

The Impact of Strategic Thinking on Product Innovation Considering the Moderating Role of the Competition Intensity (Case Study: Manufacturing Companies of Toos Industrial Town in Mashhad)

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Abstract

This study aims at investigating the impact of strategic thinking on product innovation, considering the moderating role of the competition intensity in manufacturing companies of Toos industrial town in Mashhad, Iran. This is applied research regarding the objective and a descriptive-survey study regarding the data collecting method. Bibliography and field study methods were used to collect data. A 33 item questionnaire with a five-point Likert Scale was used as the measurement tool. Cronbach's alpha coefficient was employed to determine the validity of the questionnaire and this coefficient was approved for each variable. The statistical sample of the study comprised 250 managers of manufacturing companies of Toos industrial town in Mashhad. The collected data were analyzed by using structural equation modeling (SEM) through the SMART PLS Software. Research findings showed that all dimensions of strategic thinking affected product innovation, except for focusing on the goal. Furthermore, the moderating role of competition intensity was not confirmed in the effect of "intent focused" and "thinking in time" on the product innovation. However, other dimensions of strategic thinking had an effect on product innovation, considering the moderating role of competition intensity.

Keywords: Strategic Thinking, Product Innovation, Competition Intensity, Manufacturing Companies, Toos Industrial Town in Mashhad.

L'impact de la réflexion stratégique sur l'innovation produit compte tenu du rôle modérateur de l'intensité de la concurrence (étude de cas des entreprises manufacturières de la ville industrielle de Toos à Mashhad))

Résumé

Cette étude vise à étudier l'impact de la réflexion stratégique sur l'innovation produit, en considérant le rôle modérateur de l'intensité de la concurrence dans les entreprises manufacturières de la ville industrielle de Toos à Mashhad, en Iran. Il s'agit d'une recherche appliquée concernant l'objectif et d'une étude d'enquête descriptive concernant la méthode de collecte des données. La bibliographie et les méthodes d'étude sur le terrain ont été utilisées pour collecter les données. Un questionnaire de 33 items avec une échelle de Likert à cinq points a été utilisé comme outil de mesure. Le coefficient alpha de Cronbach a été utilisé pour déterminer la validité du questionnaire et ce coefficient a été approuvé pour chaque variable. L'échantillon statistique de l'étude comprenait 250 dirigeants d'entreprises manufacturières de la ville industrielle de Toos à Mashhad. Les données collectées ont été analysées en utilisant la modélisation d'équations structurelles (SEM) via le logiciel SMART PLS. Les résultats de la recherche ont montré que toutes les dimensions de la réflexion stratégique affectaient l'innovation des produits, à l'exception de la concentration sur l'objectif. En outre, le rôle modérateur de l'intensité de la concurrence n'a pas été confirmé dans l'effet de la "concentration sur l'intention" et de la "réflexion dans le temps" sur l'innovation du produit. Cependant, d'autres dimensions de la réflexion stratégique ont eu un effet sur l'innovation des produits, compte tenu du rôle modérateur de l'intensité de la concurrence.

Mots clés: Réflexion stratégique, innovation de produit, intensité de la concurrence, entreprises manufacturières, ville industrielle de Toos à Mashhad.

1. Introduction

Strategic thinking is one of the prominent management tools in complex organizations. Strategic thinking is an inevitable measure for organization survival and growth in today's highly competitive environment. Strategic thinking is an appropriate approach to organizational leadership. This approach brings competitive priority for organizations proving them with a larger share of the market. Strategic thinking means seeing factors affecting the organization to find a solution for an uncertain future by consideration of effective factors (Ghasemi, 2014). Finally, strategic thinking leads managers toward fast learning from the business environment and using creativity to create new values. Mintzberg argues that strengthened strategic thinking contributes to better strategies. He believes that those managers who are capable of strategic thinking can encourage other employees to find creative solutions for the organization's success. According to such logic, the extant study is an attempt to show the effect of strategic thinking on product innovation.

Nowadays, organizations are dealing with unpredictable changes that have surrounded them. Therefore, organizations employ different operating strategies and programs to face such uncertainty (Hitt et al, 2007). In changing environments, companies may experience more pressure when creating or modifying products, services, and procedures (Dougherty, 1996). Product development has become an important strategy for the development of a strong position in a competitive environment due to increasing international competition, growing globalization, rapid emergence, and development of technology, progressing technologies, product complexity, and increasing rate of customers' expectations (Tidd et al., 2001). Customers expect a rapid supply of new products compared to the past so firms in such an environment should search for all available opportunities to reduce the time of introducing new products to the market. Considering the importance of innovation performance regarding the competitive position of the company, different studies conducted by researchers suggest various methods to enhance product innovation performance (Sanchez & Collins, 2001; Droge et al., 2004).

In the current competitive market, organizations are facing some challenges in promoting their products and services and introducing their products and services to the market before their competitors (Kowang et al., 2014). Successful development and commercialization of new products through time are necessary for achieving and maintaining the sustainable competitive advantage of the firm (Hult et al., 2004).

Performance of new products points to the firm's achievement of developmental objectives of products based on the market share, sales volume and growth, profitability, breakeven time, product development time, and product launch time in the market (Lau et al., 2011; Tsai, 2012). The main concern of this study is about using strategic thinking in studied manufacturing companies of Mashhad to achieve specific objectives and to create innovative products.

Accordingly, this study aims to find if there is a significant relationship between dimensions of strategic thinking and product innovation and if competition intensity can moderate the effect of strategic thinking dimensions on product innovation.

2. Literature Review

The definition is a means used to introduce concepts and approaches but the introduction of "strategic thinking" through definition is not a useful action owing to the conceptual complexity of this approach. Various definitions have been presented for strategic thinking that each of them considers some aspects of this approach without covering all dimensions of strategic thinking. Although operator strategic thinking and continuous procedures are interconnected, thinking must sometimes be before the action to direct operations.

In other cases, related to unexpected changes in the environment or immediately after the unprecedented changes, action should encompass the thinking. Under such circumstances, definitions of strategic thinking should be replaced with the nature of features, functions, and projects to illustrate a correct schema of this approach. The nature of strategic thinking implies being understanding and insightful. This insight in sophisticated business conditions leads to better recognition of market truths and rules, rapid discovery of new market features, a better understanding of business mutations, and the creation of valuable and innovative solutions for new conditions. Strategic thinking is indeed a creative and divergent process which is pertained to the design perspective of the organization's leaders (Hamidizadeh, 2009).

This insight requires managers to develop their thinking scope of daily routines to concentrate on long-term business strategic intention. Strategic thinking includes some activities such as data collecting, analysis, discussing and arguing the condition ruling the organization, performing various activities, and responding to the main questions about the organization's portfolio ((Hamidizadeh, 2011).

Schumpeter (1983) describes innovation as an irreversible and historical change in doing actions and creative destruction. In this case, innovations are defined as new creativities

implemented by companies for the first time regarding their economic importance. Innovations include process and product innovations. Product innovations comprise better or newer products produced or sold. The question raised here is what is produced. Product innovation included products with new materials and untouchable services.

Process innovation means using new methods to produce products and services. The case is about how products are produced. Process innovations can be technological or organizational. According to this scientific classification, technological product innovations have been taken into account. Some product innovations may convert to process innovations. Such conversion is only associated with capital products, not consumer ones.

The economic environment is a growing and competitive atmosphere in which business entities have to compete with various factors at national and international levels to develop their activities through new investments regarding their survival (Lester, 2000). On the other hand, the capital cost is a substantial item for managers since this is a fundamental element in making investment decisions. Reduction in capital cost will cause an increase in the economic value-added of firms (Pourheidari et al., 2014).

Economic researchers argue that intensive competition in the product market encourages managers to show efficient behaviors (Namazi and Rezaee, 2013). Companies compete with each other to obtain a larger share of the market and more customers in the product market. Increased competition intensity will raise the uncertainty in the firm's performance, which causes uncertainty in the general performance of industries or the whole economy. Therefore, competition in the product market is an element of systematic risk, which influences the capital cost of the invested stake. Furthermore, competition affects the managerial incentives through its useful role in improving technical innovations and product yield (Matsa, 2011).

Moreover, economic development affects the reduction in systematic risk and return expected by investors and intense competition acts as an external governance mechanism to increase manager's motivation for improving product yield to prevent market share loss or bankruptcy risk (Chen et al., 2014; Raith, 2003). Therefore, improved competition matches the interests of stakeholders and managers and mitigates representation costs that reduce, in turn, the capital cost (Matsa, 2011).

Yaghoubi et al., (2018) concluded that a reduction in strategic thinking causes a drop in efficiency and innovation in the organization, which leads to organizational failure. Therefore, the more strategic thinking among managers, there higher the organizational innovation and efficiency.

Kazmi et al., (2016) highlighted the relationship between the proposed theory in two operational areas of business. Strategic thinking and product innovation had a positive relationship with the key variables of this study.

Epitimin (2016) indicated that creativity and innovation are important factors in providing new services to achieve customer satisfaction. These are vital factors in pricing, promotion, product distribution, and the use of technological innovations to attract customers.

Mokhtari Dinani (2015) concluded that the manager's leadership style in sports and organizational culture of sports organizations had a significant and positive relationship with employees' creativity in these organizations.

Ghorbankhani and Salajeghe (2015) found a positive and significant relationship between strategic thinking, systems perspective, thinking in time, creativity, and intent focused, and product quality. However, there was not any relationship between intelligent opportunism and product quality.

Prajogo and McDermott (2011) found a direct association between innovation orientations (exploratory and exploitative) and organizational performance. Besides, innovation orientations not only affect the performance individually but also improve the organizational performance synergically. They also found that firm size could moderate these relationships.

According to the abovementioned points and conceptual model, the following hypotheses were designed:

H1: systems perspective affects the product innovation.

H2: intent focused affects product innovation.

H3: intelligent opportunism affects product innovation.

H4: thinking in time affects product innovation.

H5: hypothesis-driven affects product innovation.

H6: competition intensity moderates the effect of systems perspective on product innovation.

H7: competition intensity moderates the effect of intent focused on product innovation.

H8: competition intensity moderates the effect of intelligent opportunism on product innovation.

H9: competition intensity moderates the effect of thinking in time on product innovation.

H10: competition intensity moderates the effect of hypothesis-driven on product innovation.

Therefore, the conceptual model can be designed as depicted in Figure (1) based on the relationships between the mentioned variables.

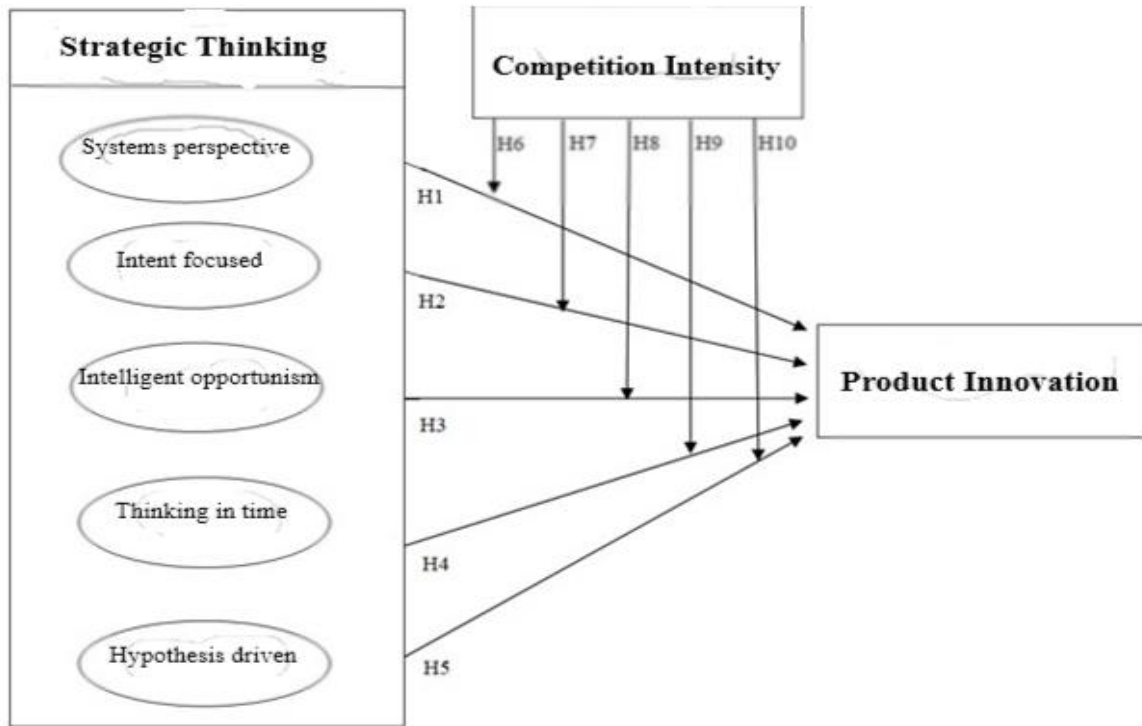


Fig 1: Conceptual model adopted from a study conducted by Kazmi et al., (2016)

3. Methods

This was descriptive-survey research in which the correlational method was used. The statistical sample comprised 250 managers of manufacturing companies in Toos Industrial Town of Mashhad that was chosen using simple random sampling. Since the studied population included unlimited members, the Cochran formula was used to determine the sample size.

To measure dimensions of strategic thinking, the Standard Questionnaire of Liedtka (1998) was used and the questionnaire designed by Bitaraf (2016) was employed to measure product innovation. Finally, the questionnaire developed by Faramarzirad (2016) was employed to fit the variable of competition intensity. Before surveying the assessed indicators through the questionnaire, these indicators were judged by 30 organizational experts in the research subject. Ultimately, the agreed questionnaire was used as a data collecting tool. In the next step, the content validity of the questionnaire was confirmed by experts and professors.

The result of construct validity indicated that all indicators of studied constructs were important enough to measure their constructs since all factor load rates were greater than 0.4. A posttest step was taken to examine the reliability of the questionnaire, and the results showed the acceptable reliability of the measurement tool. Reliability results of variables have been reported in Table (1).

Table 1: Factor Load Values, Cronbach's alpha, AVE, and Composite Reliability

Source	CR	Cronbach's alpha	AVE	Factor load	Q	Variable
Liedtka (1998)	0/957	0/944	0/818	0/928	Q ₁	Systems perspective
				0/933	Q ₂	
				0/835	Q ₃	
				0/912	Q ₄	
				0/908	Q ₅	
	0/89	0/816	0/73	0/89	Q ₆	Intent focused
				0/853	Q ₇	
				0/819	Q ₈	
	0/941	0/927	0/643	0/907	Q ₉	Intelligent opportunism
				0/865	Q ₁₀	
				0/878	Q ₁₁	
				0/834	Q ₁₂	
				0/761	Q ₁₃	
				0/699	Q ₁₄	
				0/796	Q ₁₅	
				0/554	Q ₁₆	
	0/946	0/929	0/779	0/861	Q ₁₇	Thinking in time
				0/872	Q ₁₈	
				0/856	Q ₁₉	
				0/9	Q ₂₀	
0/939	0/87	0/885	0/812	Q ₂₁	Hypothesis driven	
			0/871	Q ₂₂		
			0/941	Q ₂₃		
0/959	0/949	0/796	0/941	Q ₂₄	Product innovation	
			0/854	Q ₂₅		
Bitaraf						

				0/917	Q ₂₆	
				0/903	Q ₂₇	
				0/84	Q ₂₈	
				0/904	Q ₂₉	
				0/933	Q ₃₀	
Faramarzirad (2016)	0/953	0/927	0/872	0/936	Q ₃₁	Competition intensity
				0/926	Q ₃₂	
				0/939	Q ₃₃	

In this research, the probability value obtained from the model fit was employed within the significance mode of parameters by using SEM and path analysis to tests hypotheses. As the confidence level was 95%, the significance level of 95% in which the values are at the range of [-1.96,1.96] indicates rejection rates. Accordingly, the values out of this range will be confirmed.

4. Results

Results of descriptive statistics regarding sex indicate that 192 respondents (76.8%) were male, and 58 respondents (23.2%) were female. Regarding age, results showed that the highest age group (84 subjects= 36.5% of respondents) was in the range of 25-35, and the lowest age group (21 subjects= 9.1% of respondents) was related to the range of 56 years old. Regarding education, most of the respondents (94 subjects= 40.9%) had an MA degree, and few of them (26 subjects= 11.3%) had diplomas and lower degrees. Regarding the work experience of respondents, descriptive findings show that majority of respondents (87 subjects= 37.8%) had 6-10 years of work experience and few of them (29 subjects= 12.6%) had more than 16 years of work experience.

Descriptive statistics of variables have been described in Table (2).

Table 2: Commuality index

Variable	Mean	Min	Max	Mode
Systems perspective	4.59	1	5	5
Intent focused	4.30	1	5	3
Intelligent opportunism	4.53	1	5	3
Thinking in time	4.50	1	5	5
Hypothesis driven	4.69	1	5	5
Product innovation	4.87	1	5	5
Competition intensity	4.38	1	5	4

A variable should have a greater dispersion between its own indices than the indices of other latent variables. For this test, the AVE root is compared with the correlation between latent variables, which must be the AVE root for each latent variable greater than the correlation value of that variable with other variables. The prime diameter numbers indicate the square root of the AVE for each structure that shown in table (3).

Table 3: Correlation of structures and the square root of AVE

	Thinking in time	Intent focused	Competition intensity	Intelligent opportunism	Product innovation	Systems perspective	Hypothesis driven
Thinking in time	0/882						
Intent focused	0/782	0/854					
Competition intensity	0/833	0/762	0/934				
Intelligent opportunism	0/821	0/777	0/868	0/802			
Product innovation	0/786	0/808	0/929	0/721	0/892		
Systems perspective	0/853	0/834	0/856	0/735	0/813	0/904	
Hypothesis driven	0/879	0/72	0/862	0/764	0/88	0/815	0/941

Quality test is used as an evaluation test of the reflective measurement model. The quality of the measurement model is calculated by communality index with cross-validation (CV Com). This index indeed measures the ability of the path model to predict the latent variables through their corresponding observable variables. This index assesses the quality of the measurement model by using the BF command in each step for one reflective measurement model. If this index rate is positive, the reflective measurement model would have the appropriate quality. To examine the overall quality of the measurement model, the mean value of this index is measured, and the positive rate indicates the high quality of the measurement model. Communality index rates (CV Com) have been reported in Table (4).

Table 4: Redundancy index

Variable	Communality Index Q2=1-SSE/SSO
Thinking in time	0.621
Intent focused	0.423
Competition intensity	0.639
Intelligent opportunism	0.52
Product innovation	0.668
Systems perspective	0.67
Hypothesis driven	0.502

According to Table (4), the structural model has a good quality regarding positive values.

This part of the study explains the analysis method used in this study, which is SEM through SMART PLS Software. Then, this method is applied to test research hypotheses. A summary of results obtained from the research model has been indicated in Table (5) based on Figures (2) and (3). Results of Table (5) have been used to tests hypotheses. As mentioned, those paths with t values greater than 1.96 or smaller than -1.96 are significant paths.

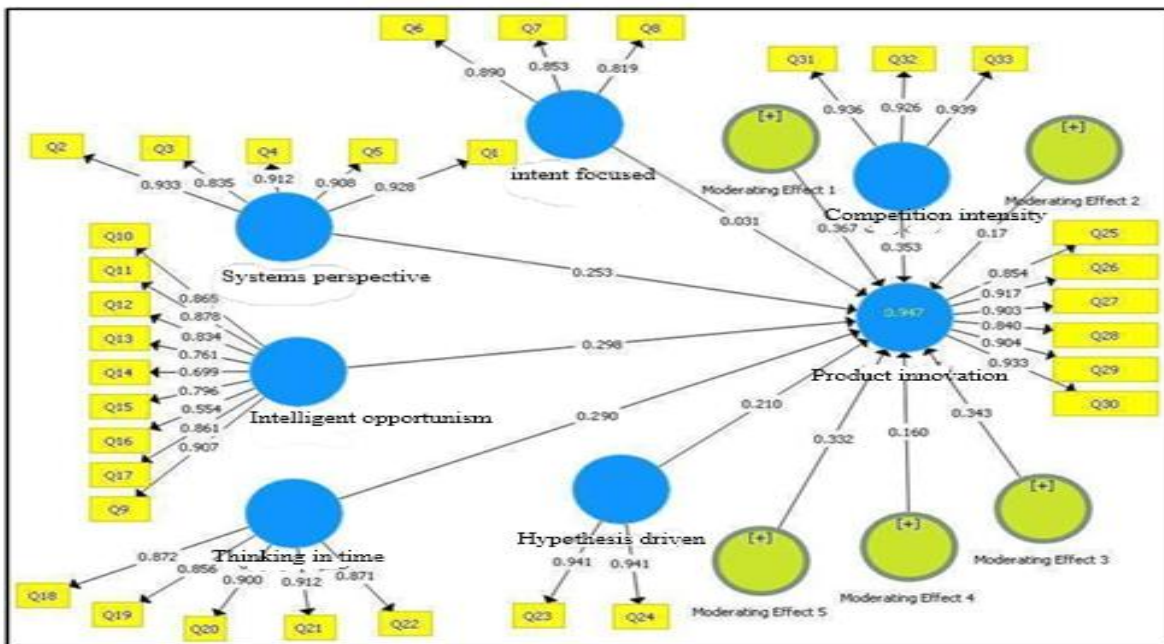


Fig 2: Factor coefficients and path coefficient of hypotheses model in standard mode

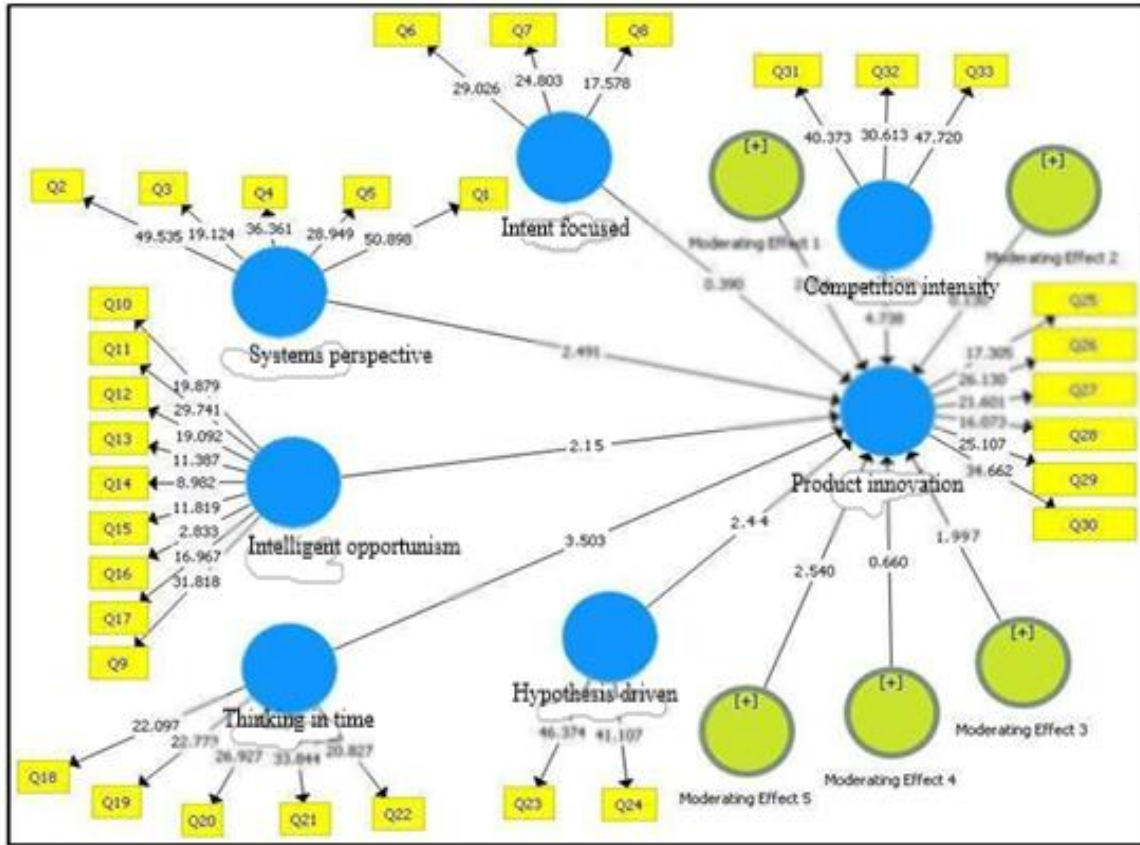


Fig 3: Factor coefficients and path coefficient of hypotheses model regarding t-value

Table 5: Results of factor analysis for hypothesis testing

Hypothesis	Hypotheses	Sig. (t-value)	Path coefficient	Confidence level	Results
1	Systems perspective → product innovation	2.491	0.253	95%	Confirmed
2	Intent focused → product innovation	0.39	0.031	95%	Rejected
3	Intelligent opportunism → product innovation	2.15	0.298	95%	Confirmed
4	Thinking in time → product innovation	3.503	0.290	95%	Confirmed
5	Hypothesis driven → product innovation	2.44	0.210	95%	Confirmed
6	Systems perspective → product innovation (moderator: competition intensity)	2.06	0.367	95%	Confirmed
7	Intent focused → product innovation (moderator: competition intensity)	0.13	0.17	95%	Rejected

8	Intelligent opportunism → product innovation (moderator: competition intensity)	1.997	0.343	95%	Confirmed
9	Thinking in time → product innovation (moderator: competition intensity)	0.66	0.160	95%	Rejected
10	Hypothesis driven → product innovation (moderator: competition intensity)	2.54	0.323	95%	Confirmed

5. Conclusion and recommendations

This study aims at investigating the impact of strategic thinking on product innovation, considering the moderating role of the competition intensity in manufacturing companies of Toos industrial town in Mashhad by using structural equation modeling (SEM).

According to table (5), the systems perspective had a significant effect on the product innovation at the confidence level of 95%; hence, hypothesis 1 was confirmed. It can be explained that improved strategic thinking of organizational managers will increase product innovation. Hence, organizational managers can evaluate different factors simultaneously and find the relationship between them. Managers have a holistic orientation, so they see the whole then the details. They can use strategic thinking generally and systems perspective partially to produce innovative products successfully. Nowadays, innovation is a vital factor in small and medium-sized companies due to lack of resources, lack of economic scale, and doubtful reputation of these companies. According to previous studies, those businesses that choose the process innovation as their strategy make barriers to the entrance of their competitors into the current markets that are full of imitations. Results of this hypothesis are matched with findings obtained by Liedtka (1998), Amini et al., (2013), Kazmi (2016) and Porter (1985).

According to Table (5), intent focused had no significant effect on product innovation; hence, hypothesis 2 was rejected. It can be explained that the leadership role regarding determining organizational goals does not necessarily lead to welcoming new ideas and innovative plans. Results of this hypothesis are not matched with findings obtained by Kazmi (2016).

According to Table (5), intelligent opportunism had a significant effect on product innovation at a confidence level of 95%. Therefore, the hypothesis was confirmed. It can be

explained that intelligent opportunism among managers means their openness to a new experience allowing them to benefit from various strategies that are matched with the changing organizational atmosphere. It is essential in strategic thinking to discover opportunities and take advantage of them by learning from experiences and understanding the circumstances. Strategic thinkers are highly aware of the most appropriate time and place. To this end, they utilize the possible opportunities and make the best decisions. In strategic thinking, individuals are looking for opportunities. Opportunity is a potential available to all people but it is actualized if the latent element(s) are added to existing ones. Opportunities can be understood if their hidden benefits are found then the process is developed by finding the rules of these opportunities. The use of appropriate opportunities relates to recognition of the atmosphere and the ability to predict the future. Therefore, it is discussed that managers' opportunism through time can affect product innovations. The results of this hypothesis were in line with studies conducted by Komeizi (2013) and Kazmi (2016).

According to Table (5), thinking in time had a significant effect on product innovation at the confidence level of 95%. Therefore, hypothesis 4 was confirmed. It can be explained that strategic thinking is thinking in the organization that links past, present, and future. The strategy is a connection between the present "current situation" and future "optimal situation." Findings indicate that complexity of the current trade area has made the organization increase its abilities in responding to environmental changes. On the other hand, resilience and preparedness for new conditions is an inevitable issue due to social transformations, challenging accelerated technologies, and new missions in organizations. Therefore, the innovation process should be continued for survival, progresses, and even keeping the current position of the organization to prevent a recession. This case requires thinking in time. This hypothesis was in line with studies conducted by Abdehgah (2008) and Kazmi (2016).

According to Table (5), hypothesis driven had a significant effect on the product innovation at the confidence level of 95%. Therefore, hypothesis 5 was confirmed. It can be explained that a hypothesis is designed by asking a creative question: what if? Accordingly, hypothesis testing is created by asking a critical question and combining the question and test of if... then... and repetition of such process leads to the discovery of new ideas and solutions. In this case, hypotheses can be designed. This hypothesis was matched with studies conducted by Gholami (2006) and Kazmi (2016).

According to Table (5), systems perspective had a significant effect on the product innovation with the moderation of competition intensity at the confidence level of 95%. Therefore, hypothesis 6 was confirmed. It can be explained that process innovation is superior

in case of competition intensity because this strategy is hidden and rivals cannot see this strategy, so the business can keep the financial sources not being imitated. This case is a critical issue for business survival under competitive conditions. According to results, if managers have a holistic perspective toward their systems and also have an efficient understanding of interrelations of incidents, then they can direct the organization toward the production of innovative products. This hypothesis was matched with results obtained by Hambrick et al., (1985) and Zahra and Covin (1993) and Kazmi (2016).

According to Table (5), intent focused had no significant effect on the product innovation with the moderation of competition intensity at the confidence level of 95%. Therefore, hypothesis 7 was rejected. It can be explained about this hypothesis that changes and transformations products regarding customer needs are not necessarily achieved by continuously attempting to the creation of new ideas and new procedures and by understanding new issues to pursue the firm's goals. This hypothesis was not matched with results obtained by Kazmi (2016).

According to Table (5), intelligent opportunism had a significant effect on product innovation with the moderation of competition intensity at the confidence level of 95%. Therefore, hypothesis 8 was confirmed. This hypothesis can be explained by mentioning this point that competition is a dynamic process in which firms distinguish themselves from their rivals to gain an advantage and a larger share of the market. According to Hayek and Schumpeter, competition is a process of permanent change and innovation that is empty of any balance and static mode. Hence, the desire to change is the main factor of economic development. Therefore, managers must have a correct understanding of their internal and external atmosphere; they should pay attention to strategic issues also must be aware more than their rivals in order to benefit from possible opportunities. This hypothesis was matched with Kazmi (2016).

According to Table (5), thinking in time had no significant effect on the product innovation with the moderation of competition intensity at the confidence level of 95%. Therefore, hypothesis 9 was rejected. It can be explained by this hypothesis that the ability to use previous solutions applied by their firms or other companies regarding solving the same problems can not affect the customer's beliefs. They believe that new products of the firm are usually better than previous ones. This hypothesis was not matched with results obtained by Kazmi (2016).

According to Table (5), hypothesis driven had a significant effect on the product innovation with the moderation of competition intensity at the confidence level of 95%.

Therefore, hypothesis 10 was confirmed. Accordingly, managers should develop perfect hypotheses in their business environment. They also must change their managerial attitude and hypothesizing procedure because of increasing competitiveness in the market and surplus products manufactured by other companies. Furthermore, managers must evaluate their hypotheses within their business environment. Therefore, hypotheses play a vital role in product manufacturing and promotion. This hypothesis was matched with results obtained by Kazmi (2016).

It is suggested that managers of manufacturing companies of Toos Industrial Town in Mashhad have a holistic and systematic perspective, understand the interrelations of incidents, pay attention to changing processes of systems to design an appropriate program. They must know the production process to achieve new ideas and innovative projects in the organization. Also, it is recommended to match the values and beliefs existing in manufacturing companies of Toos Industrial Town with managers' beliefs and values. It is recommended to manufacturing new and innovative products that cannot be simply copied. Finally, it is suggested that managers of manufacturing companies of Toos Industrial Towns concentrate on the price competition and produce inexpensive products to compete with their rivals.

Finally, it is suggested to examine the effect of strategic thinking on product innovation as the cognitive element of leaders' strategy in further studies. It is also suggested to study other industrial towns in different cities to expand the generalization of results. Ultimately, it is suggested to investigate the relationship between innovation, innovation strategy, and strategic innovation in further studies.

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