

Evaluating the Moderating Role of Innovation and Supply Chain Strategy in Relation between Environmental Uncertainty and Organizational Performance

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Abstract- Significant effect of environmental uncertainty on organization performance and moderating effect of innovation as well as supply chain strategy has been caused to investigate the moderating role of strategic orientation and innovation in relation with the organization performance and environmental uncertainty. Based on purpose, this study is considered as practical study and in terms of data collection is categorized in the descriptive study in field type study. According to data analysis approach, this study is categorized as scientific studies. The population of this study consists of all managers and directors of active companies in the oil industry of Islamic Republic of Iran. In which, the number of 197 people was selected using the available sampling method and the Cochran formula. The data required in this study were collected using questionnaires in both interview and via mail. Data analysis has been done by using structural equation modeling and partial least squares by means of Smart-PLS software. The results show that environmental uncertainty has meaning full effects on the organization performance which these effects are positively moderated by innovation and strategic orientation.

Key words: *innovation, strategic orientation, supply chain strategy, environmental uncertainty, organization performance.*

1. Introduction

The petrochemical industry in general and the oil and gas industry in particular have witnessed tangible progress over the years. So that, despite the high levels of oil embargo against Iran, it still has been able to incorporate a desired degree of performance and prevents the loss of quality indicators in its functional areas. Despite this persistent struggle in

developing and improving, this industry still has faced serious challenges, especially in relation to profitability. It is the fact that, formal and informal interview with some of the managers of this industry is an evidence of this claim. The conducted field survey during the informal interview with such company directors shows that in recent years, plenty pressures from environment are imposed to organization which has irreparable cost. This phenomenon can be attributed to the weaknesses of the management in relation to the control of the outer component [1], components that can create uncertainty or put the industry at a high risk. Environmental uncertainties refer to the variety of components in the environment around the business which has a high potential for influencing the performance indicators, so that, the responsible managers are forced to react in this regard [2]. However, this effect can leave contradictory results from a completely positive spectrum to a completely negative spectrum depending on the internal conditions of the organization and its constituent elements, the elements that are not negligible. Moreover, managers with precise and correct use of these elements, can moderate the impact of environmental uncertainty on the performance of its union in a way and the extent that it is possible [3]. The investigations [4, 5, 6, 7] in this area of study show that organizational innovation is considered as one of the most important elements that can modify the effect of environmental uncertainty. The proof made by related studies shows that when a business has a proper planning to utilize of human capital ideas, or develop clear and transparent guidelines to enhance the creativity of its employees to take

advantage of human capitals, in existing of threats due to the current situation and details of the affairs, it can create significant changes in its services or products and in its own processes. Additionally, manage or eliminate the elements of the threat, by developing and applying new ideas [8,3]. Another factor that can make tangible modifications in the relationship between uncertainty and the organization's performance, that determines the innovative orientations of the organization, is the strategic direction in which in former investigations [9, 10 ,3] is mentioned as significant key factor against the environmental uncertainty. The strategic orientation of each business in order to meet its long-term goals has a significant role in dealing with complex environmental elements. The strategic orientation is to determine how managers and human capital will face their work challenges and challenges in order to best meet these challenges and to achieve goals [10]. In order to achieve the correct response to complex environmental elements, policy makers and managers should push their strategy towards greater flexibility. The unpredictability of the environment around the organization that affects the operations and processes of the organization is called environmental uncertainty. All uncertainty forms, whether categorized as speculative uncertainty or as a dangerous uncertainty, include common elements that include the following four elements:

- Content
- Activity
- Conditions
- Consequences

Content usually is the context, condition, or environment in which uncertainty is defined and specifies the activities and conditions associated with that situation. In other words, the content provides an overview of all the implied consequences. Without specifying an appropriate content, one cannot definitely determine which activities, conditions and outcomes should be considered in the analysis of uncertainty and management activities. Therefore, the content provides the basis for all future activities of uncertainty management. After creating the content, the remaining elements in the unreliable are properly examined. An activity element is an action or incident that causes uncertainty. Activity is an active element

of uncertainty and should be combined with one or more special conditions for the emergence of uncertainty.

All forms of uncertainty come with an activity. Without activity, there is no possibility of uncertainty. While activity is an active element of uncertainty, the constituent condition of the passive element is uncertainty. These conditions determine the current situation or a set of situations that can lead to uncertainty. Combination of conditions with a particular initiator activity can produce a set of outcomes. Consequences, as the last element of uncertainty, are the results and potential effects of an activity in combination with a particular condition. With appearance of complicated elements, other former strategic orientations did not able to deal with the risks and should have be made major changes in the strategic orientations to compensate the costs and the inability to change the organization [11]. The strategic orientation is to improve organizational performance against environmental threats. Thus, that is considered to be the vital extract of the organization, which has grown considerably from the point of view of its past years. Therefore, the main research question is, "Do innovation and strategic orientation modify the impact of environmental uncertainties on organizational performance?"

In the first part of the present article, we discuss the concepts of variables and the relationship between them, along with studies confirming the theoretical framework of the research, and then discussing the method used to evaluate the relationship mentioned. In the end section of the article, we will describe the results of the study and determine the lines of the guide for future studies.

2. Research methodology

2.1. Type of research

This study in terms of purpose is applied. So, its results are used to formulate the strategy of the oil company and other related institutes. In addition, in terms of collecting data, this survey is considered as descriptive-field research. Also, based on the approach which is used in data analysis, this study has been put into scientific research.

2.2. Statistical population and sampling

The statistical population of the study consisted of all the top managers and supervisors of the companies' active in the oil industry of the Islamic Republic of Iran in 2018. In order to make this study feasible, considering the high volume, cost and time, as well as the lack of access to a number of managers, a suitable sampling method is used. It is aimed to sample the statistical population. To achieve this goal, by using the Cochran sampling technique, 190 individuals were selected as the research sample. In order to ensure that the sampling was sufficient, 220 questionnaires were distributed among senior managers and supervisors. Finally, 197 questionnaires were returned which were used for analytical analysis.

2.3. Assessment

The variables studied in this study were evaluated through questionnaires. To measure environmental uncertainty, the [3] questionnaires consisting 15 indicators, [4] for organization innovation consisting of 6 indicators and [2] for organization strategic orientation consisting of 12 indicators based on Likert Seven Spectrums, get employed. Also, the validity of these questionnaires has been confirmed with the help of internal and external research in this field and with the opinion of the professors and experts in this field. Finally, the reliability has been examined and confirmed with the help of Cronbach's Alpha Coefficient Test.

2.4. Analytical method

Data analysis in this study was done in two sections. In the first part, the results of descriptive statistics of the demographic variables of senior managers and supervisors in the research sample are examined. At the next step, the results of descriptive statistics of the main variables of the research are presented and then, the fit research model and the hypotheses of this paper using the structural equation modeling method with partial least squares approach is investigated by means of Smart-PLS software.

3. Findings of the research

3.1. Demographic findings

In order to study the demographic characteristics of the sample, variables such as age, gender, marital status, work record, education, employment type and monthly income were used. The results of these variables investigation are presented in Table 1.

Table1. Demographic characteristics

variable	Interval	Abundance	variable	Interval	Abundance
Age	<30	18	education	B.A	14
	30-40	68		MSc	29
	41-50	76		P.H.D	54
	50<	35	employment	Official	62
gender	Male	118		Contractual	85
	F-male	79		A pledge	26
marital	Single	45		Others	24
	Married	152	Income	<950usd	24
Work experience	<10	32		950-1900usd	104
	10-20	86		1900 usd<	69
	20<	79			

3.2. Research model Fit. In this section we are going to fit the conceptual model of the research, so that the hypotheses can be evaluated and analyzed by confirming the fit of the model. In order to achieve this goal, the mean indexes, standard deviations,

indicators loadings, convergent validity, convergent validity roots, coefficient of correlation of variables and composite reliability, are investigated. The results are depicted in Table 2; moreover, Divergent Validity and Reflexive quality test are reported in Table 3.

Table2. Fit research model `

Variable	average	Standard deviation	Convergent Validity	Composite reliability
Environmental uncertainties	5.439	0.838	0.610	0.701
Organizational Innovation	5.593	0.882	0.562	0.840
Organizational Performance	5.247	0.924	0.566	0.921
Strategic orientation	5.629	0.882	0.658	0.894

Table3. Divergent Validity of Research Model

Variable	Environmental uncertainties	Organization Innovation	Organization Performance	Strategic orientation
Environmental Uncertainties	0.781			
Organizational Innovation	0.741	0.753		
Organizational Performance	0.749	0.719	0.745	
Strategic Orientation	0.226	0.257	0.236	0.811

3.3. Structural Equation Model assessment

In this study In order to measure the fitting of the model by using the sheared index and coefficient of determination, the Goodness of Fit Index (GOF) was calculated by the following formula. The index (GOF) indicates that to what extent the visible variables of the covariance matrix are well implemented in a particular model. In this study, the GOF value is 0.35 which shows that the structural equation model is worthy fitted.

$$GOF = \sqrt{\text{Communality}} \times \overline{R^2} = 0/35$$

3.4. Structural Model of Research

It is necessary to observe the direct impact of environmental uncertainty on organizational performance.

The model of the path coefficients is described in Fig. 1:

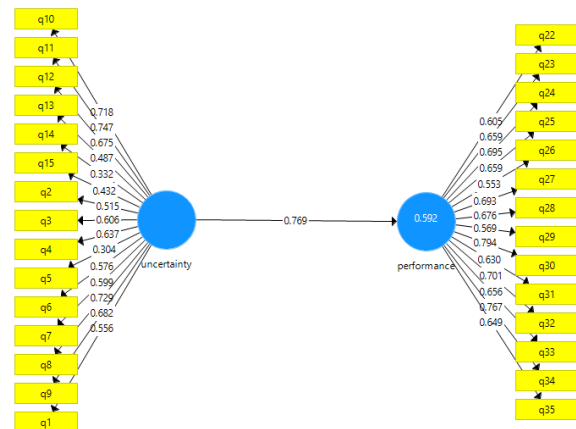


Figure1. The model of path coefficients of direct effect of environmental uncertainty on

organization performance

As shown in Fig. 1 indicator load of the executed model are above 0.3, which indicates that the acceptable level of model indicator loads of the

variables. In the follow, the t-values are presented in fig. 2:

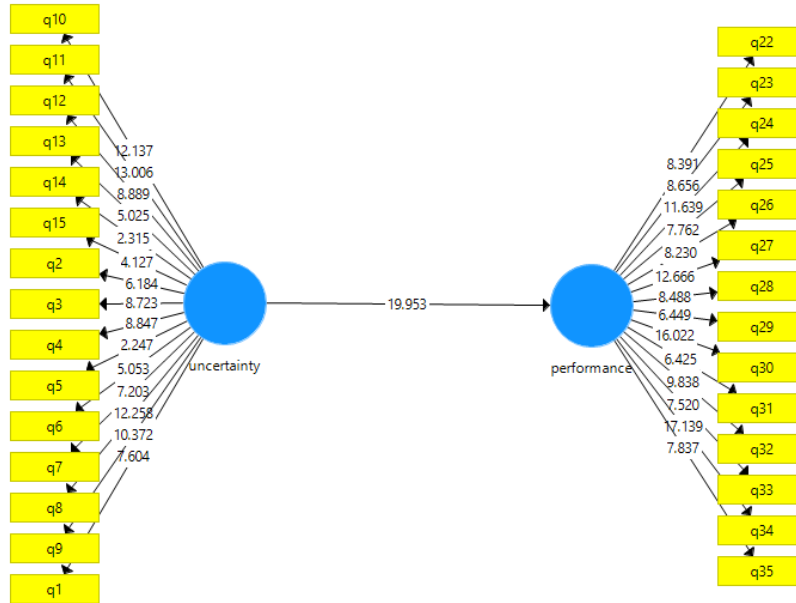


Figure2. t-values of direct effect of environmental uncertainty on organization performance

According to diagram (Fig. 2), if the t-value exceeds 1.96, it indicates the significant effect of

environmental uncertainty on organizational performance. The result is shown in Table 4:

Table4. The Effect of Environmental Uncertainty on Organizational Performance

Hypothesis	Path Coefficient	t-value	Significance Level	Result
Environmental uncertainty has a significant effect on organizational performance	0.769	19.953	0.000	Confirmation

The moderating role of innovation and strategic orientation in the impact of environmental uncertainty on organization performance are analyzed

respectively, in which the path coefficients model and t-values of the moderator role of innovations are described in Figures 3 and 4:

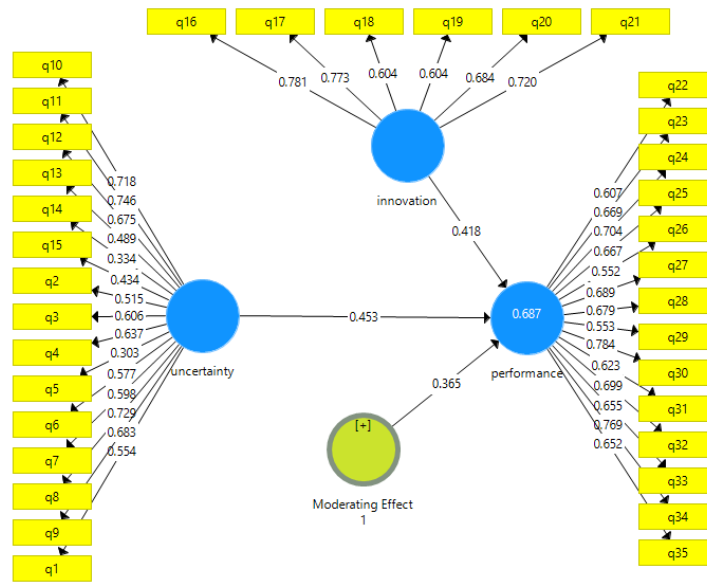


Figure3. The moderator roles of innovation of path coefficients of model

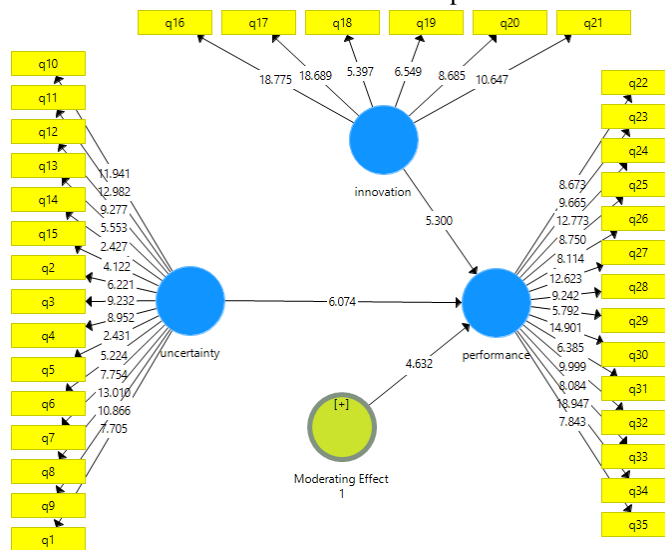


Figure4. The t-values moderator role of innovation

The path coefficient model and t-values for moderator role of strategic orientation are described in Figures 5 and 6:

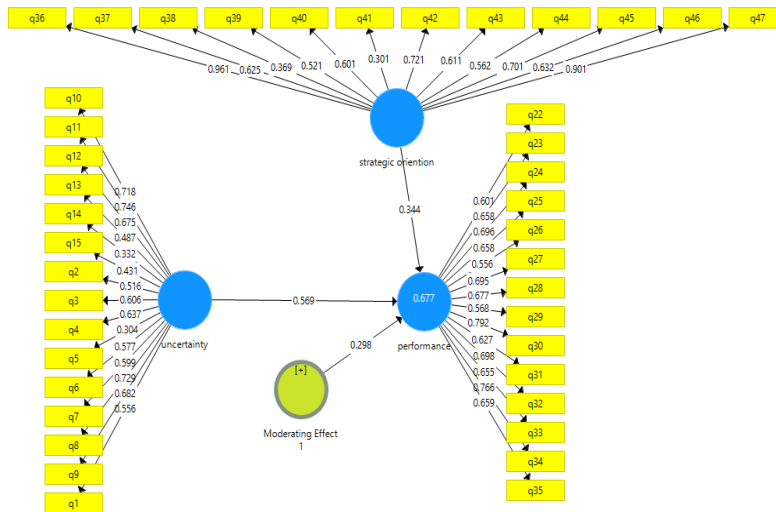


Figure5. The path coefficients model moderating of role strategic orientation

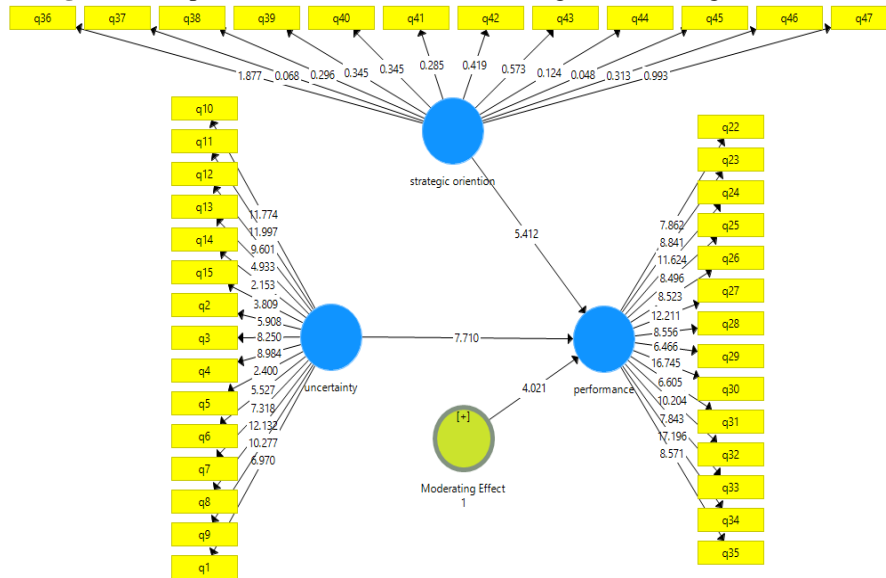


Figure6. t-value of moderator role of strategic orientation

Concerning path coefficient model, the moderating role of innovation and strategic orientation each variable have acceptable indicator load (greater than 3). Therefore, it can measure the hypotheses based on

the implemented model, which indicate that the results in the t-values correctly observed. The final result of the survey is described in fig 5.

Table4.direct effect of environmental uncertainty on organization performance

Hypothesis	Path Coefficient	t-value	Significance Level	Result
The significant effect of environmental uncertainty on organizational performance is moderated by innovation	0.365	4.632	0.001	Confirmation
The significant effect of environmental uncertainty on organizational performance is moderated by strategic tendency	0.298	4.032	0.002	Confirmation

As shown in the diagrams and tables, based on the values of path coefficients and t-values, it can be stated that environmental uncertainty has a significant effect on organizational performance, which can be

moderated by innovation and strategic orientation of the organization.

4. Discussion and Conclusion

According to studies which carried out in this area it is predicable that the moderator role of innovation and strategic orientation on business in the sample was verified. This results in consist of two major axes. In the first main axis, the results obtained in this study indicate that innovation is able to make a significant role to moderate the effect of environmental uncertainties on the performance of the organization. Positioning an organization in an environment with high environmental uncertainty can cause the organization to cope with tensions and changes in function of the business that the effects would be clear by run a long time. In this situation, an organization will be able, by utilizing new and innovative ideas that routs from the human capital minds, make significant changes in products and services and adapted itself to the created condition or benefited from this situation as an opportunity. The result has good consistency with the studies conducted by [3, 6]. In this regard, it is suggested that a certain time should be devoted to creatively think of the employees in their work era, in that in necessary, it would be possible to take advantage of the ideas proposed by the employees. In addition, organizations must have robust and specialized R&D units in order to assess the status of environmental uncertainty. In the second main axis, the result shows that the significant effect of environmental uncertainty on organizational performance is adjusted by the strategic orientation of the organization. Each organization, according to the nature of its activity, pursues a specific strategy that by run a time and utilizing the facilities try to achieve its goals in accordance with the apportioned mission. In this way, there are factors that create a diverse and complex environment in which impose many risks and uncertainties for business. In this situation, policymakers and organization decision makers, both executive and non-executive, should focus on strategies that can change and ruin the impact of environmental complexities and variations. This could be a principle that is in agreement with the studies conducted by [3, 9, 12-15].

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