

## The effect of organizational memory on the performance of human resources in new product development (Knowledge-based companies based in Bushehr Science and Technology Park)

Somayyeh Manouchehri<sup>1</sup>, Esmail Kamalirad<sup>2</sup>

<sup>1</sup>. Master of Business Administration, Bushehr branch, Islamic Azad University, Bushehr, Iran (corresponding author)

<sup>2</sup>. Assistant Professor of Management, Department of Management, Institute of Micro Higher Education, Bushehr, Iran

**Received** 2022 April 02; **Revised** 2022 May 20; **Accepted** 2022 June 18.

---

### Abstract

The purpose of the current research was the effect of organizational memory on the performance of human resources in new product development (knowledge-based companies based in Bushehr Science and Technology Park). This research is based on the findings of field research. The statistical population includes all managers and employees of knowledge-based companies located in Bushehr Science and Technology Park, whose approximate number is 135 people, using simple random sampling method, and based on Cochran's sampling formula, 100 people as a sample were selected and reviewed. Two questionnaires of organizational memory and new product development performance were used to collect data. Cronbach's alpha was used to check the components related to the studied variables from the professors' point of view and to check the reliability of the questionnaires, which was 82.00 for organizational memory. and 75/ for new product development performance. Was obtained. Pearson's correlation test and multiple regression were also used to test the research hypotheses. The obtained results showed that there is a positive and significant relationship between the research variables. Also, the results showed that the dimensions of organizational memory have an effect on the performance of new product development ( $\beta=.600$ ). The results of structural equation modeling also showed that organizational memory has a positive effect on the performance of new product development human resources in knowledge-based companies located in Bushehr Science and Technology Park, and the theoretical model of the research was confirmed.

**Keywords:** organizational memory, human resources performance, new product development, knowledge-based companies, science and technology park

---

### Introduction and statement of the problem

What makes an organization is the proficiency and experience of its human resources in full understanding and high ability to implement the instructions, laws, regulations and processes in the organization. But as it can be seen, these reservoirs of experience leave the organization and bring the memory of the organization with them. Organizational memory refers to the collection of information, rules, guidelines and guidelines, regulations, organizational structure that an organization has for They need to run things. Organizational memory is actually the place of reference for all the stakeholders of the organization, including owners, managers, employees and customers, in a way that explains a comprehensive knowledge of the organization and the way of doing business and interactions. Organizational memory can have a high volume and variety of information in proportion to the size of the organization. However, it is completely unprofessional for an organization, even if it is very small (for example, a single person), to think that it is unnecessary to create it. Maybe small businesses that started with one person and now turned into a big business. Therefore, creating a memory that manages and maintains the organization's information can greatly increase the growth rate of the organization in all dimensions and prevent wasting time during unnecessary repetitions (Al Habib and Karaz, 2012).

What is certain is that the accounting system, warehousing, payroll, attendance and secretariat can be assumed as organizational memory, but it should be noted that all these things are part of organizational memory and not all of it. Sometimes the way of selling a product is so special that it should be documented, or a problem that occurred in connection

with a work contract due to the lack of correct contract setting should be documented as a useful experience. All this must be transferred to organizational memory. Large organizations may already have operational layers of enterprise memory in place, but they have a cumbersome routine of archiving and often performing storage and assumed memory—which may also be completely outside of mainstream enterprise memory standards. be - they make it bigger and bigger (Hassanzadeh et al., 2013).

Despite the visibility of the role of knowledge and its management as well as customer orientation, many companies, especially knowledge-based institutions, fail in the competition and their products do not last for a long time; In most cases, this failure leads to the liquidation of these companies. Having said that, the question is why many of these companies do not survive in the competition, but some others, whose number is very small, come out of this competition proudly. Why are only a few of these companies meeting the needs of customers well and even attracting customers from other companies by their own actions? In order to answer, a deep understanding of knowledge and its management is needed. The trends and approaches of knowledge-based institutions and companies and the use of market knowledge and customer knowledge greatly affect the success of new products of these companies, so the main gap between knowledge-based companies that success approaches They use a method for introducing their products and they last longer in the market, and the companies that leave the competition scene very soon, is that the successful companies, before producing and presenting the product to the market, first By researching the market, they acquire the necessary knowledge about the market, competitors, and customers, and adopt a suitable structure and method to acquire, transfer, and apply this knowledge; If such researches are not carried out and organizations do not get the necessary knowledge about the appropriate approaches in new product development and do not pay enough attention to the category of knowledge and its management, not only will they not be able to achieve success in the competitive market, Rather, due to the huge costs they incur, they quickly fail and withdraw from the competition scene (Ismailpour et al., 2015).

Organizational memory is a metaphor for human memory; Although organizational memory does not fully follow the brain models of human memory, given this metaphor, it simply turns out that organizations have the power to remember (Guerrero and Pino, 2001). Hedberg used and introduced this term for the first time in 1981. During the two decades of the eighties and the nineties, a lot of research was done in this field, which led to the presentation of several definitions of organizational memory. Organizational memory represents the organization's capacity to learn from its past experiences (Dunham and Barrett, 2011). Day (1995) views organizational memory as a storehouse that includes policies, processes, current procedures, and rules that can be retrieved when needed. In other words, organizational memory is a phenomenon that people create socially and includes their interpretations of events, and as an aspect of the organization's history, it transmits past knowledge to future generations (Akgin et al., 2012). Commison and Villar-López (2011) consider organizational memory to be access to an organization's previous knowledge, including information about the competitive environment. Ebers and Wijenberg (2009) also called it a branch of knowledge as a valuable organizational asset that is difficult to imitate and transfer.

Ant (2010) introduces the dimensions of organizational memory in this way. Job knowledge: This dimension introduces various fields related to job knowledge, such as performance mastery, which is derived from the theories of Chu and his colleagues. Social knowledge: (Cross, Danport, & Cantrell, 2003) High performance results from maintaining and using knowledge that is characteristic of personal knowledge networks. This ability is shown in the form of mutual communication with people who have the desire to create knowledge within the network by using opportunities and resources. Social capital as knowledge has been represented by many scholars as follows (Leonardo et al., 2005). This dimension includes things such as reflecting the production of social networks, the ability to identify knowledge reservoirs among colleagues, having a correct understanding of people's skills and attitudes. Political knowledge: includes managerial organizational memory that includes knowledge management methods. The knowledge of resource allocation, organizational decisions, and the knowledge of managers and top personalities of organizations are included in this dimension (Zheng et al., 2006). d. Cultural knowledge: knowledge of organizational norms and values and acceptable standards of actions and behaviors, organizational goals and values, values, expectations and priorities of the organization are placed in this dimension (Delong, 2004).

The development of new products is one of the important trends of companies that increases their competitive advantages. Developing new products is a risky process. Therefore, for product development, most companies go through different

stages. In this process, the idea for a new product is proposed and then passes through the number of gates and steps to accept or reject the idea and finally reaches the commercialization stage. Research shows that there are many components that contribute to the success of new products (Salamon et al., 2015).

The performance of the new product is measured by the question of how much the organization has reached the set goals. These goals can be the amount of sales, market share, or profit goals (Hai et al., 2014). Research shows that for the proper and ideal sale of a product, the value of that product must be understandable and reliable for customers (Chen et al., 2015). For a product to be trustworthy, it needs to extract and discover technological knowledge for product production, and for a product to be of special benefit to customers, it needs a combination of market information and technological information (Tisai and Hsu, 2014). Therefore, market and business experts have come to the conclusion that the success of new products requires extracting knowledge from different functions and integrating it among group or organization members (Chiang et al., 2013).

Therefore, this research is designed to provide an analytical framework in the performance of new product development and provide the possibility of observing the multidimensional nature of the company's performance to achieve this understanding. On the other hand, considering that one of the tools for measuring the company's new product development performance in achieving the organization's goals is the issue of organizational memory, in this research, the effect of organizational memory on the performance of new product development in knowledge-based companies based in Alam Park has been attempted. and Bushehr technology should be paid. Therefore, according to the above, the main problem of the current research is to answer the question that what effect does organizational memory have on the performance of human resources in new product development in knowledge-based companies located in Bushehr Science and Technology Park? Does political-social knowledge affect the performance of human resources in new product development in knowledge-based companies located in Bushehr Science and Technology Park? Does job knowledge affect the performance of human resources in new product development in knowledge-based companies located in Bushehr Science and Technology Park? Does the external network affect the performance of human resources in new product development in knowledge-based companies located in Bushehr Science and Technology Park? has it? Does industrial knowledge affect the performance of human resources in new product development in knowledge-based companies located in Bushehr Science and Technology Park? Therefore, the current research seeks to answer the above questions.

### **Hypotheses**

The main hypothesis

- Organizational memory affects the performance of human resources in new product development.

Sub-hypotheses

- Political-social knowledge has a positive and significant effect on the performance of human resources in new product development.
- Job knowledge has a positive and meaningful effect on the performance of human resources in new product development.
- The external network has a positive and significant effect on the performance of human resources in new product development.
- Industrial knowledge has a positive and meaningful effect on the performance of human resources in new product development.

### **background research**

Manian et al. (2018) conducted a research on the role of knowledge management in the performance of the new product development process. Knowledge management and key factors of success in the performance of new software product

development process have been studied based on the study of software companies in Yazd province. This research is a correlation survey type, based on which the collected information of 43 companies has been analyzed through a questionnaire, and the results did not show any reason to reject the three hypotheses of this research. At the end, some suggestions are presented based on the results.

Haghighi et al. (2016) in a research entitled "Explaining the role of organizational ambivalence in the influence of innovative culture and organizational memory on the performance of new product development" stated that nowadays, providing the best performance of new product development is the most basic concern of managers of knowledge-based companies. transformed and try to achieve superior performance by using different techniques. The purpose of this research is to investigate the effect of innovative culture and organizational memory on the performance of new product development by explaining the mediating role of organizational ambivalence. Based on the purpose, the current research is an applied research and based on how to obtain the required data, it is a type of descriptive research. The findings showed that innovative culture and organizational memory directly and indirectly (through organizational ambivalence) have a significant effect on new product development performance, and innovative culture has a positive effect on organizational memory. In addition, the findings confirm that innovative culture and organizational memory can improve the performance of new product development in knowledge-based companies through exploration and exploitation.

Maiik et al. (2019) in a research titled "Understanding the complexity of knowledge integration in new joint product development system" stated that knowledge integration is important in joint new product development. This research examines the effective factors on creating a common understanding in the development of a joint new product. The results show that these factors are at 3 different levels: employees, project and company. In addition, there is a relationship between these 3 factors. The factors related to them are divided into 4 different types of relationships. Their different relationships with each other are caused by the common mechanisms that exist in them.

Yahoi and Wenchang (2017) in a research titled intellectual capital and new product development performance with the mediation of organizational learning ability, using interviews and survey methods to discuss the relationships governing intellectual capital, organizational learning ability and New product development performance. The results of this study show that human capital and relational capital improve the performance of new product development through organizational learning ability. Although structural capital has a positive effect on organizational learning ability, managers should pay attention to the negative effects of structural capital on organizational learning ability. The comparison of 3 types of intellectual capital of large companies in Taiwan and small and medium companies in Taiwan shows that the relational capital of small and medium companies in Taiwan is less than that of large companies.

### **research methodology**

In terms of purpose, application, and the research method used in this research, the present research is a descriptive survey method. The statistical population of this research is all managers and employees of knowledge-based companies located in Bushehr Science and Technology Park, numbering 135 people, from whom 100 people were selected as a sample by simple random method and Cochran's formula. Information related to the measurement of research data was collected with a questionnaire. In the current research, various types of statistical indicators were used to describe the collected data, such as frequency, frequency percentage, types of tables and graphs. In the inferential statistics section, regression test was used to answer the questions and check the research hypotheses. In the descriptive statistics section, common statistical software such as Excel and SPSS were used.

### **findings**

#### **The main hypothesis**

Organizational memory affects the performance of human resources in new product development of knowledge-based companies located in Bushehr Science and Technology Park.

Bivariate regression test was used to check the first hypothesis of the research. In this model, organizational memory was considered as an independent variable and its effect on the performance of human resources in the new product

development of knowledge-based companies based in Bushehr Science and Technology Park was investigated. In table number one, multiple correlation values and sum of squares of two variables are reported. Based on the results of the sum of squares of new product development performance (108.00), the amount (38.93) of it can be explained by organizational memory. According to the value of  $R^2$ , it is clear that 36% ( $R^2 = .360$ ) of the variance of new product development performance can be explained by organizational memory. Also, in this table, the values of the regression squares are presented, and it can be seen that the F value of this table is significant at the  $P < 0.05$  level for the performance of new product development.

Table number one: sum of squares test and F value

$R^2$	sig	F	Average Squares	Degrees the freedom	sum of squares	Model
.360	.000.	54.126	38.938	1	38.938	regression
			.719	98	69.062	left over
				99	108.000	total amount

In table number two, the regression coefficients of the variable of organizational memory on the performance of human resources in new product development are specified. According to the results, it is clear that organizational memory has a significant effect on the performance of new product development at the level of  $P < 0.05$  and with a value of ( $\beta = .600$ ). The t values are also higher than the critical t (1.96), which shows the significance of the regression coefficients. Therefore, the research hypothesis is confirmed.

Table number two: Regression coefficients of human resource performance in new product development

Sig.	t	Standard coefficient	Non-standard coefficients		Dimensions
		Beta	Std. Error	B	
.002	2.983		.312	.932	Constant
.000	7.357	.600	.086	.635	Human resource performance in new product development

### Sub-hypotheses

Political-social knowledge has an effect on the performance of human resources in the development of new products of knowledge-based companies located in Bushehr Science and Technology Park.

In this model, socio-political knowledge was considered as an independent variable and its effect on the performance of human resources in new product development was investigated. In table number three, multiple correlation values and sum of squares of two variables are reported. Based on the results of the sum of squares of human resource performance in new product development (108.00), the value (35.06) of it can be explained by political-social knowledge. According to the value of  $R^2$ , it is clear that 32% ( $R^2 = .325$ ) of the variance of human resource performance in new product development can be explained by socio-political knowledge. Also, in this table, the values of the regression squares are presented, and it can be seen that the F value of this table is significant at the  $P < 0.05$  level for the performance of human resources in the development of a new product.

Table number three: sum of squares test and F value

$R^2$	sig	F	Average Squares	Degrees the freedom	sum of squares	Model
.325	.000	46.143	35.060	1	35.060	regression
			.760	98	72.940	left over
				99	108.000	total amount

Table number four shows the regression coefficients of the social-political knowledge variable on the performance of human resources in the development of a new product. According to the results, it is clear that political-social knowledge has a significant effect on the performance of human resources in new product development at the level of  $P < 0.05$  and with a value of (beta = .570). The t values are also higher than the critical t (1.96), which shows the significance of the regression coefficients. Therefore, the research hypothesis is confirmed.

Table number four: Regression coefficients of human resource performance in new product development

Sig.	t	Standard coefficient	Non-standard coefficients		Dimensions
		Beta	Std. Error	B	
.000	3.587		.311	1.116	Constant
.000	6.793	.570	.094	.0641	Human resource performance in new product development

Job knowledge affects the performance of human resources in new product development of knowledge-based companies located in Bushehr Science and Technology Park.

In this model, job knowledge was considered as an independent variable and its effect on the performance of human resources in new product development was investigated. In table number five, multiple correlation values and sum of squares of two variables are reported. Based on the results of the sum of squares of human resource performance in new product development (108.00), the amount (56.71) of it can be explained by job knowledge. According to the value of  $R^2$ , it is clear that 52% ( $R^2=.525$ ) of the variance of human resource performance in new product development can be explained by job knowledge. Also, in this table, the values of the regression squares are presented, and it can be seen that the F value of this table is significant at the  $P < 0.05$  level for the performance of human resources in the development of a new product.

Table number five: sum of squares test and F value

$R^2$	sig	F	Average Squares	Degrees the freedom	sum of squares	Model
.525	.000	108.309	56.719	1	56.719	regression
			.524	98	51.321	left over
				99	108.040	total amount

In table number six, the regression coefficients of the variable of job knowledge on the performance of human resources in new product development are specified. According to the results, it is clear that job knowledge has a significant effect on the performance of human resources in the development of a new product at the level of  $P < 0.05$  and with a value of ( $\beta = .725$ ). The  $t$  values are also higher than the critical  $t$  (1.96), which shows the significance of the regression coefficients. Therefore, the research hypothesis is confirmed.

Table number six: Regression coefficients of new product development performance

Sig.	t	Standard coefficient	Non-standard coefficients		Dimensions
		Beta	Std. Error	B	
.000	2.330		.255	.594	Constant
.000	10.407	.725	.075	.776	Human resource performance in new product development

The external network has an effect on the performance of human resources in the development of new products of knowledge-based companies located in Bushehr Science and Technology Park.

In table number seven, multiple correlation values and sum of squares of two variables are reported. Based on the results of the sum of squares of human resource performance in new product development (108.00), the value (31.42) of it can be explained by the external network. According to the value of  $R^2$ , it is clear that 29% ( $R^2=.291$ ) of the variance of human resource performance in new product development can be explained by the external network. Also, in this table, the values of the regression squares are presented, and it can be seen that the  $F$  value of this table is significant at the  $P < 0.05$  level for the performance of human resources in the development of a new product.

Table number seven: sum of squares test and  $F$  value

$R^2$	sig	F	Average Squares	Degrees the freedom	sum of squares	Model
.291	.000.	40.201	31.428	1	31.428	regression
			.782	98	76.612	left over
				99	108.040	total amount

Table number eight shows the regression coefficients of the external network variable on the performance of human resources in new product development. According to the results, it is clear that the external network has a significant effect on the performance of human resources in the development of a new product at the level of  $P < 0.05$  and with a value of ( $\beta = .539$ ). The  $t$  values are also higher than the critical  $t$  (1.96), which shows the significance of the regression coefficients. Therefore, the research hypothesis is confirmed.

Table number eight: Regression coefficients of new product development performance

Sig.	t	Standard coefficient	Non-standard coefficients		Dimensions
		Beta	Std. Error	B	
.000	5.113		.282	1.442	Constant
.000	6.340	.539	.083	.526	Human resource performance in new product development

Industrial knowledge affects the performance of human resources in new product development of knowledge-based companies located in Bushehr Science and Technology Park.

In table number nine, multiple correlation values and sum of squares of two variables are reported. Based on the results of the sum of the squares of human resource performance in new product development (108.00), the value (48.75) of it can be explained by industrial knowledge. According to the value of R<sup>2</sup>, it is clear that 45% (R<sup>2</sup>=451) of the variance of human resource performance in new product development can be explained by industrial knowledge. Also, in this table, the values of the regression squares are presented, and it can be seen that the F value of this table is significant at the P<0.05 level for the performance of human resources in the development of a new product.

Table number nine: sum of squares test and F value

R <sup>2</sup>	sig	F	Average Squares	Degrees the freedom	sum of squares	Model
.451	.000	80.590	48.754	1	48.754	regression
			.605	98	59.286	left over
				99	108.040	total amount

In table number ten, the regression coefficients of the variable of industrial knowledge on the performance of human resources in new product development are specified. According to the results, it is clear that industrial knowledge has a significant effect on the performance of human resources in new product development at the level of P < 0.05 and with a value of (beta = .672). The t values are also higher than the critical t (1.96), which shows the significance of the regression coefficients. Therefore, the research hypothesis is confirmed.

Table number ten: Regression coefficients of new product development performance

Sig.	t	Standard coefficient	Non-standard coefficients		Dimensions
		Beta	Std. Error	B	
.000	4.391		.243	1.069	Constant
.000	8.977	.672	.077	.688	Human resource performance in new product development



## Conclusion

In explaining the obtained results, it can be said that knowledge-based companies consider it necessary to improve the performance of new product development in order to survive in today's turbulent and competitive environment, and naturally, according to the context and activity of these companies, organizational memory is the best and most effective way possible. To remain in such an environment. For Iranian knowledge-based companies, improving performance and innovation is considered as part of maintaining competitiveness in the country. It can also be said that political-social knowledge, while recognizing environmental changes and developments, in order to face them, identifies organizational indicators that influence the performance of new product development and give the most appropriate responses to these changes. In today's changing and knowledge-oriented environment, the performance of new product development has received more attention due to the change in corporate competition patterns and the need to adapt to rapid changes, and political-social knowledge can accelerate its process. Today, knowledge is the main capital of companies. So, if human resource management is effective in managing employees, and if the most valuable resource of employees is knowledge, then human resource management and knowledge management are closely related. On the other hand, in the completely competitive conditions prevailing in the last century, the necessary condition for the development of companies is to acquire and maintain a competitive advantage based on the knowledge that companies can gain their competitive advantages through the strategy of job knowledge. Therefore, in today's companies, the executors of the company's human resources program are knowledge-oriented.

In explaining the obtained results, it can be said that the organization's external network and cross-border communication can help the organization in finding a new product and the knowledge of new product production and development. If the organization can combine this importance with its activities and get help from it, it can be the basis for the development and strengthening of the organization in order to achieve a new product. Organizational industrial knowledge as a cultural value has the potential to guide companies in pursuing organizational learning. Specifically, organizational ambivalence is considered a construct of exploitation and exploration, and a behavioral manifestation of organizational innovation. With regard to exploitation, firms with favorable industry knowledge for innovation help employees improve their capabilities to sense market opportunities.

suggestions

- It is suggested that companies combine their professional and organizational knowledge with new knowledge to develop their products and increase their success with a local approach.
- What can guarantee a sustainable competitive advantage is the company's ability to attract, create and apply new environmental and foreign knowledge, therefore, in this field, it is necessary to formulate the necessary strategies.
- It is suggested that organizations spread practical knowledge throughout the organization so that the basis for strengthening organizational knowledge bases and procedures is provided.
- Monitoring the global capital market and competitors' strategies is one of the important ways to achieve the performance of new product development. In this context, it is recommended to help identify and apply the latest developments in the direction of product development by creating think tanks and group participation. to be
- Considering that change is one of the integral aspects of competition in today's world, it is recommended for managers to reduce resistance to it and strengthen it in order to achieve innovation, to make employees aware of the nature of change and to participate in it. encourage it

## Reference

1. Al-Habil, W.I. & Koraz, A. 2012. Organizational memory impact on Intellectual capital: Case study - Gaza power generating company, *Journal of Business Management and Economics*, 3(6): 242-257
2. Akgün, A.E. Keskin, H. Byrne, J. 2012. Organizational emotional memory. *Management Decision*, 50(1): 95-114.
3. Cross, R. Davenport, T.H. Cantrell, S. 2003. The social side of performance. *MIT Sloan Management Review*, 45(1): 20-22. Retrieved March 21, 2006, from ProQuest Wayne State University

4. Chen, A. Peng, N. Hung, K. 2015. Managing salespeople strategically when promoting new products-Incorporating market orientation into a sales management control framework. *Industrial Marketing Management*, 47: 147–155.
5. Chiang, H. Shih, H. Hsu, C. 2013. High commitment work system, transactive memory system, and new product performance. *Journal of Business Research*, 67(4): 631-640.
6. Dunham, A.H. Burt, C.D. 2011. Organizational memory and empowerment. *Journal of Knowledge Management*, 15(5): 851-868.
7. De Long, D.W. Fahey, L. 2004. Diagnosing cultural barriers to knowledge management. *Academy of Management Executive* (14:4):113-127.
8. Esmailpour, Majid; Bahrainizad, Manijeh; Quaidi, Hossein Ali. 2016. Investigating the impact of organizational approach dimensions on the success of new products with the variables of customer knowledge management and market knowledge (research on knowledge-based companies in Persian Gulf Science and Technology Park (Bushehr), *Modern Marketing Research Journal*, Volume 6, Number 3, pp. 8-108).
9. Guerrero, L.A. Pino, J.A. 2001. Understanding organizational memory. In *Computer Science Society, 2001. SCCC '01. Proceedings. XXI International Conference of the Chilean*.124-132. IEEE.
10. Hassanzadeh Samrin, Toraj; Hassanzadeh, Mohammad Sadegh; Farid, Vahid. 2014. The relationship between intellectual capital and organizational memory in the pharmaceutical industries of Gilan province, *Information Technology Management Studies Quarterly*, second year, number 7, pp. 14-9.
11. Karimi Chaijani, Munir; Neshat, narcissus; Mirhosseini, Zohra. 2016. Is organizational memory management necessary in the National Library and Records Organization of Iran?, *Quarterly Journal of National Librarianship and Information Organization Studies*, Volume 28, Number 4, pp. 95-112.