said that the innovation process does not happen necessarily inside the boundaries of the company. For example, it can be purchased by an

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agency from other partners or can be happened in the interaction of the companies and the environment (open innovation). It leads to designs which affect the method of management and understanding of the process. The ‘open innovation’ is a term which was used by Professor Chesbrough for the first time. According to its definition, companies should consider the ideas from outside of organization as well as the proposed ideas from the inside of organization and also, they should not the new ways to develop their markets and technologies (Chesbrough, 2003). This is an alternation for companies in order to associate with others in innovative works and thus, share its risks and productivities with others (Chesbrough, 2003).

Innovation

Innovation is a key concept which nowadays it is referred as the pivot of business achievements in twenty-one century. Organizations, both small and labarge ones, have begun to reevaluate their productions, services, and operations in order to create the innovation culture. The first time Schumpeter in 1934 defined the concept of innovation. He related the innovation with economic development and introduced it as a new combination of productive resources. His work was consisted of five specific items: introduction of new products, new production methods, identification of new markets, capturing new raw materials, and new facilities and methods in business organizing (Breyer, 1982). After that and in the past forty years, the concept of innovation was subjected to a lot of changes. In 1950s, in separate studies, this concept was considered discrete and discontinuous. Schumpeter (1943) has described the innovation as an historical and irreversible change in the way of carrying out works and also a creative destruction. The innovation is not necessarily meant the utilization of new technologies. The companies are focusing on the way of thinking and finding the creative solutions inside the company instead of dealing with the issue of technology (Chesbrough, 2003).

Open innovation process

Technological changes via innovation in today’s world, and on the other hand the stability of these accelerating changes in productions and processes lead to a situation in which the innovation is the most important competitiveness factor in today’s organizations. Nowadays, achieving the technological innovations through internal researches and development is a very complicated task regarding to its extensiveness and multidisciplinary nature (Chesbrough, 2003). The open innovation theory is appertained to Henry Chesbrough, the professor of Berkeley University, California. He defined the open innovation as a new requirement for creating and taking advantage of technology. He explained how in twenty century, companies have been heavily investing on research and development, employing the best personnel, making the opportunity for them to develop their innovative ideas, supporting them using by intellectual property approach, and returning the achieved profits back to the research and development section (Chesbrough, 2003). The open innovation is a paradigm which assumes companies can and should utilize the ideas from the outside as well as internal ideas and while the companies are progressing in their technological abilities, they should select domestic and foreign ways to achieve the markets (Fredberg et al., 2008). Open innovation is like a new paradigm which is consisted of a wide spectra of fields such as economics, psychology, social sciences, and cultural anthropology (Van Krogh & Spaeth, 2007) which has attracted the researches attention (Huizingh, 2011). The significance of open innovation is due to several factors; first of all, the open innovation leads to company performance improvements. Also, the open innovation makes it possible to utilize the researchers and human resources who working outside of the organization which can lead to better usage of external environment for organization. Reviewing the open innovation approach literature, the common challenges of this approach can be classified into three general categories (Table 1).

Table 1. Organizational readiness for open innovation

Organizational readiness	Attraction capacity	Cooperative capabilities
<ul style="list-style-type: none"> • Open organizational culture • Dynamic abilities for changes and restructuring the organization • Specific design of organization structure and processes 	<ul style="list-style-type: none"> • Identification of technological opportunities • Extraction and combination • Understanding and exchanging • Partnership, distribution, and utilization 	<ul style="list-style-type: none"> • Domestic cooperation • Networking capabilities • Outside-to-inside and inside-to-outside cooperation

The most of innovations would fail. Also, companies which do not utilize the innovation would die. Companies have no choice except following a much more open approach for innovation and mixing this approach with modern models of open and clear business in order to enhance the possibility of prosperity in the innovation battle. In the past, the

innovation was relied on the inside-organizational intellectual resources and trying to develop them and at the same time, preventing from notification and utilization of others at the outside of organization. In order to gain the most profit from the innovation, the innovative companies have been protecting all of patent, trade secrets, and other intellectual assets and the related rights have been implemented accurately. But, the open innovation asks the companies to benefit from external ideas and technologies in their businesses and also allow the other companies to utilize their not used ideas.

New product development

Identification of variations in consumers' needs and demands in different markets, or continuation of competition in businesses and promotion of economic prosperity lead to executing the programs of new products in companies.

Table 2. Components of new product development affecting the success

Effective components of new product development success	Researchers
Noting to the details in NPD processes	Gotha and Vaylmon (1990)
Senior manager support	Sieger and Mydick (1990) - Roberts and Brock (1974) -Artest (2002) - Polton and Barclay (1998)
Long-term strategic thinking	Cooper, Adget and Klins Schmidt (2002) - Artest (2002) -Polton and Barclay (1998)
Focusing on the actual needs of customers	Gotha and Vaylmon (1990)
Existence of required skills in the sectors dealing with NPD	Matthew (1996)
Obligation of company personnel to NPD	
Utilization of information technology	
Fast and on-time definition of product development project	Cooper (1993)
On-time presenting of product in market	Sheppard and Ahmed (2000) –Koper and Adget (2002)
Proper orientation regarding the market	Cooper and Klins and Schmidt (1995 A) -Sharma (2006)
Integration and uniqueness of the product	Davidson (1970) -Kopr (1980) -Sirpensky (2002)
Attractiveness of product for market	Link (1987)
Understanding of market and its dynamics	In et al. (1996)
Risk taking of organization managers	Haart (200)- Polton and Barclay (1998)
Flexibility of organization in meeting the changes	Polton and Barclay (1998)
Exact definition of expected performance standards	Cooper (1999)
Having a clear attitude of NPD project and the product development team	Lin et al. (1996b)- Lawson and Tetris (1992) -Arjris and Sushon (1978)
Existence of extensive internal communication in organization	Montoya, viz and Kalanton (1994) -Roth Vale (1992)
Existence of a proper controlling and monitoring system	Roth Vale (1992)
Existence of an appropriate organizational structure	Cooper (1999)

The increasing development and production of new products and the successful presenting of them into the market result in shortening the life cycle of products from mass production to custom manufacturing (Sarmad Saidi, 1388). Generally, the production of new product is a set of activities and growth creation approaches which leads to minor or major reformation of products in the current market at different steps of production (Cooper, 2006). The development of new product is a set of activities and growth policies which leads to minor modification and reformation in products for existing sectors of markets (Rainy, 2005). Crick and Hart using extensive researches in the field of product development could divide all theories into two parts of public-oriented and specific-oriented.

Public-oriented approach: This group has determined the success or failure factors of new product development. These researches and measurements have measured the set of variables which effects on the process of new product. This group of research is known as 'public-oriented researches'. Specific-oriented approach: This approach emphasizes on a specific aspect of development of new product, instead of measuring the various effective variables of new product development process (Cooper et al., 2002). In the below, a list of other studies in the field of factors influencing the success of new product development is presented.

The product development strategy of some automobile manufacturing companies

Iran Khodro Company

Still nearly one century after entering the first automobile in the country, the main approach of automobile manufacturing as it is known today industrial, was started in 1958 by establishment of the first automobile assembly factory and progressively was developed. The industrial group of Iran Khodro has met great challenges in recent years because of changes in domestic and global business environment. The acquiring the design knowledge and development of new products are two of the main competitive advantages. For this purpose, since 2012, at least about 3% of the Iran Khodro sells was devoted to research and development and related projects. With devoting 3% of Iran Khodro sells to research and development, all of quality programs through the entire value chain, from parts procurement to after-sale services were conducted by the supreme committee of quality. In the document of technology macro strategy of industrial group of Iran Khodro, the alignment of technology cart and product cart's of group is considered. Entrance of industrial group of Iran Khodro to new businesses, because of risk reduction and avoiding from the heavy investment, often is begun from the assembling the new products which does not require any advanced and profound technologies and just relies on the assembly process technologies. Generally, the approach of this company in developing the new products and acquiring the new technologies can be divided into macro and group levels. The approach of this company in the level of a group is as follows:

- Technological integrated management through the value chain.
- Technology cards of group and acquiring the knowledge
- Acquiring strategical technologies through the group and with cooperation of business units.

Hyundai Company

The Hyundai Motors Company is the fifth manufacturer of automobile in the world and is the greatest exporter of cars. This company with associating in Automatic Development Association with comparing to other European and American companies tries to create the best process for product development. The general steps of product development in this company are as follows:

- 1- A step before development of new product: The factors which separate the current product of company from similar companies' products are investigated. This step accomplished using marketing researches from customer in order to fix the problems.
- 2- Product development step: investigation of product development steps from the technical and marketing viewpoints.
- 3- After production step: evaluation of the product in order to fix the possible problems and preparing it for mass manufacturing and sending to the target markets.

KIA Motors Company

KIA Motors is a Korean automobile manufacturing company which is considered as a subset of Hyundai Motor Group and was known as the second automobile manufacturer in South Korea by manufacturing 2.75 million cars in 2013. In recent years, KIA makes a lot of efforts in order to correct the lack of reliability of its vehicles, so that its current

reliability rate is more than other companies. In recent years, KIA makes a lot of efforts in order to correct the lack of reliability of its vehicles. In general, the strategy of this company for developing the products is as follows:

- Cooperation contract with foreign companies
- Creating a production line in countries with the largest car market
- Promotion of cars' quality and enhancing the reliability of company's products
- Diversity in products
- Design and development of systems in order to promote the recycle level
- Initial researches
- Product development
- Testing and evaluation
- Introducing to the market

New product development using open innovation approach

There are various approaches related to the strategy of product development. These approaches should be considered as means for taking advantages from future opportunities and facing with the possible threats. These approaches can be divided into two categories:

- 1- Reactive strategies of new product development: facing and coping with pressures and events that will happen after them (such as simulation of a successful product of rival company)
- 2- Defense strategies: creation of changes in existing products in order to cope with rival's successful products.

The investigation of the product development literature indicates an extensive and growing attention to this topic in the last three decades. Regarding to the extension and diversity of performed studies, there is a need for distinguishing the studies. In this area, Van de Ven (1992) presented the three distinct approaches in these researches which are as follows:

Casual approach: The aim of this approach is to find the reasons of companies' success or failure based on the new product development and offering solutions for improving the performance of product development. This approach is related to the exploring process about the viewpoint and minor factors of the whole process.

Cognitive approach: the aim of this approach is to introduce models which following them could lead to success in product development. The outputs of this approach are the official models or processes of new product development which is substantially divided into two separated classes of linear models and non-linear models.

Structure-oriented approach: the purpose of this approach is to investigate the relations between variables and characteristics of new product development process and also understanding the facilitated internal mechanisms to achieve better outputs in new product development. Booz, Allen, & Hamilton (1982) stated that for each 7 ideas, 4 ideas could enter the development step and finally just one idea could make the marketing approval as a product.

Companies in the open innovation environment can use the others' ideas and technologies in their work and at the same time allow others to utilize their not used ideas. Commercialization and exchanging the research findings with industrial and marketing arena, without exaggeration, is one of the most complicated steps of innovation process (Bandarian and Mousaee, 2010). Generally, the main managerial challenge of knowledge owners and investors is how to convert their productive and modern knowledge to an economic efficiency flow for founders, investors, and employees. In other words, the major problem is not about the invention, but its commercialization (Gans & Stern, 2003). Choosing a commercialization model is the basis of this process. Selecting the commercialization strategy is embedded in this process and refers to the path in which the organization intended to bring benefits from an innovation or the resulted productions (Mehta, 2008).

The open innovation combines the internal and external ideas to productions and modern systems. Also, in open innovation, the internal ideas enter to market using external channels apart from the current company's business in order to bring more values. The innovation is the result of a dynamic restructuring. Exploitation of opportunities of a new and innovative product requires the manufacturing, developing, and evaluating the new product ideas. Its main steps are consisted of understanding the need for new products, discovering the existing and potential sources of ideas, and finally, evaluation of ideas (Lilien et al., 2002). It can be said that till now, many models have been proposed for the new products development, such as cascade models, Ancef competitive strategy model, Booz et al. model, spiral models (Bullinger et al., 2003). Choosing the outside-in process as the main perspective of open innovation implementation by a company means that the company tends to obtain the income through investment on creation of interactions with customers, suppliers, and other external sources of knowledge.

Looking at the background of automobile manufacturing industry in the country and its growth trend, several distinct periods in the past and two periods for now and future can be distinguished. The industrial group of Iran Khodro has met great challenges in recent years because of changes in domestic and global business environment. Thus, since 2012, this company has devoted 3% of its sells to research as development programs and implementation of related projects. In the present research, the emphasis is on the open innovation environment as the context of a successful development of new products In Iran Khodro Company. According to the obtained data, it can be said that the following facts are true for Iran Khodro Company:

- From the aspect of open or closed innovation, Iran Khodro Company is an organization which has preferred the open innovation over the new product development process.
- From the aspect of inward or outward open innovation, Khodro Company is an organization that relies on the inward open innovation rather than outward open innovation. In other words, a state between sourcing and acquiring.
- From the aspect of process of open innovation or the result, Khodro Company is an organization that has a interstitial state and it seems that in the innovation process, it acts open, but at the result of innovation, it acts like a closed one.

3. Research methodology

According to the essence of current study, it is of fundamental type, because this research is looking for investigation of relations between phenomena and presenting a model. One of the main and focal purposes of present research is development of existing knowledge and understanding about a phenomenon called 'new product development using open innovation'. Thus, this research is of explanatory type. But, based on the main topic of research, this study is a combined research (qualitative-quantitative) and the qualitative and quantitative data were used in this research. In other words, according to the qualitative approach, the sampling method was theoretical and judgmental. The theoretical sampling was used in this research due to the need for achieving a profound understanding of the surrounding world from the viewpoint of people who are being studied in order to simulate the new product development using an open innovation method. To choose a sample and in order to respond to the questionnaire and performing the interviews, a non-probability sampling was used during the Delphi process and validation of the conceptual model. The under study statistical population was consisted of Iran Khodro Company experts and university faculties familiar with the automobile industry. Finally, the number of interviewed experts and professors in this research was set to 30.

4. Data analysis

In the present research, with considering the research methodology of combined (qualitative-quantitative) type, firstly, the obtained results of theoretical investigation was analyzed and then the resulted data of semi-structured interviews were analyzed.

Literature review: the literature review of current research is included of investigation of past valid sources and patterns (in the field of new product development using an open innovation approach) and creation of the initial conceptual model of research. The final factors obtained from the literature review can be summarized as follows:

Table 3. The main final components

<p>1- Conceptualization</p> <ul style="list-style-type: none"> - Technical analysis - Market evaluation - Investment evaluation - Collecting ideas 	<p>2- Creation</p> <ul style="list-style-type: none"> - Technical feasibility - Studying the market - Economic feasibility - Strategic business - Production of the prototype - Designing the marketing strategy - Field test
<p>3- Commercialization</p> <ul style="list-style-type: none"> - Production - Distribution and sale - Production support - Development of market 	<p>4- Used technology</p> <ul style="list-style-type: none"> - In accordance with customers' needs - Time and cost efficiency of technology - Technological design and production - Leading-edge technologies

Table 4. Final list of codes

	Initial code	ID	ID	ID	ID	ID	ID
1	Using the knowledge sources from outside of organization	A1	F17				
2	Focusing the knowledge of employees	A1	D18				
3	Coordinating the activities systematically	A1					
4	Knowledge empowerment of employees	A1	D19	F18	G1		
5	Intelligent network of technology	A1	B2	C2			
6	Optimal cycle of knowledge	A1	B6	C6	D6	E6	G2
7	Utilization of information technology	A1	C3	C14	D7	E7	F7
8	Considering the outsourcing of activities	A1	B8	C8	D8	E8	G15
9	Considering the motivation of individuals	A1	B9	C1	D9		
10	Organizational open culture	A1	G3				
11	Networking capabilities	A1					
12	Product attraction for market	A1	C5	D1	F1	G4	
13	Product attraction for customers	A1	G5	G14			
14	Obligation to the need of customer	A1	B4	D5			
15	Generating the flexibility	A1	G16				
16	Organization agility	A1	D13	E12	F13	G13	
17	Appropriate marketing strategy	A1	B17				
18	Obligation and support of senior managers	A1	G19				
19	Knowledge integration	A1	G6				
20	Fast responding to the rivals	A1	G18				
21	Competitiveness of product	B12	B2	D3	E12	F3	G10
22	Considering the needs of society	C13	B3				
23	Production feasibility	G17	B5				
24	Appropriate orienting in market	C7	B7				
25	Patternicities from successful companies	C10	B10	C15	E11	F11	G11
26	Integrated strategy	B11	E1	E9			
27	Long term strategic thinking	B13					
28	Evaluation of required capital	F14	B14				
29	Considering the global market	F4	B15				
30	Considering the time of production	F5	B16				
31	Utilization of intellectual property	F9	B18				
32	Obligation and support of senior managers	C4	C16				
33	Partnership and cooperation with research and development team	C9	F8				
34	Multicultural	C11	D14	E5	D17		
35	Emphasizing on stakeholders purposes	C12					
36	Coordination with company's production structure	C18					
37	Existence of required skills	C19	E2				
38	Considering the rivals' products	D2	E3				
39	Adapting the ideas to needs and organizational values	D4	E4				
40	Market studies	D12	E10	F10	F12		
41	Monitoring the activities inside market network	F16	G7				
42	The highlighted role of contractors	E14	G8				
43	Development of team work	B19	D15	F2	F6	G12	
44	Appropriate communication program	E15	D16				
45	Utilization of quality improving techniques	C1	F15	G9			

Thematic analysis: after completing implementing each interview, the interviews' texts were investigated using thematic analysis method. In this method, first, the interviews' texts were completed using the recorded voice of interview sessions and the notes were taken in these sessions. Then, with accurately reading these texts, firstly, all the independent ideas were identified as the subsidiary concepts and themes and then, a code was assigned to each one (coding was performed using the Gliser method). Then, according to the identified subsidiary themes, a more general classification was conducted which led to identification of the main themes. In this way, the main themes describing the new product development strategy were identified. During the data analysis, there were various transformations between data and literature which resulted in a more accurate insight about the findings.

Some expressions were coded qualitatively such as below. In the following, the initial codes assigned to each expression are presented:

- The most effective activity in order to facilitate the innovation in organization is to empowerment the employees (A4).
- Utilization of the web-based technologies leads to receive new ideas from the global market of automobile productions (A5).

The final list of performed coding is as follow:

Table 5. Samples of extracted indicators that offered to group members

Indicators that are not on this list	Extracted indicators that offered to group members
Integrated strategy Finding the ideas Pay attention to the global market The flexibility of organization Improvement of group work Strong communication Capable staff Math the ideas with the available facilities The chain of available supply	Intelligent network of information technology Design the attractive product Scientific empowerment of organization Optimal use of the outside and inside science of company The ability of the networking and integrating the activities Pay attention to the outsourcing the activities Pay attention to the needs of the stakeholders and society Open organization culture Acceleration of organization in producing Plan the suitable strategy of marketing Product feasibility Marketing research Monitoring the activities inside the market network

Extraction of final components: in this step, the coding of latent relations between concepts was performed by returning to the interviews' texts and revising the code. At the end, the final components were extracted. At the end of this step, the selected components were matched with the obtained model from the theoretical framework and the literature and finally, the final components of new product development strategy using the open innovation approach was obtained. For example, "utilization of the web-based technologies leads to deliver new ideas from the global market of automobile products and the usage of information technology leads to increase in productivity and reduction in time. Also, the utilization of information technology results in increasing the productivity and better understanding of the future global market of automobile trends".

- Performed pivot coding: intelligent network of technology; utilization of information technology
- Performed optional coding: intelligent network of information technology

Delphi: the distribution of questionnaire was conducted in person using the Delphi method in three steps.

First step: a list of indexes which have been extracted by previous researches was given to the group members to determine their importance. In addition, they were asked to offer their comments about the indexes which weren't on the list. Second step: The indexes set proposed in the first step was given to them to determine their importance. Third step: The comments of experts group were received again regarding to the study of indexes identified important in the first and second steps.

Table 6. The most important indicators for expert group in third step

Most important indicators		
Finding the ideas	Open organization culture	The intelligent network of information technology
Pay attention to the global market	Acceleration of organization in producing	Design the attractive product
The flexibility of organization	Plan the suitable strategy of marketing	Improvement of group work
Improvement of group work	Product feasibility	Optimal use of the outside and inside science of company
Math the ideas with the available facilities	Marketing research	The ability of the networking and integrating the activities
	Monitoring the activities inside the market network	Pay attention to the outsourcing the activities
		Pay attention to the needs of the stakeholders and society

The final model of developing the new product by open innovation approach is as follows:

Studying the results obtained from each interview and comparing and matching them, we performed an analysis for each attended case. In this step, the themes that stated in different interviews and therefore they were saturated, are identified as the research results in the studied case. By classifying of similar concepts related to 7 interviews, we achieved a conceptual model consisting of 18 main themes.

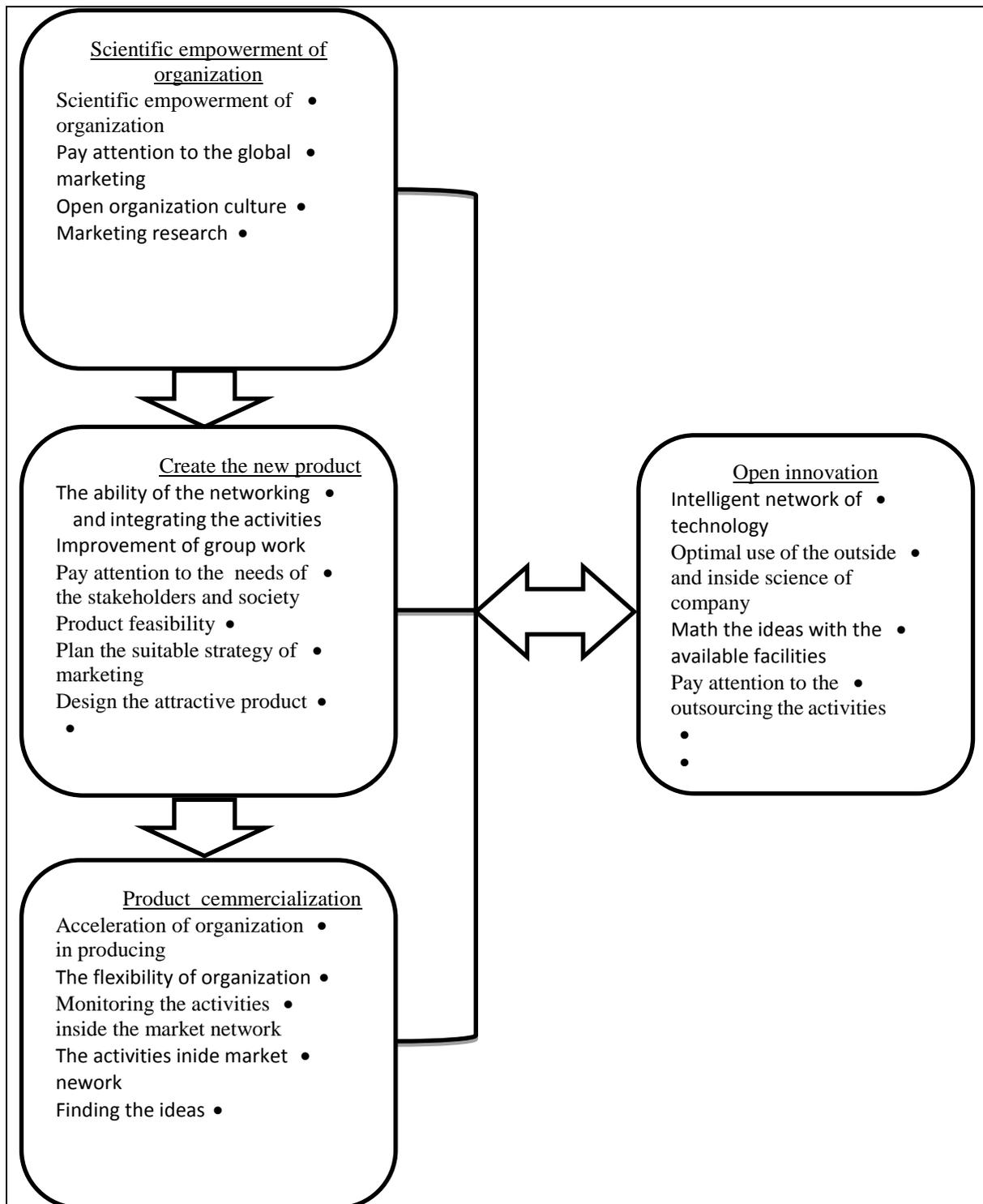


Figure 1- Final conceptual model of development of new product by open innovation approach

5. CONCLUSION AND SUGGESTION

To develop the new and innovative product, it should be a logical process that through which the ideas convert to a product, can be sold, and be profitable. The goal of the new product development is to meet the customers' needs, match to the market conditions and environmental changes, increasing the benefits, customer satisfaction, and coping with rivals' policies. In Iran Khodro Company, clarifying the product development strategy by open innovation approach is affected by the many different variables which formed in social and restricted economic framework and in combination with external limits and considerations. The main goal of this study is to explain the new product development strategy using open innovation approach in Iran Khodro Company. An overview of the economic structure and the formation of industry in this country indicate that the product development in our country is typically different from Europe, America, and Japan. We can classify and study these differences from economic, political, social, and cultural viewpoints. Development of the product in mentioned countries was typically endogenous, while the formation and development of this technology and in consequent the new product development process in our country was an exception and was a function of external technological behaviors.

In the present study, to answer the question about explaining the new product development strategy using open innovation approach, we used the Delphi technique and thematic analysis. The final model of new product development strategy by open innovation approach consists of four main themes: scientific empowerment of organization, the creation of the new products, the product commercialization, and open innovation process. According to the literature and findings resulted from interviewing with experts, we obtained some abilities for Iran Khodro Company in new product development strategy such as: The intelligent network of information technology, Finding the ideas, Open organization culture, Design the attractive product, Improvement of group work, Optimal utilization of the outside and inside science of company, The ability of the networking and integrating the activities, Paying attention to the outsourcing the activities, Paying attention to the needs of stakeholders and society, Accelerating the production of organization, Planning a suitable marketing strategy, Product feasibility, Marketing research, Monitoring the activities inside the market network, Paying attention to the global market, The flexibility of the organization, Improvement of team work, Matching the ideas with the available facilities. These factors help organizations to continue the manufacturing of product, using the knowledge from outside of organization, matching this science in organization. Chesbrough (2006) obtained similar results in his study. He pinpointed that the factors such as recognizing and predicting the market, controlling the available technologies in the market, knowledge management, networking of the activities affect the product development. He concluded that the science and knowledge management is the effective factor in achieving the goals of organization in open innovation space. Also, Barbaroux emphasized the effect of the knowledge management and adaptive management of the organization. To improve the product development process, the Iran Khodro Company can attend the similar factors. In this way, this company achieves the performance improvement and the competitive benefits. Finally, considering the results of this study, we offer some suggestions for the Iran Khodro company to achieve the competitive benefits in new product development:

- Implementing the qualitative processes in throughout the value chain
- Meeting the costumers' need and try to offer the products, considering to the present and future need of customers.
- Offer the various products at different times
- Cooperation with global auto companies and using their experiences and find a pattern
- Correcting the company program and paying attention to key processes based on the obtained abilities.
- Using the mechanism of attracting the innovative ideas.
- Paying attention to utilization of innovation in the organization and facilitating the communication processes.
- Using the educational workshops about innovation and finding ideas.
- Empowering the organization's knowledge through holding the educational courses and flow the knowledge throughout the organization.
- More attendance of the organizational managers to organizational open culture
- Paying more attention to the marketing research and implementing the marketing strategy
- Improving the ability of networking and integrating the activities
- Using the intelligent network of technology, improved utilization of science and knowledge of outside and inside the company and paying attention to outsourcing the activities.

REFERENCES

- Bandarian R., A. Mosaie (2010).** Use the available industries; a solution to facilitate the commercialization", *Roshd-e-fanavari quarterly*. No. 18.
- Darbanda S., S. Khorshid, (2010).** "The open innovation approach and its role in innovation development", the second national conference of the finding creativity", Tehran.
- Barclay I., Dann Z. and Holord P. (2000).** "New product development", IRWIN publish.
- Bacher M.J. (2000).** Marketing strategy and management" third edition Macmillan press LTD London.
- Booz, Allen, and Hamilton (1982).** New Product Management For the 1980s. Booz Allen & Hamilton inc.
- Bullinger H. J., Fahrnich K. P. and Meiren T. (2003).** Service engineering methodical development of new service products. *Int. J. Production Economics*. 85(3): 275-28.
- Breyer S. (1982).** Regulation & Its Reform, Cambridge, MA: Harvard University Press.
- Chesbrough H. W. (2003a).** Open innovation: The New Imperative for Creating and Profiting from Technology. Harvard Business School Press, Boston.
- Chesbrough H. W. (2003b).** The logic of open innovation: managing intellectual property. *California Management Rev.* 45(3): 33.
- Chesbrough, H. W., (2003c).** The era of open innovation. *MIT Sloan Management Rev.* 44(3): 35-41.
- Chesbrough, H. W., (2007).** Why companies should have open business models. *MIT Sloan Management Review* 48(2): 22-28.
- Chesbrough, H. W. (2003).** The Era of Open Innovation. 44(3): 35-41.
- Cooper R.G., Edgett S.J. and Kleinschmidt E.J. (2002).** Optimizing the stage-gate process: what best practices companies are doing, part 1. *Res. Technol. Manag.* 45(5): 21-27.
- Cooper, R. G. (2006).** Formula for success in new product development. *Marketing Management*. 18-24.
- Guttman, J. S., Sierek, A. W. & D. M. Friedl (1992).** "The New Clean Air Act's Big Squeeze on" America's Manufacturing Base. *Business Horizons*. 35:37-40.
- Huizingh, Eelko K.R.E. (2011).** Open innovation: State of the art and future perspectives. *Technovation* 31:2-9. Doi: 10.1016/j.technovation. 2010.10.002
- Lilien G. L., Morrison P. D., Searls K., Sonnack M. and Van Hippel E. (2002).** Performance assessment of the lead user idea-generation process for new product development. *Management Sci.* 48(8): 1042-1059
- Mehta S. S. (2008).** Commercializing Successful Biomedical Technologies: Basic Principles for the Development of Drugs, Diagnostics and Devices, New York, Cambridge University Press.
- Sarmadi Saeedi and A. Mamghani (2010).** " Practical model in new product development process", *Tadber Monthly*. 214: 54-59.