

IDENTIFICATION OF CRUCIAL SUCCESS FACTORS OF NEW PRODUCT DEVELOPMENT IN SMALL AND MEDIUM BUSINESSES LOCATED IN SOUTHERN KHORASAN TECHNOLOGY AND SCIENCE PARK

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***Abstract:** Today, speeding up the processes of product development and more rapid presentation of the products and services in market is a matter which receives lots of attention by companies and organizations. The purpose of the present research is to identify the crucial success factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park. The population of the study is a combination of experts and managers of small and medium companies in southern Khorasan technology and Science Park from fall 2014 to spring 2015 who are employed in different fields of industry such as electronics, medicine and medical, agriculture, and modern energies. We used Morgan table to determine the sample volume and 59 companies were considered as the sample. The present research is functional in terms of purpose and is qualitative in terms of nature of the data. The methodology and data collection method is survey and the instrument of data collection is questionnaire. The content validity of the questionnaire was approved by the instructor and advisor in effective factors of product development. So it has an approving validity. In the present research we used Cronbach alpha in order to measure the reliability of the questionnaire which was higher than the standard value of 0.7. In this research we used one-sample t-test in order to examine the hypotheses and the results showed that four managerial, commercial, marketing and technological factors affect the process of new product success.*

***Key words:** produce development, managerial factors, commercial factors, marketing factors, technologic factors.*

INTRODUCTION

Small and medium businesses have been development pivot for lots of developing countries during the past two decades in a way that a better part of employment and

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production of such countries have been allocated to that. So lots of industrial development policies in emerging countries have moved toward small and medium institutions. Small and medium institutions are considered as one of the key sources of dynamism, innovation and flexibility in industrial and also developing countries. They should create jobs and more important, they should innovate, profit and commercially grow. If small and medium institutions do not receive external financial sources for investment, the capacity of capital earning for each employer or worker will be affected and seriously deviated (Musavi, 2010).

Emerging state of the art technology in production and communication and new approaches in revolutionary businesses, distribution and structure of institutions, have increased the importance of small and medium commercial units. Governments have always used special approaches and policies for promotion of small and medium industries and also facilitation of entering entrepreneur companies into economy, in order to guarantee the free market competition and preventing from exclusion of big companies (Nili, 2013).

The small and medium companies have an effective role in economic growth, technology development and consequently innovation. The development of such companies relies on the creation of required fundamentals for decreasing their risk taking during their activity. Such small companies lack the ability of attracting technology from the national technologic institutions and need different support mechanisms of technology. In order to meet those needs, technology and research institutions support small and medium companies through advising, informative programs and technology transmission projects (Mahdiani, Achak, 2006).

Small and medium economies (SMEs) are considered among the important economical pillars of each country and largely affect the economic growth (Thomas and Webb, 2003).

Small and medium economies which cover a wide range of innovative and dynamic firms are the factors of social and economic development (Helberg, 1999). Small and medium companies in EU industrial section receive lots of attention (Floeiand Mc Manus, 2005). According to the reports of foreign economy reports in Europe which was published in 2003, SME's cover 99% of economic activities in Europe and in EU which comprises of 25 countries; there are 23 million SMEs which have employed 75million people (European commission, 2003).

In Iran, small and medium economies also cover about 90% of existing economical institutions and certainly have a large share of country's economic growth (annual statistic report, 2008; Bayat and Taghavi, 2007).

According to a general definition of economies which are not considered as big businesses in terms of number of employees, amount of capital and other criteria, are named small and medium businesses. Such organizations have legal aspects and have limited income and capital.

Success in presentation of new productions to the target markets is an important subject for managers and owners of such businesses. Considering the competitive situations which have covered the economic institutions, distribution of new products are considered the only surviving path and profitable method which they can go through (Crawford and Benedetto, 2003). On the other hand, answering to the question that what factors gives priority to some companies to introduce their new products and why the fraction rate is high among product development projects, has obsessed the minds of so many researchers. Regarding the importance of this subject so many researchers have been done to find a promising way in new product development. Despite the studies done on developed economies such as Europe and North America or economies having high capacities and expertise, developing countries' economies and new markets such as meddle east, receive less attention. Generally, the processes on new products development of small and medium economies in this area are not known. Understanding the main factors of success of developing a new product in small and medium economies is so important in terms of theory and policy making. So the question raised here is that what are the crucial factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park?

REVIEW OF THE LITERATURE

Product: the term is used to explain all the commodities, services and sold knowledge. The products are a package of features including shape, function, advantages and operations which can be tangible as in physical products or intangible as in services or a combination of both (PDMA TOOLBOOK3, P493).

A lot of researchers (Johne and Storey, 1998; Larson *et al.* 1991) claimed that new product development includes the production of both tangible and intangible products.

New product: The most general definition of the product is a commodity or service for the market of company except for the products which are changed in the advertisements (PDMA TOOLBOOK3, P488). The definition which is accepted as a basic is that new products are the original, modified and developed products or new brands that are created during the company's researches and productive activities (Olraik, 2000; Catler, 1991).

Developing a new product: the whole strategy, organization, concept production, marketing program creation, evaluation and production, and economizing the new product is developing a new product although the only used term is product development (PDMA TOOLBOOK3, P 488). In a similar categorization, three separate groups are identified which are those really innovative and meeting the needs. The alternative products which differ in shape, function and advantages, are fake commodities for the companies and are not new for the customers (Petrick and Echols, 2004; Stanton *et al.* 1994).

THEORETICAL FRAMEWORK

The crucial factors of new product development success

Managerial factor

In the process of product development, from finding ideas to presenting the product to the market, the most effective thing is the managerial factor of product development team. Lots of factors have roles in the manager's decision making in the process of NPD. We can mention some indices such as: having a bright and shared scope in the developing team, support by the chief manager for the team and the scope of the team, maintaining the experienced members of the team, the commitment of the chief manager, organizational culture, presenting trainings in new product management, accurate management in team causes success in the executive approaches in distinguishing programs of product development process which can play an important role in arranging other indices of making a team.

Marketing factor

According to Catler, marketing is a process for identification, prediction, creation and meeting the demands and requirements which the customers have for products and services. In 1952, Nile Born introduced the term marketing mixture which is a combination of factors which are seeking to answer the needs of market. The idea was completed by McCarty in 1960 and was identified in four main factors of Ps4. The concept of marketing mixture implies a collection of controllable tools that a suitable combination of those are used in marketing programs and its consequences are realization of the aims of a institutions and answering to the target market. The process of new product development is formed according to the customer's needs in the market. The key indices of marketing are: understanding market and its dynamics, following the advantage of the new product, attraction and advantages of the product compared to the opponents, advertisement quality and the size of product market (Catler, 2006).

Technology factor

Technological changes are a variable issue according to the growth and innovation in industries. According to the researches we can give importance to the technology in the new product development (NPD) in terms of points such as: technology complying with the need of customers for the product, the required skills for the product development, the required standards for the function, quality and technical level of the product.

Commercial factors

If we want to present a product to the market, it should be compatible and should minimize the imposed internal and external risks and manage them. So following a systematic approach according to the environmental changes and having hope to the

survival of the companies caused the situations below become effective in this issue (Ansef, 1957) : introducing the product to the target market on time, presenting an appropriate strategy and crucial instructions, production according to the sound of customer, creating a positive presupposition of the company through producing new commodities.

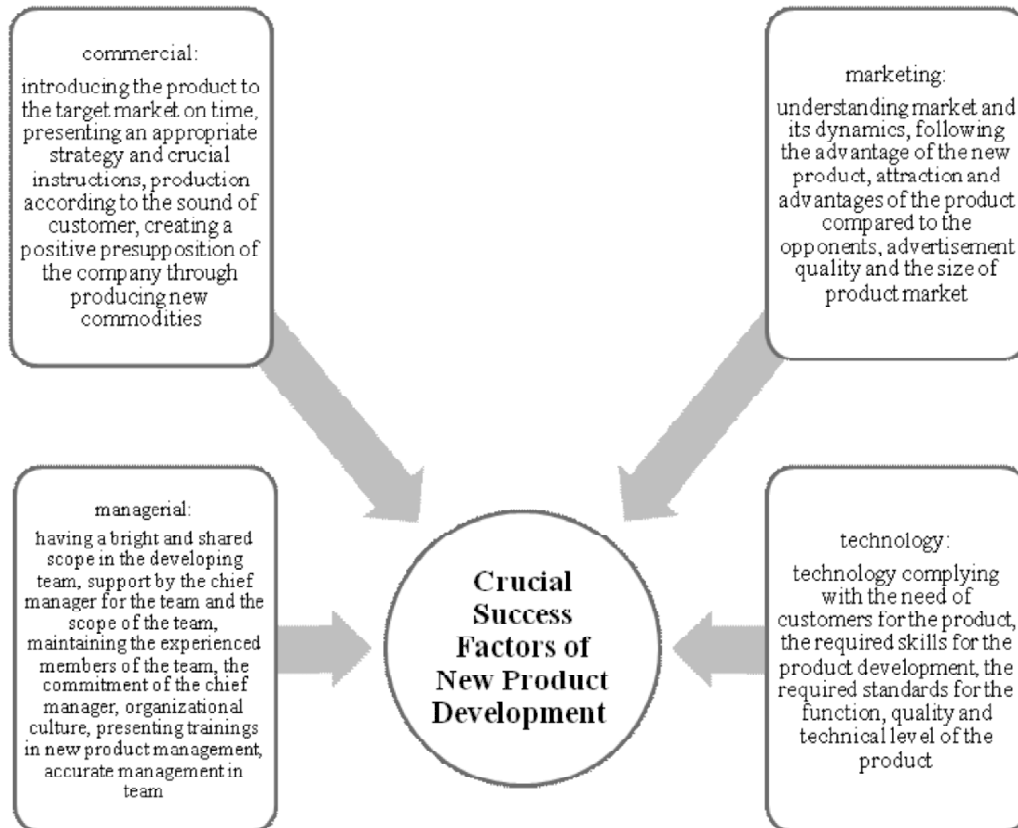


Figure 1: Conceptual model of the research

RESEARCH PURPOSES

The general purpose of the study is to identify the crucial success factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park.

The peripheral purposes of the research are:

1. Identification of managerial factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park

2. Identification of commercial factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park
3. Identification of marketing factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park
4. Identification of technology factors of new product development in small and medium businesses located in southern Khorasan technology and Science Park

RESEARCH HYPOTHESES

The main hypothesis

There is a significant relation between the crucial factors of success and the success of companies in the southern Khorasan technology and Science Park.

Sub hypothesis

1. Managerial factor is important for the development of a new product.
2. Commercial factor is important for the development of a new product.
3. Marketing factor is important for the development of a new product.
4. Technology factor is important for the development of a new product.

METHODOLOGY

The present research is functional in terms of purpose because it identifies the crucial factors affecting the success of a new product and develops the functional knowledge about the quality of effectiveness of the variables. It is quantitative in terms of the nature of the data. The data collection method and the method used for the present research is survey and data collection tool is a questionnaire. The data related to the research variables are assembled in a 24-item questionnaire. Then the hypotheses are examined and the affecting factors on the development of a new product in the southern Khorasan are extracted. The content validity of the questionnaire is approved by an instructor and advisor in the effective factors in the development of a new product. The questionnaire had the required validity. We used Chronbach alpha in order to measure the reliability of the research which is higher than the standard value of 0.7. The population of the research includes a combination of experts and chief managers of small and medium companies located in the science and technology park of the southern Khorasan which are employed in different parts such as electronics, medicine and medical, agriculture, and modern energies. According to the estimations of the research, the population includes 70 companies. In the research we used Morgan table and 59 companies were considered as the sample volume. In the present research we

described factors such as frequency distribution, frequency percent related to the variables gender and education first using the descriptive statistics and using the software SPSS, then the affecting factors on the new product development are identified using survey method and the relation between them is determined using a single-item t-test. Then accordingly the solutions are presented.

RESEARCH FINDINGS

H1: Managerial factor is important for the development of a new product.

Table 1
The results of H1 examination

<i>variable</i>	<i>mean</i>	<i>T value</i>	<i>Degree of freedom</i>	<i>Significance level</i>	<i>Minimum</i>	<i>maximum</i>
Managerial factor	24.6833	17.591	59	0.000	5.9231	7.4436

Because the significance level is lower than the error level of 5% for the managerial factor variable we can conclude that the mean of this variable has a significant difference with the average 18. Also because the minimum and maximum amount and the upper limit of confidence level are positive, so the mean is higher than 18. The average of managerial factor variable is 24.6833. So the managerial factor is important in the success of new product development.

H2: Commercial factor is important for the development of a new product.

Table 2
The results of H2 examination

<i>variable</i>	<i>mean</i>	<i>T value</i>	<i>Degree of freedom</i>	<i>Significance level</i>	<i>Minimum</i>	<i>maximum</i>
Commercial factor	24.1833	19.363	59	0.000	5.5444	6.8223

Because the significance level is lower than the error level of 5% for the managerial factor variable we can conclude that the mean of this variable has a significant difference with the average 18. Also because the minimum and maximum amount and the upper limit of confidence level are positive, so the mean is higher than 18. The average of managerial factor variable is 24.183. So the commercial factor is important in the success of new product development.

H3: Marketing factor is important for the development of a new product.

Table 3
The results of H3 examination

<i>variable</i>	<i>mean</i>	<i>T value</i>	<i>Degree of freedom</i>	<i>Significance level</i>	<i>Minimum</i>	<i>maximum</i>
Marketing factor	23.8333	15.424	59	0.000	5.0766	6.5901

Because the significance level is lower than the error level of 5% for the managerial factor variable we can conclude that the mean of this variable has a significant difference with the average 18. Also because the minimum and maximum amount and the upper limit of confidence level are positive, so the mean is higher than 18. The average of managerial factor variable is 23.8333. So the marketing factor is important in the success of new product development.

H4: Technology factor is important for the development of a new product.

Table 4
The results of H4 examination

<i>variable</i>	<i>mean</i>	<i>T value</i>	<i>Degree of freedom</i>	<i>Significance level</i>	<i>Minimum</i>	<i>maximum</i>
Technology factor	23.2833	13.601	59	0.000	4.5060	6.0606

Because the significance level is lower than the error level of 5% for the managerial factor variable we can conclude that the mean of this variable has a significant difference with the average 18. Also because the minimum and maximum amount and the upper limit of confidence level are positive, so the mean is higher than 18. The average of managerial factor variable is 23.2833. So the technology factor is important in the success of new product development.

CONCLUSION

Today, speeding up the processes of product development and more rapid presentation of the products and services in market is a matter which receives lots of attention by companies and organizations. Gaining skills in the new product development can help lots of organizations in achieving to their goals. If organizations increase their effectiveness and efficiency in entering new products to the market, they can strengthen their roots in the weak ground of the market and survive. New product development is one of the biggest abilities and meanwhile one of the most difficult existing activities in every business. The managers of economies and philosophers of the market agree on the fact that one of the crucial factors for the long term survival of the organizations in success in new product development (Pelton and Barkley, 1998). The new products provide growth opportunities and gaining compatibility for the organizations in a way that today organizations worldwide found out that their only survival relies on the inclination toward production and developing new products and using approaches for accurately implementing the process of developing the new product in order to be success.

In the present time, with the development of technology, science and new produced equipment, the competition of organizations and economic institutions the rapid and fundamental changes in the needs and demands of customers and the similar issues have faced the production and new product development with a lot of problems. So

lots of studies today are seeking to identify factors which guarantee the success of development of new products. The new products are as a gate of opportunities which opens to the organizations and meanwhile carry a huge risk. Infact the development of a new product is one of the most important, most risky and most difficult activities of the organizations.

The results of the examination of research hypotheses show that all managerial, commercial, marketing and technologic factors affect the new product development. All the hypotheses were confirmed and the results are consistent with those of Kambiz Talebi (2012), Saeid, Saeida Ardakani, (2011), Alireza Moghani (2011), Narges Imani Pur,) 2010), Dr. Rokhsana Fekri, (2012), Lean *et al.* (1999), Lester (1998), Pulten and Barakley (1998), Couper (1999), Couper and Kinasmith (2007), Zigger and Maydic (1990), Roberts and Brooke (1974), Ernest (2002), Matheo (1996), Ross *et al.* (1998), Couper and Clean Smith (1995a), Anushima (1996), Sharma (2006), Bun Kim and Jung Ju Kim (2008), Hardt (2000), Lovson and Ventris (1992), Argris and Sushun (1978), Montoya, vizz and Kalanton (1994).

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