

## Investigating the Effect of Dynamic Capabilities and Innovation on Performance Management (Case Study: Pars Special Economic Energy Zone Organization)

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### **ABSTRACT**

*The present study aims at identification of a model of performance management by the use of which a favorable ground will be set for the development of innovation in the organization. In other words, it will be shown that how the organization can apply innovation and dynamic capabilities to preserve and upgrade their performance. Based thereon, the variables' interrelationships were investigated using structural equation modeling and SmartPLS software. 380 questionnaires were administered to the managers and staff members of the Pars Special Economic Energy Zone Organization (PSEEZ) and 292 of them were perfectly answered and returned. After confirming the convergent validity, divergent validity and the reliability of the measurement models, the data entered the statistical analysis. It was made clear based on the statistical analysis that all aspects of the dynamic capabilities, namely perception, acquisition and change, have a positive and significant effect on the performance management. As for innovation, each of the aspects, namely innovation in product, innovation in process and innovation in structure, was found significantly and positively influencing the performance management.*

*Keywords: dynamic capabilities, innovation, performance management*

### **Introduction**

In today's turbulent world, acquisition of the competitive advantage is one of the most important issues for the managers and there are new theories and views proposed to overcome them. Nowadays, competition differs from the past; these differences can be due to globalization and hence much more competitions, relying on the modern technologies and increasing role of non-physical resources like workforce skills, organizational knowledge and innovation. Sometimes the extent of these environmental challenges and surrounding changes is so much that the organization's ability to adapt, would be twisted. Hence, the experts and theoreticians have sought overcoming those issues and while trying to adapt themselves to changes and predict the future changes, attempt to present and develop new concepts and theories in that context. The present study aims at identification of performance management model so

that an optimal ground to be provided for innovation and its development in the organization. In other words, we intend to demonstrate how the organizations can preserve and upgrade their innovation strategy by implementing the performance management model. In this study, innovation is formed on the basis of dynamic capabilities concept.

Following sections deal with the general principles of performance management, innovation and dynamic capabilities. Performance management is important and vital for organization's achievement of the goals and accomplishment of the set missions. Performance management has a determining role in getting individuals and groups' performance aligned with the organization's strategic goals as well as the extent of success in achieving the specified goals, by process of constant identification, assessment and enhancement of the individuals and groups' performance. Of course, that can be achieved successfully only when setting goals, evaluating the performance continuously and getting feedback. We can say that the performance management seeks achievement of the optimal organizational goals in financial and/or operational grounds, which can come true by controlling and directing the staff within a framework of agreement.

During the recent years, many efforts have been made with the objective of putting forward a performance management model in the governmental and semi-governmental organizations and entities. Despite all these proceedings, many of the organizations are still having a small productivity since there has been no effective and efficient model that could study, analyze and manage the performance of the organization's workforce in a principled manner. However, it has to be pointed out too, that in spite of the absence of an effective model, there are many abilities and potentials in many of those organizations which can considerably enhance the organizations' productivity and efficiency by developing a performance management process and proper implementation of it. Thus, one should get acquainted with the latest performance management achievements and trends in the context of human resources management. This is the only appropriate way for ensuring that the organization's team members are kept in the most effective and efficient form. As time passes our knowledge and perception about the human beings' psychology develops and expands. Moreover, every generation has to cope with its own specific issues that are influenced by different motivating factors. If the organizations fail to keep their pace with the latest performance management's achievements and trends regarding human resource management, surely, will be hindered from growth and will lose the battle of talent to their provident rivals. Therefore, in addition to other organizational processes, the performance management systems should be evaluated and revised every year if necessary, so that the favorable effect of improvement on the organization's efficiency and productivity to be preserved.

### **Performance Management**

In the first place, the organization can achieve an optimal improvement in the field of activities and its competitive power among the rivals, only by paying attention to the human resource issues and relying on its workforce. Formation of different units inside an organization such as the human resource planning and training units, are evidence to this point. Today, if an organization by relying on old methods, attempts to manage the staff affairs, surely will not be able to reach a noteworthy position and most likely has to leave the field in favor of its rivals.

Nowadays, in order to grow and improve the knowledge and skills among staff, organizations pursue specific activities and, in line with that, they define the main duties of the human resources in the shape of processes. These processes are diverse and each has a great impact on the development and improvement of the human resources. Amongst the most important subsidiary processes which are embedded in the human resources management process, the supply and adjustment of manpower, training and improvement, maintaining and rewarding systems can be pointed out. Each of these subsidiary processes has specific input and output and may include other secondary processes, but eventually all outputs shall result in benefiting of skilled workforce, formation of a sound organizational culture, a dynamic structure in the human capital management and satisfying the interests of the staff, organization and society.

Dealing with the HRM issues in an organization and the necessity to consider the design and implementation of specific processes (such as staff training needs assessment, service compensation, job

classification, performance evaluation, occupational pathology, sociability, etc.), requires open attitude among managers and their support. Utilizing the best experts and consultants makes it possible to achieve that well. One of the most important issues in the organization is employee performance management. In that regard, the organization must pursue specific goals. The priority of those goals may differ from one organization to another, which might be influenced by the organization's strategy, organizational goals and even the attitude of managers.

### **Innovation**

The ability to come up with new and useful ideas is called "creativity" or, in other words, the ability to generate innovative ideas that create new value. The extent of idea's novelty and uniqueness depends on how different the idea is from the previous works and experiences. A common definition of innovation is the implementation of an innovative idea. Innovation refers to the creation of a new product or service or process, and it can be considered as continuous and gradual or intermittent and fundamental.

Innovation in an organization is the acceptance of an attitude or behavior that the organization considers new. According to the popular view, innovation is a regular and structured process involving market research and production according to market demands.

Nowadays, in many organizations, innovation has become the most important incentive for competitive advantage achievement and preservation. In fact, organizations owe their development and profitability to the sale of their new products. Considering rapid pace in technological change, it appears that the chance for gaining competitive advantage often stems from innovation and creativity.

In the organizational level, innovation is seen in the form of introducing a new product (or a fully upgraded product), a new process, a new structure in the organization's environment or its external relations. This broad definition of innovation encompasses many different types (innovation in product, process and organizational structure). Product innovation leads to changes in the shape or design of products or the introduction of alternative methods for service delivery, product production methods or customer interaction. Innovation in the process is an important action in the organization with the aim of improving quality and reducing costs, and innovation in the structure refers to the improvement, promotion of missions, goals, new strategies and internal interactions.

Depending on the origin of innovation, different divisions can be considered for it. Schumpeter distinguishes between entrepreneurial innovation and conventional innovation. Thus, entrepreneurship or, in another example, the research and development department of the organization (common innovation) may be the source of innovation. Another researcher, Von Hippel, has categorized innovation differently based on its application and on the basis of a group of individuals or organizations that benefit from it. To develop this division, he and Riggs explored the practical sources of innovation, arguing that, for users, the creation of innovation is often scientifically important, and that manufacturers often achieve it because of its economic importance.

Damanpour and Ivan also divided innovation, according to its nature, into two groups: technology and administration. According to them, technology-based innovation includes those innovations that occur in the technical part of the organization and are directly related to the initial work activities of the organization; While administrative innovation is related to the social system of the organization and affects the organizational structure, administrative processes and human relations.

### **Dynamic Capabilities**

Organizations will be able to create a competitive advantage by relying on their operational capacity, but as the development process continues and to maintain a competitive advantage, they must redefine the available resources as the environment changes. In other words, value-creating resources in the organization are always exposed to drastic environmental changes, and their capability to create value may vanish quickly. For this reason, organizations have to make the capacity within themselves to be able to rebuild those valuable resources so that they can maintain their competitive advantage over time. Researchers call this ability "dynamic capabilities." According to Teece, dynamic capabilities in the organization are the source of creating and maintaining a competitive advantage. This theory is especially

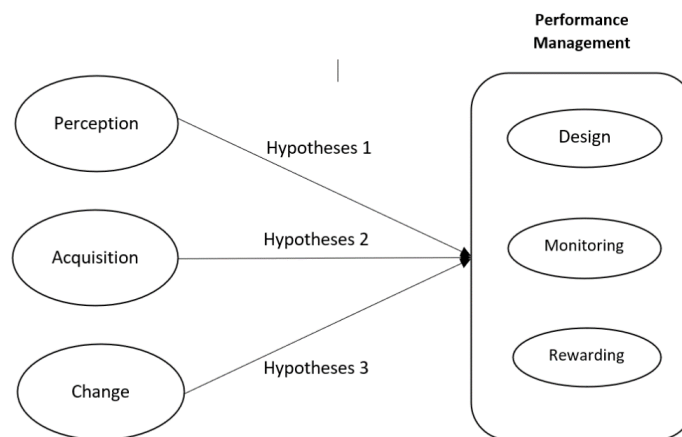
applicable in industries that are exposed to more environmental changes because the emphasis of dynamic capabilities is on the organization's ability to renovate, integrate and reshape its abilities and resources, in order to adapt to the changing environment.

Based on the above, for variable “dynamic capabilities” three dimensions, namely perception, acquisition and change; for variable “innovation” three dimensions, namely product innovation, process innovation and innovation in structure; And for variable “performance management” three dimensions, namely design and planning, monitoring, and rewarding are questioned in this study.

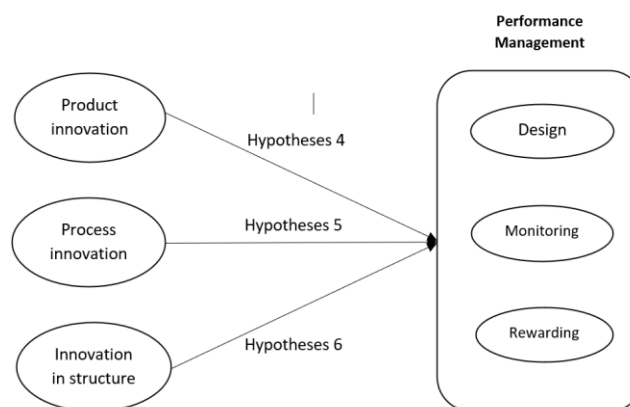
### Study Hypotheses

Based on what has been mentioned in the research literature, the following hypotheses are presented. The first to third hypotheses are statistically analyzed based on the first model, and the fourth to sixth hypotheses are statistically analyzed based on the second model:

- 1) Perception has a positive effect on performance management;
- 2) Acquisition has a positive effect on performance management;
- 3) Change has a positive effect on performance management;
- 4) Product innovation has a positive effect on performance management;
- 5) Process innovation has a positive effect on performance management;
- 6) Innovation in structure has a positive effect on performance management.



**Figure 1. Study's first model**



**Figure 2. Study's second model**

### Research Methodology

Based on the general scope of the research, the descriptive-analytical and causal-retrospective (ex post facto) method was considered by the researcher. Data collection methods in a descriptive research comprising tests, questionnaires, interviews, focus groups, observations, etc.). In this research, a survey method has been used to collect data. Therefore, this study can be placed amongst the field studies and, since the variables are not manipulated, the study is under the category of descriptive researches. Considering the method used, this research is sub-category of non-interventional (observational) research. Data and models are also analyzed and evaluated using SmartPLS software.

### Questionnaire, Sampling and Analysis Level

The statistical population of this research includes managers and employees Pars Special Economic Energy Zone Organization. To design the questionnaire, the opinions of experts were utilized and its content validity was confirmed by using content validity index (CVI) and content validity ratio (CVR), as well as inquiring the opinions of fifteen experts.

In this research, we applied random sampling method and Cohen's table was used to determine the sample size, in which the concepts like effect size, test power, researcher's theoretical error, number of hidden variables and number of observable variables are used. Based on this and considering the value of 0.05 for the effect size, 0.85 for the test power, 0.08 for the theoretical error of the researcher ( $\alpha$ ) and also, number of hidden and observable variables of the research, minimum sample size was determined to be 281. Data were collected during a span of five months (September, 2019-January, 2020).

The questionnaire is designed in the form of Likert's five-point scale. The questionnaire consists of 27 questions, nine questions for the dynamic capabilities (three items for perception, three items for acquisition, three items for change), nine questions for innovation (three items for product innovation, three items for process innovation and three items for innovation in structure) and nine questions for performance management (three items for designing& planning, three items for monitoring, three items for rewarding).

### Research Findings

One of the most important steps in structural equation modeling is to check the validity and reliability of measurement models. At this stage, it is determined whether the questions designed for the constructs having the required validity for evaluating them or not.

To evaluate the reliability, the combined reliability index is used, and to evaluate the construct validity, two criteria of convergent validity and divergent validity are used. Table 1 shows the average values of variance extracted (AVE) and the combined reliability (CR) of the model constructs.

**Table 1: Amounts of convergent validity and combined reliability**

Variable	AVE	CR	Convergent validity	Combined reliability	Determination coefficient (model 1)	Determination coefficient (model 2)
Perception	0.511	0.781	Confirmed	Confirmed	---	---
Acquisition	0.593	0.824	Confirmed	Confirmed		
Change	0.536	0.759	Confirmed	Confirmed		
Product innovation	0.523	0.783	Confirmed	Confirmed	0.170	0.173
Process innovation	0.557	0.848	Confirmed	Confirmed		
Innovation in structure	0.541	0.992	Confirmed	Confirmed		
Performance management	0.844	0.844	Confirmed	Confirmed		

According to Table 1, it can be seen that, since the values of AVE and CR for all structures are more than 0.5 and 0.7, their convergent validity and combined reliability are confirmed. The divergent validity of the measurement models was also confirmed, since in the table produced by SmartPLS, cross factor

load for all the related questions, were at least 0.1 larger than the factor loads of the questions in other constructs. Furthermore, considering the appropriate value of the coefficient of determination for the main dependent variable of performance management (0.141), the model has an acceptable quality in explaining the main dependent variable.

### Path analysis and research hypotheses review

In Figures 3 and 4, respectively, the significance of the relationships between the variables of conceptual models 1 and 2 is examined.

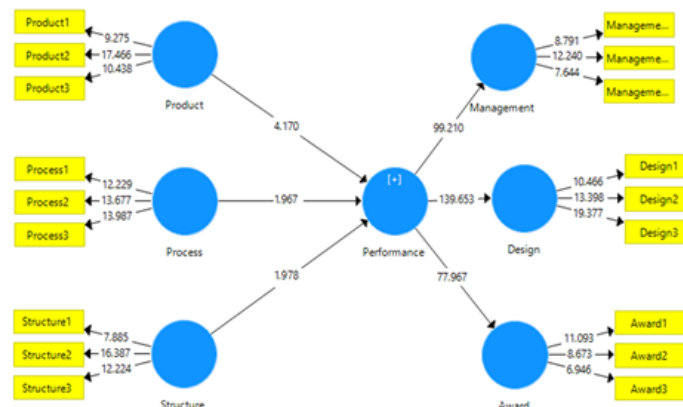


Figure 3. Significance coefficients of relationships between variables of the 1st model (Figure 1)

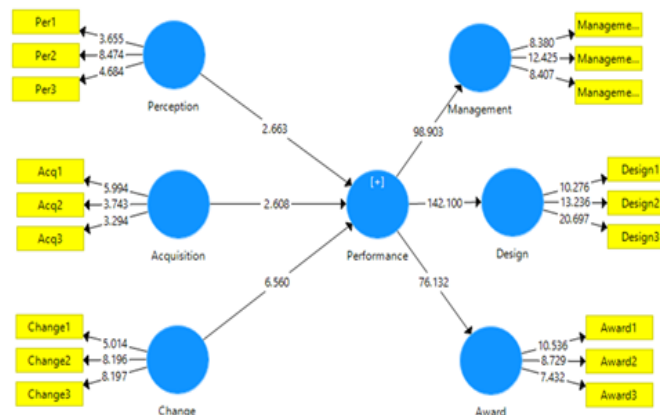


Figure 4. Significance coefficients of relationships between variables of the 2nd model (Figure 2)

Table 2 shows the results of examining the research hypotheses:

Table 2: Investigation of research hypotheses

Hypothesis	Independent variable	Dependent variable	Path coefficient	Test statistic	Result
1	Perception	Performance management	0.112	2.663	Confirmed
2	Acquisition	Performance management	0.104	2.608	Confirmed
3	Change	Performance management	0.374	6.560	Confirmed
4	Product innovation	Performance management	0.396	4.170	Confirmed
5	Process innovation	Performance management	0.102	1.967	Confirmed
6	Innovation in structure	Performance management	0.105	1.978	Confirmed

According to table (2), the path coefficient of the perception's effect on the performance management is equal to 0.112 and its t-statistic value is equal to 2.663; thus, since the t-statistic value is greater than 1.96, the significance of the relationship between these two variables is confirmed. In addition, since the path coefficient of these two variables is positive, it is concluded that the perception has a positive effect on performance management and this confirms the first hypothesis. The path coefficient of the acquisition's effect on performance management is 0.104 and its t-statistic value is equal to 2.608; thus, since the t-statistic is larger than 1.96, the significance of the relationship between the two variables is confirmed. Additionally, the positive path coefficient for these two variables' relationship indicates the positive effect of the acquisition on the performance management and this conforms the second hypothesis. The path coefficient of the change's effect on the performance management is 0.374 and its t-statistic value is equal to 6.560; thus, since the t-statistic is greater than 1.96, the significance of these two variables' relationship is verified. On the other hand, the positive path coefficient for these two variables' relationship indicates the positive effect of the change on the performance management which means the third hypothesis is confirmed. The path coefficient of the effect of product innovation on the performance management is 0.396 and its t-statistic value is equal to 4.170; since the t-statistic is greater than 1.96, the significance of the two variables' relationships is verified. Moreover, since the path coefficient of these two variables is positive, the effect of the product innovation on performance management will be positive too, therefore confirming the fourth hypothesis. The path coefficient of the effect of process innovation on the performance management is 0.102 and its t-statistic value is equal to 1.967; since the t-statistic is greater than 1.96, the significance of the two variables' interrelationships is verified. Moreover, since the path coefficient of these two variables is positive, the effect of the process innovation on performance management will be positive too, therefore confirming the fifth hypothesis. The path coefficient of the effect of innovation in structure on the performance management is 0.105 and its t-statistic value is equal to 1.978; since the t-statistic is greater than 1.96, the significance of the two variables' interrelationships is verified. Moreover, since the path coefficient of these two variables is positive, the effect of the innovation in structure on performance management will be positive too, therefore confirming the sixth hypothesis.

### **Discussion and Conclusion**

One of the characteristics of the environment in which organizations are active, is its rapid change and transformation, in such a way that avoiding the impacts on the organizations is almost inevitable. On the other hand, to maintain its position in the face of challenges (such as increasing competition, rotating market demands, cost reduction, limited resources, availability of skilled labor, etc.), an organization needs to have particular abilities, enabling it to recognize environmental evolutions in a timely manner and make appropriate decisions with the aim of maintaining and improving its performance level under new conditions. Meantime, dynamic capabilities may increase the capacity and power of the organization in response to the environmental changes. Therefore, the purpose of this study is to investigate the effect of dynamic capabilities (perception, acquisition and change) and innovation (in 3 dimensions of product, process and structure) on performance management, thus presenting a model of performance management through innovation and dynamic capabilities (Case study: Pars Special Economic Energy Zone Organization). Based on the research literature, the hypotheses were developed. By distributing the questionnaires among the target population, the data were collected and analyzed using SmartPLS software. It is worth mentioning that the questionnaire's reliability has been confirmed using Cronbach's alpha method and; the combined reliability and validity of the questionnaire, were confirmed using the divergent and convergent reliability, as well. In the first hypothesis of this research, the relationship between the perception (one of the dimensions of the dynamic capabilities) and performance management was investigated. The results show that the path coefficient of perception on performance management is 0.112 and by considering the t-statistic value (2.663), the hypothesis is confirmed. This implies that measures like monitoring market trends and customer needs, together with identification of events and opportunities, as well as having the ability to discover new combinations of available resources, can influence the performance of an organization and even enhance it in the face of environmental change. In

the second hypothesis, the relationship between the acquisition (another dimension of the dynamic capabilities) and performance management was investigated. The results show that the path coefficient of the acquisition on performance management is 0.104. Thus, with considering the t-value (2.608), this hypothesis is also confirmed. Acquisition refers to the organization's ability to learn new knowledge as well as knowing how to compose and commercialize it. Acquisition requires a set of organizational routines in knowledge management and continuous learning in the organization. Researchers believe acquisition as an important ability of the organization to produce knowledge that help organizations to achieve their goals and maintain their competitive advantage. An organization that learns and effectively uses the concepts learned by monitoring environmental developments, in fact, improves its operational capabilities, and this means performance development. Acquisition helps groups to be more active by increasing their innovative and creative capacities. In other words, it facilitates the recombination of resources and therefore it can be said that the ability to acquire brings along the potential to create innovation in all organizational processes. In the third hypothesis, the relationship between the change (dimension of the dynamic capabilities variable) and performance management was confirmed. In this regard, the path coefficient is found to be 0.374, which according to t-value which is equal to 6.560, the amount of impact is confirmed. The ability to change while maintaining consistency and coordination between the system elements of an organization, enables organizations to provide a suitable platform for the necessary changes. This capability is highlighted when important models or changes that is needed to be applied to the structure of the organization interfere with the current structure or processes. Accordingly, an organizational culture that forms a flexible structure and supports innovation and change, though challenging, will provide a solid and reliable foundation for applying changes quickly as well as maintaining advantage in the future. The fourth hypothesis examines the effect of product innovation (another dimension of innovation) on performance management. The path coefficient of this dimension on performance management is found to be 0.396, which is confirmed by considering t-value which is equal to 4.170. It must be acknowledged that senior executives have a key role to play in creating product innovation. Verhees & Meulenber (2004), concluded in their research that according to the weakness or strength of product innovation, the market will also have a positive or negative effect on product innovation. In explaining this hypothesis, it can be concluded that the performance of the organization will be affected by product innovation, because the market and customer orientation affects its success or failure, which in turn affects performance. Therefore, the performance management system plays an important role in product innovation and has the capacity to provide a suitable and favorable grounds for its development. The fifth hypothesis of this study examines the effect of the innovation process (as one of the dimensions of innovation) on the performance management of the organization. Results show that the path coefficient of process innovation on the performance management is 0.102 and calculated t-value is 2.209, so the effect of the process innovation on the performance management is confirmed. Process innovations mainly aim at reducing production costs, improving the quality of products and services, and ultimately gaining more market share. On the other hand, reducing production time and carrying out activities in the shortest possible time, can increase customers' satisfaction and their demand consequently. Based on this, market share and competitiveness of the organization will be improved and in continuous cycle, production costs will decrease (economy of scale) and at the same time the value of products will increase accordingly, which means improved performance. It is worth noting that cost management methods (such as activity-based costing) also confirm this. Sixth hypothesis in this study examines the effect of the innovation in the structure on the performance management of the organization. The path coefficient of innovation in structure on performance management is found to be 0.105, and according to the t-value, which is equal to 2.665, the effect of the innovation in the structure on the performance management is thus confirmed. Organizational structure, mainly through innovation and organizational learning, can affect the performance of the organization. But in this regard, it should not be overlooked that there may be several other variables with moderating role in the relationship between organizational structure and performance. One of the findings in the research done by Hao & et al. (2012), was that most experienced managers with a relatively high experience at work, believe that organizational structure improves performance directly and through innovation. In contrast, managers with less empirical



experience believe that organizational learning has a significant mediating effect on performance. This point can be considered by other researchers in this field in future studies. A progressive structure, by integrating and integrating innovation in itself, can enhance the organization's innovation capacity in the future. Those organizations intending to increase their creative capacity must make decisions regarding their organizational structure. Referring to a study carried out by De Mello & et al (2012), in a Brazilian petrochemical company with newly revised structure, the findings revealed that the organizational structure of the company in question, had been revised regardless of innovation and revision is done solely by focusing on research and development in such a way that the new structure was still based on the traditional framework along with centralized decision-making and specific functions. No need to say that an advanced structure regards innovation as an integral part of itself, so can enhance the organization's innovation capacity in the coming days of an organization. In general, the results of this study emphasize on the important roles of the dynamic capabilities (perception, acquisition and change) and innovation (product, process and structure). Monitoring and assessment of environmental developments would be valuable and noteworthy only when leads to the learning and acquisition of organizational knowledge that subsequently help in making appropriate decisions, with the aim of maintaining the position of the organization and/or gaining a competitive advantage. Additionally, innovation can improve performance when it ends in achievement of organizational goals such as: customers' satisfaction, positive impact on market share, cost reduction, value-added products and developing a culture of innovation in the organization. Realistic managers are always looking to improve the performance of their organization, and this is not possible, except by creating an attitude of dynamic capabilities and creating innovation in the organization. In fact, dynamic capabilities and innovation can be considered as two wings for organization enabling it to fly towards optimal performance. In this study, in order to have a better understanding of dynamic capabilities concept, we have broken it down into three dimensions and studied the effects of each dimension separately. On the other hand, by considering innovation as an intermediary variable, this study helps to reduce the ambiguity about the intermediary mechanism through which dynamic capabilities improve firm performance. Finally, it is suggested to the managers:

- 1) Institutionalize the culture of creativity and innovation in the organization and allocate sufficient resources for their development.
- 2) The organizational structure should be designed and enforced with innovation as one of the essential principles (avoid traditional structures and centralized decision-making).
- 3) Monitoring environmental developments and collecting data from it, shall be considered as one of the routine organizational processes, (this is vital especially in the face of opportunities and threats).
- 4) Improve the levels of organizational knowledge and employees' tacit knowledge, through the process of acquiring up-to-date knowledge and combining it with existing knowledge.
- 5) Creating a suitable environment in order to increase the spirit of flexibility and readiness to accept changes in the organization, in order to maintain and grow organizational performance with the objective of achieving competitive advantage.
- 6) Injecting the attitude of dynamic capabilities into different layers of the organization and integrate it with the dimensions of innovation in the organization.
- 7) Enable the organization in redefining available resources so that shortcomings can be overcome upon encountering any changes and/or challenges.

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