

The Relationship between Organizational Structure with Job Innovation in Employees of an Industrial Company

Asieh Shahverdi Shahraki*

MA in Industrial and Organizational Psychology, Department of Psychology, Shahid Chamran University of Ahvaz, Iran

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ABSTRACT

The purpose of this study was to investigate the relationship between dimensions of organizational structure with innovation. The sample includes 313 employees of an industrial company which were selected by stratified random sampling. Of these, 89% were male and the mean age of them was 34 years. To measure studied variables organizational structure and innovation questionnaire was used. In order to analyze the results, simple correlation and multiple regression analysis were used. The results of this study showed a statistically significant negative relationship between the three dimensions of organizational structure (complexity, formalization and centralization) with job innovation. The results of multiple regression analysis showed that organizational structures were significant predictor of innovation.

KEYWORDS: Complexity, Centralization, Formalization, Innovation.

1. INTRODUCTION

Usually, this question came to mind of curious people that why an organization progress, while a similar organization has better conditions in terms of resources and is backward. In response to the above question and a realistic systemic approach to this issue can name various causes. Study of developing history of nations and comparison with other nations face the fact that innovations occur in these environments that were considered too unimportant for developing countries [1]. German famous sociologist Max Weber believes that spirit of innovation is an important factor in explaining the concept of the formation of new industrial civilization and capitalism in the West. Now is the time to dominate the spirit of entrepreneurship and innovation and competitive markets in the world, the great classical capitalism gradually lose their power and just organizations will be able to continue the socio-economic life in international field that have spirit of innovation [2]. Therefore, in this new competitive arena, a society is leading that have dynamic and flexible organizations and attract and work with employees that give creative and innovative efforts to organization [3]. Schumpeter [4], believes innovation include new product and superior quality than what is exists, a new method of production, opening new markets and new forms of organization, and Davila et al. [5], believes it is a new administrative process with special tools, Von Hippel [6], introduced innovation as something new that is into the market. At the same time, Morrell and Bo Li [7], introduced innovation as convert idea into technology or new product, Mittal and Sahadry [8], introduced it as create value and meet customer requirements. Porter [9], also introduce it as most effective causes of competitive advantage and Morris [10], introduced it as creates new idea and turn it into new value in business. In this regard, researches show that organizations to be innovative, require important changes in the structure, management, strategies, values and processes [11]. Always bear in mind that many factors within an organization affect individuals' ability to innovate. Wolf [12], in the study showed that private variables and organizational variables such as technology, structure, strategy, culture and also consecutive environment variables influence on organization innovation that from these three categories, organizational elements have the most important role and finally the organizational structure is considered as the main factor influencing innovation. At the same time, according to Porter and Stern [13], innovative activities of organizations are under the influence of a country's policies and regulations, and industrial properties that belong to it; So from this angle, the study of factors influencing the development of innovation and to determine the influence of each of these factors in the context of local pattern design, are necessary to the development of innovation capacity in the country. Organizational factors, are the most important factors affecting the development of innovation, including: structure, leadership, learning, organizational culture, strategy and goals, reward system and employees' participation. Organizational structure, determine the method of communication, decision-making positions, reporting and hierarchy of the authority. Organizations that have inflexible structure, to create cooperation and solidarity in times of crisis are in disarray while organizations can predict relationships, especially flexible and informal relationship in its structure, create positive and effective factor for encouraging growth and innovation in their organization [14]. The organizational structure has many dimensions, including recognition, centralization, complexity and hierarchy, specialization, having a standard, professionalization, and ration of personnel. In general, among these variables, three-dimensional structure are more important and also included some other variables. These variables include: the complexity, centralization and formalization [15].

Complexity: complexity is measured based on the specialization of jobs within the organization [16]. It also may be define and measure by number of places where work is performed in it, the number of jobs and the number of hierarchies that exist, the increased complexity in the organization increased control and coordination problems [17]. The complexity

* **Corresponding Author:** MA in Industrial and Organizational Psychology, Department of Psychology, Shahid Chamran University of Ahvaz, Iran; Email: asieh.sh65@yahoo.com

of the organization is due to the lack of confidence. Complex and changing environments increase uncertainty in the environment and thus the organization to adapt to the increasing complexity and diversity of the environment, increases its internal complexity. An organization called complex with a high number of hierarchy levels and areas of extensive surveillance and geographical distribution [18].

Formalization: The second part of the formal organizational structure is formalization and indicate the amount to be written, a variety of regulations, rules, procedures, and methods of communication in the organization [19]. The importance of formalization as one of the important aspects of the organizational structure is to the extent that some people know organizational structure as framework of organization, regulation, control tools and procedures to do works [20]. Existing evidence have confirmed that there is more formalization in large organizations. Using of rules and regulations provide control possibility over all of the organization's tasks for top managers [21].

Increase in formalization in the organization with the aim of reducing the diversity and facilitate the coordination. The high formalization eliminates ambiguity, but in contrast deprived authority of make a decision or personal opinion [22].

Some researches done by Dess et.al, [23] and Fry and Slocum, [16] has shown that, whatever people have more freedom to choose their work-related activities, the performance on those activities will be more. Also organizations that are characterized by a lack of focus and lack of formal regulations, have more innovation [24].

Centralization: centralization refers to tough decisions of organization and assessing activities. Centralization dimension determines the persons that have decision making rights in the organization [16].

Since the ability of managers to gather and process information is limited and too much information leads to confusion in the decision, take some decisions must be made by others. Thus, the decision authority broadcast in the entire organization and a lack of focus occurs. Lack of centralization provides opportunity to participate in decision-making and strengthen the managers' decision making in the lower organization. In the field of effectiveness of decisions made in the organization cannot vote to absolute priority of having centralization on not having it, because the advantages and disadvantages of centralization and lack of centralization depends on the specific situation of issue [18]. Centralization means that decisions are taken at the highest levels of the organization. Essentially there isn't high centralization in entrepreneurial organizations' decisions, because these organizations need to respond quickly to environmental changes and customer needs. Thus, many of the decisions taken at a lower level and decision-making authority is delegated to units and individuals, so at the appropriate time, design a movement and implement it. There is positive relationship between decentralized structure and entrepreneurial orientation in the organization. This positive relationship, include high power of authority, influence and control over the organizational resources and make members powerful in commissioning and testing the new threats. Creating and maintaining informal and decentralized structure is an incentive for senior executives empowerment, increase the participation of members and thus ensure innovation [25].

Researchers say that those public sector institutions that are looking for better distribution function should have their organizational structure and from the centralized system to a decentralized system that will facilitate higher levels comment and vote on them [26]. Whatever individual encourage to independent thinking and involve in decision-making do their best in performances. Decentralized organizational structures facilitate the flow of horizontal and vertical communication within the organization. Such structure cause to promote entrepreneurship and is considered an instrument to create an informal interaction between senior management of organizations and employees, and speed up the recognition of the idea [27].

One of the most interesting applications of structural dimension (complexity, formalization and centralization) can be determined by comparing with organic and mechanical forms of organization. High levels of complexity, formalization and centralization are properties of the mechanical organization. In mechanical organizations, labor is divided to highly specialized subsets (high complexity); Workers during work have freedom of action and rules and procedures strictly defined (high formalization); and limited participation is done in decision-making at the highest levels of the organization (high centralization) in terms of structural dimensions, organic form of organizational structure is at the opposite of the mechanical structure; an organic structure has low levels of complexity, formalization and centralization. There is a strong and positive relationship between organizational structure and organic and flexible organization with an entrepreneurial orientation. It means that how much the flexibility of the organizational structure increases the degree of risk taking of managers, and innovation in organizations and also the organization's overall response to the variations and environmental conditions is more active and more dynamic. In comparison with the machinery organizations, workers in organic organizations, in their orientation are more comprehensive (Lower structural complexity) and have more freedom to do tasks (less formal) and decision-making is led to lower levels of the organization (Non-centralization) [28].

Other researches done by Kevin and Sloan [29]; Bartlett and Ghoshal [30]; and Dess et al. [23] showed that characteristics such as risk taking, willingness to innovation and be active in the organization with organic structure is more than the organization with mechanical structure. Mintzberg [31] provides simple, machinery, professional, part, Adhocracy, belief structure that is development of mechanical and organic structure of Burns and Stalker [32]. Adhocracy structure is suitable for innovation in complex and dynamic environment. He believes mechanical structure is suitable under stable conditions, and organic structure, is suitable in dynamic condition.

Researches of Burns et al. [32], Shafritz [33], Spender [34], Saleh & Wang [35] and Daft [36], showed that a specific structure is appropriate at every opportunity and organic structure has important impact on innovation. Researches of Kanter [37], Burns and Stalker [32], and Russell and Russell [38], consider the decentralized structures more innovative. In Kak study [39], between parts integration was emphasized. Kondo [40] during a study as determining relationship between standardization rate and the ability of employees to be innovative indicated that there is

a significant negative relationship between standardization and the ability of staff to be innovative. As a result, although standardization and innovation are essential for the management and organization, how much standardization get more, people innovation is reduced. Therefore, to keep fit and balance between standardization with regard to increasing innovation capacity of employees, organization managers should show more flexibility. Katz [41], in a study entitled "creative workers performance" came to the conclusion that although the standardization work is necessary for innovation, and in organizations and business companies in the contrary, these two factors are in conflict. With increasing standardization the remaining space for innovation in organizations is reduced. Smith [42], in studying the effect of internal and external factors on innovation in professional sports leagues showed that of internal and external factors, internal factors had a greater impact on innovation. So from the internal organization factors formality, complexity, centralization, leadership, values of group, size, age and education of employees, three factors formality, centralization and leadership allocate the most explained innovation variance for themselves $r^2 = 0.54$. from this perspective we can studied accurately dimensions and factors of organization structure and allocating specific sections as organizations creative circles and providing services to these sectors help more to this organizational process. The main component of this study is regarding three main components of organizational structure formalization, centralization and complexity.

2. MATERIALS AND METHODS

2.1. Research Hypothesis:

1. There is a significant correlation between the complexity and innovation.
2. There is a significant relationship between the recognition and innovation.
3. There is a significant relationship between centralization and innovation.

2.2. METHODOLOGY

The population of this study consisted of approximately 4,000 staff of an industrial company, which 350 employees were selected as hypothesis sample. After selecting these number, research tools were given to them that the number of 313 questionnaires (response rate of 6.87%) were in use and finally be analyzed. Because of the different subsidiaries with different populations and to select a sample that is representative of society, stratified random sampling was used.

2.3. Research tools:

Organizational structure questionnaire: this questionnaire for the first time made by Gerald Hague (1965). The questionnaire contains 63 questions which classified in three scales, formalization, complexity and centralization. According to Likert scale, options of questionnaire (strongly agree, agree, no comment, disagree, strongly disagree) respectively takes number 5, 4, 3, 2, 1. Gerald Hague obtained reliability of 0.94 through Cronbach's alpha. The reliability of the questionnaire in this study was obtained through Cronbach's alpha 0.875. Innovation and job inventory questionnaire prepared by Martin Patchen. That includes 6 questions, each question has the option of 3 or 4 pieces and grading from 1 to 3 or 1 to 4. Patch obtained questionnaire reliability 0.84 from test-retest. The reliability of the questionnaire in this study was obtained 0.687 through Cronbach's alpha.

3. RESULTS

In this section descriptive findings and results of the research hypotheses are mentioned. The descriptive findings includes the describing characteristics related to research variables. Information for this section is shown in Table 1. The findings of the research hypothesis is presented in Table 1. Table 1 shows the correlation matrix between the dimensions of the organizational structure with innovation. The first hypothesis suggests a significant relationship between complexity and innovation. Considering Table 1, we see that the complexity has the correlation coefficient of -0.334 with innovation and is significant in level of $p < 0.001$. The first research hypothesis is confirmed. The second hypothesis suggests a significant relationship between the recognition and innovation. Table 1 shows recognition and innovation has the correlation of -0.451 that in the level of $p < 0.001$ is meaningful. Therefore second hypothesis is confirmed. The third hypothesis suggests the relationship between the centralization and innovation. By observing Table 1, we see that this dimension has a correlation coefficient of -0.365 which is meaningful in $p < 0.001$. Therefore, the third hypothesis is also confirmed.

Table 1. Correlation coefficients of organizational structure with organizational innovation

Variables	M	SD	1	2	3
1.innovation	2.40727	15.1693			
2.complexity	7.57385	93.6486	-0.334**		
3.centralization	7.02551	40.2460	-0.365**	-0.660**	
4.formalization	7.02511	60.6454	-0.451**	0.532**	-0.482**

**P<0.001

To examine that innovation to what extent and how predicted by organizational structure dimensions, multiple regression analysis was used by login at the same time method. The results of which are shown in Table 2. These results indicate that multiple correlation of the organizational structure with innovation is equal to 0/45. That is meaningful in

$F=62/82$ at $p < 0.001$. These variables explain 34% of innovation variance. Also values of β indicates that recognition specifies more weight among other aspects to itself.

Table 2: Results of multiple regression analysis of the organizational structure with organizational innovation

Variables	B	B	T	P
Complexity	0.28	-0.41	-7.54	0.0001
Centralization	-0.17	-0.44	-8.03	0.0001
formalization	-0.14	-0.59	-5.58	0.0001

4. DISCUSSION AND CONCLUSIONS

In this study, we examined the relationship between organizational structure aspects with business innovation. Results of this study show that research hypotheses are confirmed. The results of this study confirmed the negative correlation between complexity and innovation. These findings are consistent with the results of the West [43], Kondo [39], Hansen [44] and Omid [45]. Katz and Allen [46] believed that communications systems should be made in a way that people be able to face other people to learn new ideas. Face to face relations give people the chance of rapid exchange of ideas, quick analysis of the data and obtain information that is more relevant to their work. It requires less complexity in the organization to have faster communication. Levesque in 1996, believed organizations that can not benefit from the higher education level, may be resistant to environmental changes due to lack of academic education or as common and routine issue react to it. Kondo [40], stated in a study, the more vertical complexity of the organization, the same proportion of the population innovation will be reduced. So as to create a balance and proportionality between the organization hierarchy and the power of innovation, managers of organizations should be more flexible in the implementation of matters related to creative circles. The results of this study confirmed the negative correlation between recognition and innovation. This finding is consistent with results of Damanpour research [17], Wolf [12], and Lee Yuh Chen [47]. Wolf (1995), stated that personal and organizational variables such as technology, structure, strategy, culture and also environment variables that affect organizations innovation and creativity that from these three categories, organizational variables have the greatest role and finally, organizational structure is selected as the main factor influencing creativity and innovation of organizations. Bennis in 1998 [21] believes that situation in the contemporary world has conflict with demands and values of the organization as a rational system. For example, bureaucracy, relying on specific laws and regulations that apply, is not able to comply with fast environmental change. Or while today activities requires people with multiple and varied expertise, but this kind is incompatible with large and cumbersome laws and regulations. Due to the rules and procedures over the organization and also attention of managers to more standardization of administrative and organizational affairs, and finally make decisions as an individual and based on the personal findings as adopted affair by superior heads and subordinate staff, the innovation fallen and sometimes have been forgotten [21].

The results of this study confirm the negative relationship between centralization and innovation. These findings are consistent with results of Kondo [40] and Omid [45]. Basdur (1997), in a study which carried out on researchers and scientists community, reach to a number of innovative behavioral limitations:

Lack of communication and the flow of ideas from the bottom to top, 2. Unsufficient communication from top to bottom 3. inadequate relationship with the external environment [48].

Kondo [40] has come to the conclusion that there is a significant relationship between the level of centralization and innovation. So that high levels of centralization caused protest and disruptive approaches and inhibit the development of new ideas. Amabil [49] argues that centralization in decision-making and compliance of laws cause reducing internal motivation, and thereby reduce innovation and the ability to deal with the problems. Sholly and Gillson [50] also note that variables such as formalization and centralization that are the properties of mechanical structures, negatively correlated with creativity and innovation. The negative correlation between the two main dimensions of formalization and centralization with experts innovation is accordance with the findings of Fakhryan [51]. It shows when the organization has organic structure and use participatory management style and systems theory, compared to the mechanical and bureaucratic structure, that has command style and classic management has emphasis and attention on innovation and improve the quality of goods and services. These results are consistent with findings of Kondo [40] and Katz [41].

The results of this study also confirms the results of Smith [40] and Sheridan [52]. According to the study, in addition to the relationship between organizational structure and innovation, there is a direct linear relationship between these two variables that can increase or decrease organization innovation through organization structure and its design. It also observed that how much the organizational structure is closer to the organic structure, its innovation will be more, and how much is closer to the mechanical structure, the organization innovation will be low. In this regard, the organization by review standards and work lows and modify them create space for more innovative activities. However, due to the fact that amount of direct control of employees on their own affairs in Iran organizations is lower than similar organizations in other countries, we can infer that the centralization factor in organization, as a deterrent, can be a barrier to progress and innovation. So that how much directions and regulations be from top to bottom, and personal preferences applied, and ingenuity and innovation of organization experts and their subordinate is attenuated.

5. REFERENCES

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