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AN ANALYSIS ON CRITICAL SUCCESS FACTORS FOR NEW PRODUCT DEVELOPMENT IN SMES OF IRAN'S FOOD AND BEVERAGE INDUSTRIES

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ABSTRACT

The purpose of this paper is analyzing on critical success factors (CSFs) for new product development (NPD) in Small - Medium Enterprises (SMEs) of Iran's food and Beverage industries, by the use of managers and experts who are involved. This study is a quantitative research that the questionnaire for collection data was developed by an extensive review of the related literature and also performing structural interviews. We have used the viewpoints of more than 50 managers and experts, related to NPD, from SMEs of food and beverage industries of Iran. The finding of the study revealed CSFs for NPD in SMEs and then specifies its critical success dimensions (CSDs) for NPD in SMEs that include technological, commercialization, marketing, organizational, internal, and supporting dimensions. The study also shows that there is a significant gap between current situation and ideal situation and then with identifying factors that cause such a problem, have presented a set of managerial solutions.

KEYWORDS

Critical success factors, NPD, SMEs, Iran's food and beverage industries, managers' viewpoints.

INTRODUCTION

Ministry of Industries and Mines of Iran has divided Iranian industries into two main categories; Metal-based and nonmetal-based. Nonmetal-based industries have six subcategories, including food and beverage industries, pharmaceutical and health industries, polymer industries, cellulose industries and chemical industries.

Statistically, 27000 active industrial units are categorized into nonmetal-based industries, which are about 222000 billion Rials (approximately 22 billion dollars) of investment and over 646000 employees. 26 percent of value-added Iran's industries and mining part is categorized into nonmetal-based industries. (Quotation from Ministry of Industries and Mines of Iran, 2007)

Food and beverage industries of Iran are ranked first among Iran's nonmetal-based industries as a consequence of supplying life's basic needs, high value-added and large number of employees, reducing agricultural wastes and participating directly in the production of national income, diversity of products, and the number of active firms.

Statistic Center of Iran (2007) says that Iran's food and beverage industries have caused employment for 420000 people.

Iran's food and beverage industries has a value-added scale, 8 times more than Electrical Industries, 3 times more than Rubber and Plastic Industries, and 2 times more than textile and clothing Industries, so they have a significant importance in industry.

Although nonmetal-based industries' share in GDP of Iran is about 5 percent, food and beverage industry (including agricultural and non agricultural) owe about 2 percent of this share, and other nonmetal-based industries have about 3 percent of that. (Quotation from Ministry of Industries and Mines of Iran, 2007).

Having a vast number of active units, food and beverage industries will be at the center of our focus. We will study units, located in Fars industrial town, which is one of the leading provinces of Iran in industry.

Despite the large number of literature, dealing with the product development process in large-scale industries, unfortunately few studies have been done in the field of SMEs; however, this issue has an important role in survival and growth of SMEs.

This research has three main objectives:

- Identifying critical success factors (CSFs) of NPD in small - medium enterprises of food & beverage industries;
- analyzing critical success dimensions (CSDs) of NPD in small - medium enterprises of food & beverage industries;
- Identifying gaps between expectations and perceptions of these units from managers' viewpoint with respect to the critical success factors of NPD.

In the following study, first, two concepts (NPD and SME) are introduced, then the relevant studies from the literature are reviewed, and in the third section, the study questions are discussed. Fourth part deals with research's methodology, followed by data analysis and results in the fifth section. The discussions and managerial implications are mentioned in sixth section, and finally, the last part talks about limitations and future researches.

DEFINITIONS**NEW PRODUCT DEVELOPMENT (NPD)**

Effective NPD has become the focal point of competitiveness in many industries, particularly those where product life has shortened, competition increased on a global basis, and customer demand for greater product variety has grown (Maylor, 1997; Pisano 1997). Recently, studies about NPD issue are being done in different organizations such as universities, consulting firms, and manufacturing companies, and in a wide range of fields such as technology management, business, marketing, engineering, etc. There are many different and various definitions for NPD, and that's because of its great abundance and complexity. Fuller (1994) believes a broad definition is the most useful and should encompass either the development or introduction of a product not previously manufactured by a company or the presentation of an old product into a new market. Product Development and Management Association (PDMA) defines new product development as "a series of defined and regular tasks, procedures and practices that describe natural goal of a firm for conversion of early ideas into final products and services". With respect to this definition it can be said that the entire NPD process itself may include several sub-processes and sub-stages (Griffin, 1997).

Dougherty (1990) supposed that NPD process is basically, of knowledge development, knowledge combination and blending activities, which comes from a current of non-routine and routine tasks performed by active individuals and groups in the organization.

In general, new product development is a complex process that requires participation of various functional parts of a firm. In fact, in order to implement NPD process adequately, the whole firm must be motivated and sensitive (Wheelwright and Clark, 1992).

SMALL - MEDIUM ENTERPRISES (SME)

There are lots of studies done in the field of SMEs, and this has caused various definitions in different countries with respect to age, population, cultural structure and etc.

SMEs have many similarities in many countries, but despite this, they don't have the same unit and definition in all countries. Each country has expressed a definition according to its special business conditions. For example, Europe Union defines companies under 250 employees as SMEs. (European Commission, 2003). In Table 1, you can see the definition of SMEs in Iran's industries.

TABLE 1: DISTINCTION BETWEEN SMES AND LARGE COMPANIES IN IRAN BASED ON THE NUMBER OF EMPLOYEES (Commerce Ministry of Iran, 2007)

Number of workers	Industry type
more than 150	Large
Less than 150	Medium
Less than 50	Small
Less than 10	Very Small

It should be noted that beyond the firm size categorization (based on numbers of employees), SMEs and large companies have significant differences in other categories like structure, policy, management and resources. Table 2 has presented some of these differences.

TABLE 2: COMPARISON BETWEEN SMES AND LARGE COMPANIES (Ghobadian and Galleary, 1997)

large companies	SMEs
Pyramidal structure with several layers	Flat structure with a few layers
Information flow and non-flexible structure	Information flow and flexible structure
Emergence of low innovative	Emergence of high innovative
Slow respond to environmental changes	Quick respond to environmental changes
High degree of formalization	Low degree of formalization
low Independency and authority of employees	High independency and authority of employees
Appropriate access to financial and human resources	Limited access to financial and human resources
High resistance of staff to changes	Minimal resistance of staff to changes
individual creativity is stifled	Individual creativity is encouraged
Non-intuitive and deliberative decision making by decision makers	Intuitive decision making by decision makers (usually owner)

LITERATURE REVIEW

Balachandra (1997) says that, goals of introducing more than 90 percent of products have not been possible in 1991. Cooper (2005) noted the failure rate of NPD projects in the world as about 33 percent. Morris believes that the cost of failure in food industry of America is estimated to be 20 billion dollars and that's because of the unsuitable development of new products. Also Booz, Allen and Hamilton (1982) expressed that, out of every seven ideas, almost four ideas enters the development phase and finally, only one idea converses to product and launches to market.

All the statistics above are expressing this point: it's a high percentage of failed NPD projects. In fact, the success of NPD projects was a vital challenge for managers in the past, and unfortunately, embraces today's managers. So, the necessity of researches in this area is clear, and that's because the percentage of success in NPD projects increases by correctly recognition and application of critical success factors of NPD.

A variety of researches has been done associated with the critical success factors (CSFs) of NPD, but the results of them are different and sometimes contradictory with respect to the type, size, and other variables of industries and companies being studied.

Kandemir, Calantone, and Garcia (2006) in an elaborative research, studied CSFs of NPD projects in biochemistry industries of several advanced countries. Their research results showed that the following factors can be considered as critical success factors for NPD projects:

- 1) Using multi-functional teams and focusing on specific teams;
- 2) Using detailed market researches;
- 3) Testing the market, initial assessment of the product, and also final customers;
- 4) Propaganda quality;
- 5) Degree or scale of the company in international markets;

Lynn, Valentine, and Wright (1996) have introduced a model of determining the successful development of new products which includes 11 factors as follow: Having a structured process, and a clear vision, refining a product after launch, having long-term vision, optimization of team members skills, understanding the market and its dynamics, support of top management, using lessons obtained from former projects, supplying appropriate team, and finally maintaining team members by experiences from product development projects.

Cooper (1999) noted that CSFs for NPD include: proper orientation to the market, attention to market, product orientation and customer orientation, focusing on presentation of a world level product, having an international orientation in design processes and development and marketing, attention to activities before entering to development of main project, and sharp and timely definition of product development project.

Researches about CSFs of NPD of industries located in China showed that four aspects in the process of product development are effective (Mu, Peng and Tan, 2007):

- A) Technological factor
- B) Marketing factor
- C) Administrative factor

D) Commercialization factor

Despite increasing attention to researches about CSFs of NPD, most studies done in this area are related to large companies and few studies have been done in relation with small and medium sized companies (SMEs) (Woodcock et al, 2000). Though issue of product development is considered as an important subject to maintenance, survival and growth of SMEs as a source of innovation and growth, unfortunately, small number of researches has been done in this field. Therefore, this is the reason why this study is important to be done.

After searching, in literature, most of studies related to this subject, CSFs of NPD have been introduced in table3.

TABLE 3: CRITICAL SUCCESS FACTORS OF NPD IDENTIFIED BY PREVIOUS RESEARCHERS

№	Critical Success Factors	Researcher/ Researchers
1	Attention to details in NPD Process	(1990)Gupta and Wilemon
2	Top management support	Lester (1998); Poolton and Barclay (1998); Lester (1998); Gupta and Wilemon (1990);Ernst (2002)
3	Having Strategic Think (long-term view)	Poolton and Barclay (1998); Gupta and Wilemon (1990);Ernst (2002); Lester (1998); Lynn et al(1999)
4	Attention to opinions of market retailers for designing and manufacturing product	Luo (2005)
5	Having necessary skills in the parts related to NPD	Mathieu (1996)
6	Personnel commitment to NPD	Mathieu (1996)
7	Using IT	Mathieu (1996)
8	Sharp, stable, and early product definition	Cooper (1999)
9	On time delivery to market	Shepherd and Ahmed(2000); Cooper and Edgett(2002); Cooper (1999)
10	Proper orientation to market	Sharma(2006); Cooper and Kleinschmidt(1995)
11	Having a structured and formal new product development process	Lynn et al. (1999); Griffin(1997a); Maidique and Zirger(1999); Page(1993); Voss et al(1998)
12	Existing creative and entrepreneurial environment in the firm	Cooper and Kleinschmidt(1995); Voss et al(1998)
13	Applying lessons obtained from previous projects	Lynn et al (1999)
14	Using Cross-functional teams	Sharma(2006); Lester (1998)
15	Integrating marketing activities and R&D	Maidique and Zirger(1999);(1990) Gupta and Wilemon; Biemans(1992)
16	Supplier involvement in NPD projects	Liker et al (1995)
17	Having a unique and differentiated product	Cierpicki et al (2002); Cooper(1999)
18	Being an attractive product for market	Link et al(1987)
19	Market understanding and its dynamics	Lynn et al (1999)
20	Top management acceptance of risk	Poolton and Barclay (1998); Cooper (1999)
21	Flexibility and responsiveness to change	Poolton and Barclay (1998)
22	Defining standards of expected performance	Cooper (1999)
23	Refining a product after launch	Lynn et al (1999)
24	Having a clear and shared vision on the team	Lynn et al (1999); Lester (1998)
25	Being extensive inter-organizational communications	Rothwell(1972); Montoya-Weiss, Calantone(1994)
26	Having a proper control system	Rothwell(1972)
27	Having a proper organizational structure	Cooper (1999)
28	Generating good ideas	Lester (1998)
29	Organization's attention to external markets	Luo (2005)

So, with respect to the topic of the research, research's questions and hypotheses are proposed as follow.

Research's questions:

1. What are CSFs of NPD from managers and experts' viewpoint, which are related to Small-Medium Enterprises (SMEs) of food and beverage industries of Iran?
2. What are critical success dimensions (CSDs) of NPD from managers and experts' viewpoint, which are related to Small-Medium Enterprises (SMEs) of food and beverage industries of Iran?

RESEARCH'S HYPOTHESIS

There is a significant gap between expectations and perceptions of managers in Small-Medium Enterprises (SMEs) of food and beverage industries of Iran with respect to the CSFs of NPD.

RESEARCH METHODOLOGY

RESEARCH DESIGN

Most of the previous researches have identified CSFs by causal correlation between candidate factors and NPD performance (Sun & Wing, 2005). But the design of this research is different from the other studies in this field, and that's because:

1. Our study under firms had no high life cycle and most of them don't have separable parts such as R&D or NPD project management.
2. Evaluation of NPD performance by using item such as new product success represented to market, product share of market, etc is laborious for these firms.

So to recognize high importance CSFs of NPD, we used opinions of the managers and experts who concern with NPD issue.

METHOD OF DATA COLLECTION

We have used a questionnaire in order to gather required data. Therefore, we created a comprehensive questionnaire regarding identified factors in Table3; review of literature about the subject of research, and also using same other questionnaires. After designing the primary questionnaire, in order to support the questionnaire's validity, we sent it to 20 experts of NPD, received their viewpoints, and then evaluated questionnaires. Most of the viewpoints focus on the questionnaire to be voluminous. So we conducted structure qualitative interviews with some of the selected managers of Iran's food and beverage industries, and asked them to answer to questions in two dimensions (more-effective or low-effective).

The results of these interviews showed that the factors of 1, 3, 6, 7, 10, 16, 23, and 27 from table 3 have low importance, so we didn't use them in new edition of the questionnaire.

Finally, the questionnaires were edited according to their opinions and were sent to other managers again and were confirmed. This is a summary of the received opinions:

Manager opinions of company A:

"... the competitor brands are effective for success on NPD projects as our more interest and better products, in compete with them have problem. Also, conjunct chain of suppliers, employees, managers, and customers are effective for success on NPD projects..."

Manager opinions of company B:

".... challenges of NPD are factors outside organization, that include: exiting saturation markets, being inappropriate for international markets, lack of support, by governmental enterprises (such as insurance, work office, etc), political tampers in industries level, exiting strong brands as competitors..."

Manager opinions of company C:

"... exiting impregnated markets and unsound compete atmosphere, lack of support by governmental enterprises, and their bureaucratic rules are really tormentor, and sometimes creates problems in production process. Firms compete discussion is an important and considerable issue that make more problems for NPD projects. Also, because of decreasing people's power, there isn't dynamic possibility on various products and implementation of these projects..."

Manager opinions of company D:

"... Successful new product development depends on a strong research team that is dominant to technical, marketing, and financial issues. In fact, companies that are successful in the field of identifying appropriate target market should be leader.

Also, the lacks of transparent management templates in macro-level of a country for supporting small and medium industries make timid managers accept the risk of creating new products..."

Generally, Questionnaire's items included four sections:

1. Demographic information of individuals, including 3 questions about sex, work background, and job;
2. General information of the firm, including 2 questions about the number of personnel and firm activity background;
3. Information about new products that was presented to market, including 4 questions about estimation of financial success, profit, sale and market share of new product in 5 last years;
4. Effective factors on NPD process success, including 21 two part questions. One part asks about the ideal situation and the other, about the current situation. In fact, these questions are perceptual– prospective.

The questions of this part are categorized in 4 aspects based on Mu, Peng and Tan Research (2007) in table4.

TABLE 4: CRITICAL SUCCESS DIMENSIONS (CSDs) OF NPD WITH RESPECT TO EACH QUESTION

Related questions	Dimensions
16, 4	Technological
13, 12, 11, 2	Marketing
21, 19, 18, 17, 14, 9, 8, 7, 3, 1	Administrative
20, 15, 10, 6, 5	Commercialization

QUESTIONNAIRE'S RELIABILITY

We used Likert spectrum to evaluate the questionnaire's items (minimum 1 to maximum 5) and selected Cronbach's α coefficient to assess the reliability. The results for 4 aspects are presented in table5, and show that the questionnaire is reliable.

TABLE 5: CRONBACH'S α COEFFICIENT FOR DIFFERENT ASPECTS OF THE QUESTIONNAIRE

Items	Cronbach's α coefficient
Items related to Technological aspect	0.764
Items related to Marketing aspect	0.725
Items related to Administrative aspect	0.913
Items related to Commercialization aspect	0.779

THE SURVEY

The statistical society of this study is managers of SMEs related to food and beverage industry located in industrial town of Fars (one of the provinces of Iran).

NPD is a process that covers a wide range of organization's managers, so, in order to ask their ideas, statistical society was calculated as table6. After determining the population, 100 questionnaires were sent (to more than 60 percent of the target society) to managers of these firms, and finally, 85 questionnaires (85 percent) were returned during 3 weeks. Also in order to enhance the quality of the results, we divided them into two categories. The first group was those who had assessed their new products as successful products or relatively successful. Second group was those who had assessed their new products as unsuccessful products. So, we used 51 completed questionnaires from the first group (Table7).

Also should be noted that the sampling method used in this study is stratified random sampling, due to a heterogeneous society.

TABLE 6: DETERMINING THE RESEARCH SOCIETY

Grouping Enterprises	No. active enterprises	No. selective managers	No. goal managers
Micro-Small	10	1	10/10(1×)
Small	66	2	132/66(2×)
Medium	6	3	18/3×6/
Total	82	-	160

TABLE 7: DISTRIBUTION OF INFORMANTS RELATED TO THE GOAL QUESTIONNAIRES

Informants	No.	Percentage
Gender		
Man	38	74.5
Woman	13	25.5
Job position		
Senior Management	13	25.5
R&D Manager	5	9.8
Engineering & design Manager	3	5.9
Production Manager	9	17.6
Sale & Marketing Manager	3	5.9
Other managers	18	35.3
Total	51	100.0

DATA ANALYSIS AND RESULTS

At first, we did a test (T-test) on 21 questions related to section 4 of the questionnaires (CSFs of NPD). Running this test, we can answer the first research question. The result of statistical Analysis for 21 items (CSFs of NPD) are explained in table 8 (significant level is 0.05):

TABLE 8: RESULTS OF T-TEST ON 21 ITEMS RELATED TO SECTION 4 OF THE QUESTIONNAIRES

Test Value = 3						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Minimum	Maximum
Q1	4.225	45	.000	.60870	.3186	.8988
Q2	2.015	46	.050	.31915	.0004	.6379
Q3	3.720	48	.001	.51020	.2344	.7860
Q4	3.590	48	.001	.46939	.2065	.7323
Q5	1.910	47	.062	.22917	-.0122	.4705
Q6	2.746	49	.008	.40000	.1072	.6928
Q7	2.560	49	.014	.34000	.0731	.6069
Q8	4.432	46	.000	.63830	.3484	.9282
Q9	.274	44	.785	.04444	-.2819	.3708
Q10	.586	46	.561	.08511	-.2074	.3776
Q11	1.069	49	.290	.14000	-.1232	.4032
Q12	4.225	49	.000	.58000	.3041	.8559
Q13	2.460	45	.018	.36957	.0670	.6721
Q14	2.934	48	.005	.46939	.1477	.7911
Q15	2.990	49	.004	.36000	.1180	.6020
Q16	3.841	48	.000	.48980	.2334	.7462
Q17	3.934	49	.000	.48000	.2348	.7252
Q18	2.774	49	.008	.42000	.1157	.7243
Q19	4.287	49	.000	.60000	.3187	.8813
Q20	.693	49	.492	.14000	-.2660	.5460
Q21	2.483	49	.017	.36000	.0686	.6514

Finally, table 8 shows that questions number 5, 9, 10, 11, and 20 are not significant and with respect to the questions of the questionnaire, significant CSFs of NPD, from the perspective of managers and experts related to SMEs of food and beverage industries of Iran is shown in table 9.

TABLE 9: SIGNIFICANT CSFs OF NPD

Q	Significant CSFs	Q	Significant CSFs
1	Top management support	9	Existing creative and entrepreneurial environment in the firm
2	having Necessary skills in parts related to NPD	10	Having an attractive product for market
3	Market understanding and its dynamics	11	Having a clear and shared vision on the team
4	On time delivery to market	12	Flexibility and responsiveness to change
5	Attention to opinions of market retailers for product's designing and manufacturing	13	Define standards of expected performance
6	Top management acceptance of risk	14	Having extensive inter-organizational communications
7	Applying lessons obtained from previous projects	15	Having the proper control system
8	Having a structured and formal new product development process	16	Generating good ideas

DIMENSION ANALYSIS

In this part we can answer the second research question, finding critical success dimensions (CSDs) of NPD. Previously in part of 4.2 (see table 4), we introduced 4 dimensions with respect to the related literatures. In order to find out whether these dimensions cover all variables (CSFs of NPD), we used factor analysis and the Maximum Likelihood method.

Before running the factor analysis, we must be sure about the correlation between variables and also meaningfulness of data matrix. In fact, Partial Correlation Coefficient is a proper indicator to determine the intensity of the relationship between variables. We used KMO (Kaiser-Mayer-Olkin) test for this purpose. If the values of this index are close to 1, the relevant data are suitable for factor analysis, otherwise (usually less than 0.6) factor analysis results for the relevant data are not very suitable. In order to evaluate of the importance and meaningfulness of the correlation matrix, we used Bartlett's test. In fact, if significant level of Bartlett's test is smaller than 5 percent, the factor analysis for identifying the structure (a factor model) is appropriate.

A) TECHNOLOGICAL DIMENSION

This dimension covers two questions of section 4 of the questionnaire (questions 4 and 16).

Doing KMO test, because the index KMO value was 0.5 (less than 0.6), factor analysis for this set of variables (questions 4 and 16) was not suitable and we considered both in this aspect (no change).

B) MARKETING DIMENSION

This dimension covers four questions from section 4 of the questionnaire (questions 2, 11, 12, 13). Because question 11 was non-significant, it was removed from this collection and factor analysis was done for other three questions.

Doing KMO test, because the index KMO value was 0.634 (bigger than 0.6), it can be stated that the factor analysis for this set of variables (questions 2, 12, 13) is suitable.

Also results of the Bartlett test indicated (because 0.001 is smaller than 0.005) that implementation of factor analysis based on correlation matrix is justifiable.

Table 10 indicates that considering this three questions in a dimension is acceptable (with respect to amount of their loading, which is higher than 0.5). Also because one factor in the matrix has been suggested, factors rotation matrix is not defined for it. (This matrix is important for more than one factor).

TABLE 10: ROTATED FACTOR MATRIX

	Factor 1
Q2	.764
Q12	.502
Q13	.599
4 iterations required	

C) ADMINISTRATIVE DIMENSION

This dimension covers 10 questions from Section 4 of the questionnaire (questions 1, 3, 7, 8, 9, 14, 17, 18, 19, 21).

Because question 9 was non-significant, it was removed from this collection and factor analysis was done for other questions.

With respect to the obtained KMO value (0.864), it can be said that factor analysis is appropriate for these set of variables (for questions 1, 3, 7, 8, 14, 17, 18, 19, 21). Also results of the Bartlett test show (because 0.000 is smaller than 0.005) that the implementation of factor analysis based on correlation matrix is justifiable.

Table11 shows that considering these nine questions in one dimension is not very logical. (With respect to the amount of their loading which is less than 0.5). So with respect to the factors rotation matrix, we can consider these 9 questions in two dimensions include:

1. This dimension covers questions 7, 8, 14, 17, 18 and 19. With respect to the type of questions, we entitle this new factor as organizational internal aspect.
2. This dimension covers questions 1, 3 and 21. With respect to the type of the questions, we entitle this new factor as supporting aspect.

TABLE11. ROTATED FACTOR MATRIX

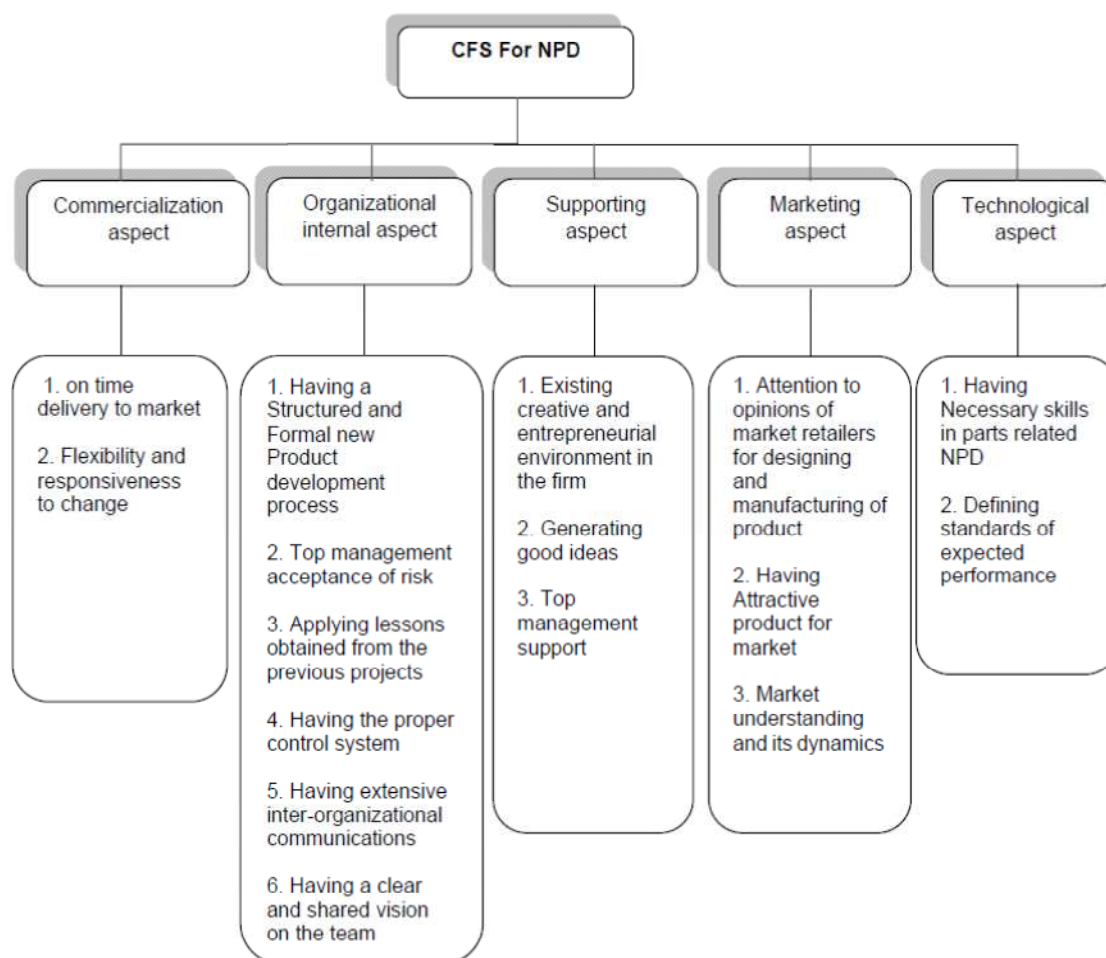
	Factor	
	1	2
Q1		.665
Q3		.915
Q7	.640	
Q8	.567	
Q14	.731	
Q17	.666	
Q18	.597	.571
Q19	.705	
Q21		.605
Rotation Method: Varimax with Kaiser Normalization.		
Rotation converged in 3 iterations.		

D) COMMERCIALIZATION DIMENSION

This dimension covers 5 questions from section 4 of the questionnaire (questions 5, 6, 10, 15, 20).

Because questions 5, 10 and 20 were non-significant, they were removed from this collection and factor analysis was done for other questions. Also with respect to the obtained KMO value (0.58, that is less than 0.6), it can be said that factor analysis is not appropriate for this set of variables (questions 6 and 15), and we consider these 2 questions within one dimension.

You can see dimensions and questions related to this section in figure 1.

FIG 1: TREE DIAGRAM OF QUINTUPLE EFFECTIVE DIMENSIONS, AND COMPONENTS RELATED TO EACH ASPECT

GAP ANALYSIS

At this stage, gap analysis is used to answer our research's hypothesis. Method of Gap analysis will be comparing the current situation (perceptual) and the ideal situation (prospective). Our research statistical hypothesis is as follow:

In connection to the CSFs of NPD there is a significant gap between expectations and perceptions of managers of small-medium enterprises (SMEs) of food and beverage industries of Iran. (There is no difference between mean of the current situation and mean of the ideal situation).

Responding to this statistical hypothesis, and examining data being normal, we did Kolmogorov - Smirnov test (K-S Test) (Table 12). Table 11's results show that data have %95 confidence level and normal distribution. (Because significant value (0.326) is larger than 0.05).

TABLE 12: STUDYING OF BEING NORMAL

Normal Parameters	Mean	3.4700
	Std. Deviation	0.82320
OST Extreme Differences	Absolute	0.135
	Positive	0.105
	Negative	-.135
Kolmogorov-Smirnov Z		0.951
Asymp. Sig. (2-tailed)		0.326

With respect to the data being normal, Paired Samples Parametric test were used for calculating statistic and critical values (Table12). The table's results show that our research's hypothesis is meaningful with %95 of confidence level, and there is difference between the mean of current situation and the mean of ideal situation. (There is a significant gap between expectations and perceptions in connection with the CSFs of NPD).

TABLE 13: RESULTS OF PAIRED SAMPLES PARAMETRIC TEST

Paired Differences	Mean	-.46000	
	Std. Deviation	.85619	
	Std. Error Mean	.12108	
	95% Confidence Interval of the Difference	Lower	-.70333
		Upper	-.21667
t	-3.799		
df	49		
Sig. (2-tailed)	.000		

DISCUSSION AND MANAGERIAL IMPLICATION

Searching about CSFs of NPD in SMEs, we proposed three main objectives and suggested two research questions and a hypothesis. With respect to the first research question, which is related to CSFs for new product development, results tell us that among 29 identified critical success factors for NPD by previous researchers (Table 3), 16 factors are significant (Table 8) and 13 factors are not significant. So we deleted the insignificant factors and used other 16 factors in order to answer the second research question.

For the second question, at first, we used research of Mu, Peng and Tan (2007) as the base, and then, by using methods of statistic, the analysis was done. Results showed that there were five effective aspects that help new product development process in SMEs of selected food and beverage industries of Iran, to be successful; Technological, marketing, organizational internal, supporting, and commercialization aspects.

With respect to the research hypothesis, results showed that there was a gap between the ideal situation and current situation (Table 12) so, we used scatter diagram (figure 2) to identify problematic factors (we used Excel software to draw this plot).

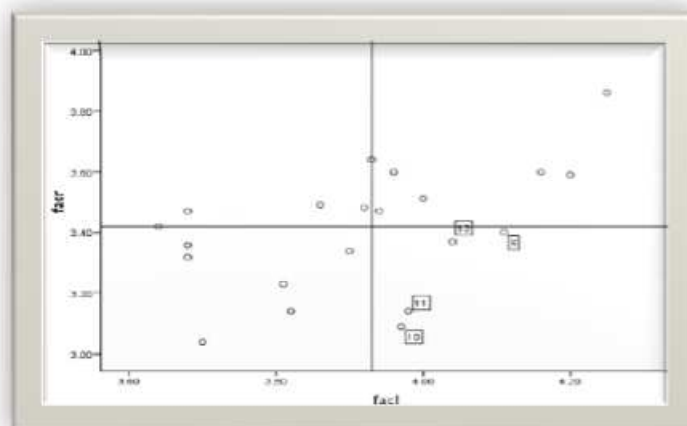
Vertical axis of figure 2 representing CFSS for product development in current situation and horizontal axis represents CFSSs for product development in the ideal situation. figure 2 includes these 4 districts:

- A) Bottom of the left side which is the area of stabilized equilibrium;
- B) Top right side which is the area of growth equilibrium;
- C) Top left side which is the critical area;
- D) And bottom of the right side which is the problematic area.

Analysis of this diagram confirmed that components 6, 13, 11 and 10 of CFSSs for new product development have problematic status. Namely, these components have high expectation status and low perceptual status (current situation). These components include:

- A) Introducing timely products to appropriate target market;
- B) Understanding market and its dynamics;
- C) Introducing differentiated products;
- D) Integrating marketing, research, and development (R&D) activities;

Therefore, we focused only on the problematic factors and provided solutions for using these factors.

FIG 2: SCATTER PLOT OF CFSS FOR NPD.

Considering the problematic factors discussed, solutions and suggestions for using these factors by managers, are as follows:

- 1) In order to use the factor of introducing timely products to appropriate target market in SMEs, sales and marketing units should have a constant connection with wholesalers, customers, distribution channels, and other market participants, in order to find a good time for launching the products to the market.
- 2) In order to use the factor of introducing differentiated products and understanding the market and its dynamics in SMEs, organizations should search all competitors' products, and opportunities of the market. Relying on the strength points of competitors' products, the organizations should receive feedback from customers and use self capabilities, and product's design, manufacture, and launch.
- 3) In order to use the factor of integration of marketing and R&D activities in SMEs, it should be done as follow:
 - A) Creating a suitable database from customers' feedbacks (even collect ideas that seem not to be applicable in present), and share it in all levels of organization for generating ideas.
 - B) Creating periodic meetings for these two units for interaction and exchanging opinions.

LIMITATION AND FUTURE RESEARCHES

With attention to this fact that industries being searched had low to moderate technology, results cannot be generalize to high tech industries.(because of the different structure and condition of this industry).

In order to confirm content validity and modification of research questionnaire, we used the views of some scholars with assumption of their being familiar to the issue of NPd, which can make potential errors in the research.

In this study, SMEs were identified from other companies with respect to the number of employees. Although using this method is common in most studies, there may be some other preponderant indicators for making distinction between these companies, including a financial turnover, productions' value, sales and etc.

We also proposed two suggestions in this section:

This research is typically a quantitative research. While the tendency towards qualitative researches in the field of management is growing, it is recommended to use qualitative perspective for future researches in order to make them deeper. Also using related strategies such as case study and action research is suggested.

With respect to be important subject of clusters, that's better a study have done in them and its results is compared with this paper.

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