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Regression Analysis on the Effect of Strategic Orientation (Entrepreneurial and Technological Orientations) on Organizational Innovation in Public Organizations: A Case Study of Information Technology Organization of Iran

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Abstract: Innovation is as an important issue for individuals, institutions and overall, for all societies because of its relation with the flexibility and production. On the other hand, organizations reflect their resources in activities that have strategic direction and invest. The study of regression analysis shows that the entrepreneurial orientation and the orientation of technological is effective in the development of organizational innovation in Iran information technology organization based on its governance role to manage, support and organize the affairs related to security and technological development of information and their application in the country and rapid changes in this area. In other word, value of organizational innovation in the studied organization changes based on advantages of entrepreneurial orientation and technological orientation effectively. The study population was all the staff that their number is 400. The 196 of them were selected using random sampling method and Cochran formula. They responded to questionnaires of technological orientation and organizational innovation, entrepreneurial orientation. SPSS Software was used for data analysis.

Key words: Cochran formula, SPSS, entrepreneurial, flexibility, organizational

INTRODUCTION

Innovation as an important issue for individuals, institutions and overall, for all societies because of its relationship with the flexibility and production (Runco, 2004). Its important for governmental agencies to develop new ways to enhance and improve the quality of administration system, efficient and optimum use of resources, services and products adapted in return of changes in demand new needs and targeted active participation in the national and international division of labor in particular providing the necessary benefits to gain more share for global standards in comparison with other countries is inevitable especially those who are working with today's technology, each day increasingly to creativity and innovation to ensure its survival and growth need to compete with other organizations (Jung *et al*., 2003; Tierney *et al*., 1999). Innovation is the predictor and effective variable in many other organizational variables that can influence on the success and sustainability of any organization. Bowen *et al*. (2009) believe that innovation as a today stimulate of organizations to achieve performance (optimal) in the future. From Van der Meer (1996) perspective innovation is set of activities those results in to introduce something new in strengthening the competitive advantage reflected According to Wong and Chin (2007) organizational innovation is to create value from new technology or new business activities in terms of new products or processes. Kerr and Gagliardi (2003) believe that the most important factor in growth and human progress in the field of innovation and creativity and therefore innovation is an important factor in the survival of organizations in the current competitive environment.

Organizational innovation is influenced by many factors. However, it is important that organizations reflect their resources in activities have the strategic direction. Strategic direction to the organization's strategic direction refers to create appropriate behavior in order to achieve superior performance (Gatignon and Xuereb, 1997). In this regard, entrepreneurial orientation that organizations are able to identify and exploit opportunities and accepting risks and resource merging, has joined his new world and fits together And also, technological orientation and more important focus on the adoption of new technologies and applications to organizational innovation; it seems essential (Hisrich and Peters, 2002; Yu *et al*., 2013).

Accordingly, the fundamental question in this study is whether the development of organizational innovation and entrepreneurial and technological orientations are affected in information technology organization of Iran? The effect of each of these orientations on organizational innovation is to what extent and which one is more

effective? This study is high importance due to governance mission of the organization under study to manage, support and organize the affairs related to security and development of information technology and its application in the country in one hand and increasing speed of evolutions and revolutions in this area and emphasizing on important topics such as innovation, entrepreneurship and information technology development in the country including development plans.

The theoretical framework and hypotheses

Entrepreneurial orientation and innovation: The concept of entrepreneurship is to take advantage of the opportunity with effort and persistence and compliance risks associated with financial, social and psychological. Entrepreneurial orientation focuses on the acquisition of external knowledge and develops attitudes towards change (Zhou *et al*., 2005). Thompson (1999) believes that the entrepreneurial orientation is comprehensive needs and essential for all organizations (government and private voluntary etc.) with any size (large, medium and small). From the perspective of Miller (1983) an entrepreneurial company is the one of the process such as product innovation, taking the risky investment decisions, initiatives. There is a significant relation between corporate entrepreneurship and innovation. A positive correlation between entrepreneurship and innovation is factor that cause organization reach to success and dynamic stability and entrepreneurship and innovation are concerned within organizations continuously. Evidence suggests that an entrepreneur organization leads to better performance (Hughes and Morgan, 2007; Runyan *et al*., 2008; Slotwinski, 2010). In a multivariate analysis of 51 study, demonstrated a relatively generally large positive correlation between entrepreneurial orientation with corporate performance regard to the amount of growth and profitability (Moghadam and Hejazi, 2014).

- H_1: Entrepreneurial orientation has a positive and significant impact on organizational innovation

Technological orientation and innovation: Oriented technology, prominently focuses on the adoption of new technologies for the modernization of features and applications as necessary for organizational innovation (Yu *et al*., 2013). Technological orientation leads to enhance the ability of companies and gain Significant technological foundations and use it in the development of new products (Gatignon and Xuereb, 1997). Tanriverdi states that the technological orientation to understand the needs of knowledge in the business units and lead in facilitating the identification of sources and motives organizational units for knowledge. Venkatraman (1989) states that Technological orientation in addition to creativity and technological change cause to trends and to find the root of the problem and produce the best solution. Zahra and Gravis (2000) defined technology as one of the key drivers in the company's to the modernization that can be key ideas to change. These changes are redefining business concepts and organizations while new innovative systems are design and implement Organizational innovation is value creation of new technology or new business activities in terms of new products or processes. Keeble and Wilkinson (2000) argues that, early features of companies with advanced technology, high level of R and D intensity and high level of innovation activities is fundamental. According to Thornhill (2006) where the pace of change is high, company has more emphasis on efforts in research and development of products, processes and technologies to overcome technological barriers and thereby distinguish their products compared to other competitive company:

- H_2: Technological orientation has positive and significant impact on organizational innovation

MATERIALS AND METHODS

Sample and method: The study interm of purpose and nature is applied and the methodology is (non-experimental) descriptive and the research design correlation regression. The study samples are all staff of Iran information technology company and they were 400 people. According to statistic society size, the number of Cochran's sample size was 196 people. For data analysis, was used descriptive statistics such as percentage, mean and standard deviation. These variables include organizational innovation (as a dependent variable), entrepreneurial orientation (as independent variables) and technological orientation (as independent variables) To measure the variables used the questionnaire of Yu *et al*. (2013) which contains 4 questions for organizational innovation, 3 questions for entrepreneurial orientation, 4 questions for technological orientation are as Table 1 and based on the Likert scale (1 = strongly disagree to completely I agree = 5). To achieve the research objectives of regression analysis (multiple linear) to investigate the relation and predictor situation of independent variables to the dependent one was analyzed by using SPSS Software. The method of data collection was field method.

Criteria

Durbin Watson test: A regression assumptions of independence of errors from each other and accordingly to assess the independence of each test errors, Durbin

Table 1: Study questionnaire (Yu *et al.*, 2013)

Variables	Ranges (1-5)				Questionnaire
Entrepreneurial orientation					
1	2	3	4	5	We often are predicted business processes by using essential parameters
1	2	3	4	5	We often follow business processes in organizations and show quick response to them
1	2	3	4	4	We strive to explore opportunities to expand business
Technological orientation					
1	2	3	4	5	Information systems plays an important role in our process of making decision
1	2	3	4	5	We actively launch information systems and use of outcomes data.
1	2	3	4	5	When faced with strategic decisions we usually do a comprehensive analysis
1	2	3	4	5	We use technology to support strategic planning we would like
Organizational innovation					
1	2	3	4	5	We're quick respond to our customers
1	2	3	4	5	We will act quickly to introduce new products or services
1	2	3	4	5	In our organizations innovation is encouraged
1	2	3	4	5	Our organization as an innovator in the offering of new goods (services) is popular

Watson was used. If this statistic is in the range of 1.5-2.5, the assumption of independence between the errors accepted and regression can be used.

Frequently distribution histograms: Errors must be normally distributed with zero mean. By comparing the frequently distribution histograms of if the distribution of error is almost normal and standard deviation and average small is close to zero regression can be used.

Tolerance and variance inflation factor: Should not be a linear relationship between the variables. The linearity test tolerance parameters and the Variance Inflation Factor (VIF) were examined. The meaning of the variance tolerance is an independent variable that is not explained by other independent variables The amount of it is between zero and one and indicated the independent variables to what extent which are linearly related to each other the more amount of tolerance closer to one alignment amount is lower and vice versa. Another parameter is variance inflation factor which is result of one to the value of tolerance if this parameter is higher than 2 the amount of linear is more. Interpreter of variance inflation factor is opposite to tolerance That is what these coefficients go up coefficients of variance and regression one increases as a result of the regression model to predict is not good.

The t-statistic: The statistics shows significant importance of each independent variable in the model variables that have a statistically significant effect on the changes in the dependent variable. At a significance level of 90, 95 and 99% with a minimum value of 1.64, 1.98 and 2.58 compared. If the amount earned above the minimum level of ensuring statistics considered that the relation or hypothesis is confirmed.

The validity and reliability: Cronbach's alpha coefficient was used to evaluate the reliability of the questionnaire. This coefficient varies between 0-1and if it is much closer to one questionnaire have higher reliability. If the alpha value is >0.7, the reliability is good and if between 0.5-0.7, reliability is the average and if <0.5, questionnaire have no reliability (Mirzade, 2013).

RESULTS AND DISCUSSION

Descriptive statistics: These results indicate that 52% of respondents were male and 48% of respondents are women. Those with a Bachelor's degree (47.96%) form the largest sample size People aged 20-30 years, 39.76, 47.46, 31-40 years and 41 years are 12.76% and form the sample size People with work experience of one to five years, are the most (45.41%). Table 2 shows the mean and standard deviation of regression variables.

Inferential statistics: In this study, Cronbach's alpha coefficient was used to test reliability. According to analysis by Software SPSS value of this test for entrepreneurial orientation questionnaire (0.70), Technological orientation (0.87) and organizational innovation (0.80), respectively, indicating that the test of reliability is acceptable. Table 3 Pearson correlation coefficients between variables and significance level regression test to show it. Decision criteria (Sig. = 0.000) for each pair of variables is shown. High correlation between each pair of variables, cause no correlation hypothesis between them.

According to Table 4, analysis of regression coefficients and weights beta (Beta) shows that the effect of technological and entrepreneurial orientation is positive and significanton organizational innovation. Technological orientation with impact factor 0.389 has highest effect on innovation and entrepreneurial orientation with impact factor of 0.285 is in second priority. According to coefficient, technological orientation value compared to entrepreneurial orientation variable has highest effect in organizational innovation in the organization under study. In other word, technological

orientation has important role in regression equation, because lead to changes in standard deviation of technological orientation of 0.389 or standard deviation of 38.9% in organizational innovation performance. While standard deviance in entrepreneurship has 0.285 standard deviance or 28.5% changes in organizational innovation. Statistic t (up from 2.58) and according to the decision criterion value (Sig. = 0.000) shows the relative importance of presence in each independent variable in the model. The variables have statistically significant effect on the changes in the dependent variable. The test linearity between variables, the amount of tolerance is close to one and show that the linearity is less. VIF value or variance inflation factor is <2. In Table 5, ANOVA showed significant predictive power of regression equation is likely to top 95%

In Table 6, in relation to the amount of variance explained by the variables of the study, it was concluded that 31% of the variance in organizational innovation is explained by the regression and Durbin-Watson statistic with a value of 1.887 at a distance of 1.5-2.5 and so the assumption of independence between errors accepted and use of regression.

By comparing the frequent distribution of histograms of errors and normal distribution curve Fig. 1 observed that the standard deviation is close to zero (0.995) and the mean is small and so almost errors is normal and regression analysis of the data is valid.

The importance and necessity of organizational innovation, regard to competitive today world, the lack of effectiveness of traditional attitudes and repeated reactions to face with changes especially for governmental organizations for active and targeted participation in national and international division of labor system as well as providing opportunities and benefits for gaining more share for global standards in comparison with other countries, especially those involved with updated technologies the motivation to establish this study was to examine the effect of entrepreneurial orientation and technological orientation on organizational innovation in the form of regression model is considered. Information technology organization of Iran with regard to governmental role of it in management, support and organization of matters relating to the security and development of information technology and its applications in the country on the other hand today changes in this area was chosen as the research community results of general utility model regression implies that significant positive impact entrepreneurial orientation and Technological one on the development of organizational innovation in organization of information technology of Iran should be emphasized In connection with the explained variance, the thirty and one (31)% of the variance in the dependent variable organizational innovation is explained by the regression.

Table 2: The mean and standard deviation of regression variables

Variables	Mean	SD	N
Organizational Innovation	11.2347	3.62131	196
Entrepreneurial orientation	9.7755	2.67383	196
Technological orientation	11.9541	3.90173	196

Table 3: Pearson correlation between variables in the regression

Parameters/Variables	Organizational innovation	Entrepreneurial orientation	Technological orientation
Pearson correlation			
Organizational innovation	1.000	0.414	0.483
Entrepreneurial orientation	0.414	1.000	0.332
Technological orientation	0.483	0.332	1.000
Sig. (1-tailed)			
Organizational innovation	-	0.000	0.000
Entrepreneurial orientation	0.000	-	0.000
Technological orientation	0.000	0.000	0.000
Organizational innovation N	196.0	196.0	196.0
Entrepreneurial orientation	196.0	196.0	196.0
Technological orientation	196.0	196.0	196.0

Table 4: Regression coefficient

	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
Model 1	B	SE	Beta	t-values	Sig.	Tolerance	VIF
Constant	3.15	0.927	-	3.40	0.001		
Entrepreneurial orientation	0.385	0.086	0.285	4.47	0.000	0.890	1.124
Technological orientation	0.361	0.059	0.389	6.11	0.000	0.890	1.124

Table 5: Analysis of regression

Model 1	Sum of squares	df	Mean square	F-valuess	Sig.
Regression	781.9920	2	390.996	42.509	0.000[a]
Residual	1775.212	193	9.198		
Total	2557.204	195			

[a]Dependent variable: Organizational innovation

Table 6: Summary of Regression Model

Model	R	R^2	Adjusted R^2	SE of the estimate	Durbin-Watson
1	0.553[a]	0.306	0.299	3.03282	1.887

Predictors: (Constant) entrepreneurial orientation, technological orientation; Dependent variable: organizational innovation

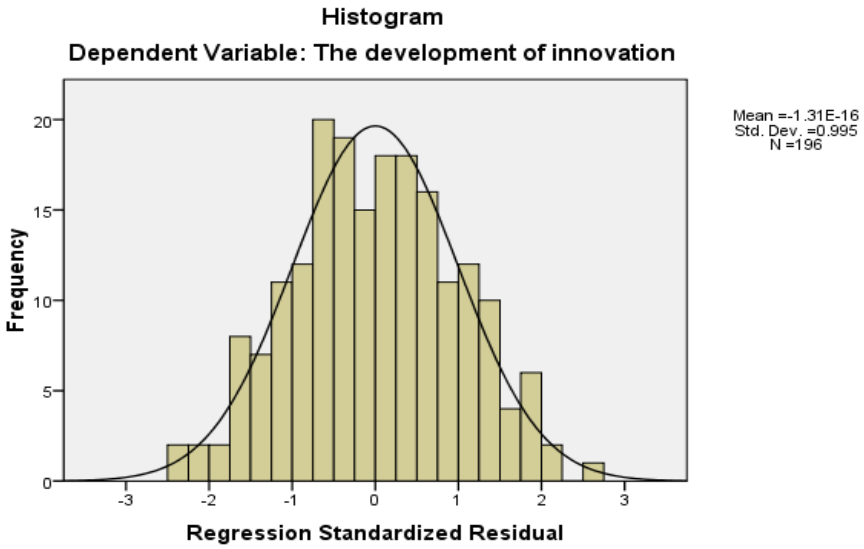

Fig. 1: The Frequency distribution of errors and normal distribution

model. In this regard, technological orientation variable to entrepreneurial orientation one shows higher impact factor in the development of organizational innovation.

This study with researchers such as Runyan *et al*., (2008), Miller (1983), Zahra and Gravis, (2000), Yu *et al*. (2013), Ventakaraman (1989); Gatignon and Xuereb (1997) and Zhou *et al*. (2005) are compatible. However, some experimental studies suggest poor communication and even negative between entrepreneurial orientation and performance (Morgan and Strong, 2003; Quoted *et al.,* 2013). In addition, Hughes and Morgan (2007) have claimed that research on entrepreneurship are failed to analyze the importance of entrepreneurial orientation in explaining the performance (Quoted *et al.,* 2013). Also, someone defined technology as a newness technology and others have no insisted on newness of the technology (Thornhill, 2006). Some studies have reported that innovation is not effective on firm performance or negative performance results for innovation found. On the other hand, organizational sociologist scientists (Wilson, 1989) believe that governmental agencies based on the bureaucratic structure who are trying to maintain stability and resistance to change and have no tend to show creativity and innovation (Azadehdel and Maryam, 2010).

Managerial implication: Based on regression models of research, higher reaction of information technology organization to predict, follow to explore opportunities and to use the technologies in support of strategy planning show tends and when faced with strategic decisions, actively use it outputs information, can be predicted as much as in development organization innovation have been encouraged, the organization to meet the needs and expectations of act fast. In the execution of their duties to achieve success and reputation and overall expand (mission). Therefore, the amount of organizational innovation in the organization under study is changed depending on the degree of the benefit of entrepreneurship and technology effectively. However, the development of organizational innovation is not act specialized but it is use of their specialist in effectively way while the development of innovation is a change process so, it is necessary in study organization change management. Also, innovation performance is a function subordinated by being good management and key staff in an organization. Senior management and key staff is responsible for the efficient use of resources (human and material) and preventing of wastage of them in the production of abortive and cheap results.

CONCLUSION

The main point is having a systematic approach to issues and also due to the development of innovation in the framework of strategic management. Strategic and entrepreneurial technological orientation may concern the changes in the alignment with the resources and increases flexibility of organization.

LIMITATIONS

Unwillingness to respond by some of the participants cause the possibility of trend some of the participants in giving respond to some questions, including restrictions.

SUGGESTION

This reachers can be carried out in other organizations and in particular similar organizations and results of them compare with this study. Innovation is influenced by various factors and so researchers in the future be able to add, model and test other factors affecting on organizational innovation.

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