

# Investigate the Mediating Role of Technological Innovation and Entrepreneurial Orientation in the Impact of Organizational Innovation on Export Performance

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**Abstract** Despite the importance of the role of technological innovation and the entrepreneurial orientation in export performance, no significant attention has been paid to the issue in previous studies related to management science. Therefore, this study examined the mediating role of technological innovation and entrepreneurial orientation in the impact of organizational innovation on export performance. This was an applied study in terms of purpose and a descriptive research with survey method in terms of its nature. The data collection method was a questionnaire. Statistical population of the study consisted of 235 managers and exporters of the top exporting firms. Statistical analysis was performed using Smart PLS software. The results indicated that technological innovation and entrepreneurial orientation affect the export performance through organizational innovation. Other results of the research showed that technological innovation and entrepreneurial orientation affect the export performance.

**Keywords** Technological Innovation, Entrepreneurial Orientation, Organizational Innovation, Export Performance

## 1. Introduction

Exports are known as the most common way for companies, especially small and medium enterprises (SMEs), to enter foreign markets. One of the main reasons for this is that exports need less resources compared to other internationalization methods. Hence, export sales are increasingly considered as an appropriate way for the company growth.

What is now the focus of attention for regional and trans-regional integrated markets is the growing tendency for the exchange of goods and services based on modern scientific technologies. Therefore, the use and application of state-of-the-art knowledge and the harmonization of domestic products with the desired global production standards are among the priorities and requirements of economic policymakers in the strategies of export development. Expanding the scope of innovations, initiatives and infrastructures to its proper use in the field of national production, has a major impact on the level of exports with advanced technology.

Thus, the most important factor in the survival and strong

presence of any firm in the domestic and international economic arena is the further development of an entrepreneurial approach with innovation. The increasing development of these businesses, in general, increases the productivity of the factors produced and, in the long run, creates a wealth and competitive advantage for the country's economy and ultimately guarantees the survival of sustainable development in the country. Moreover, it should be noted that the existence of environmental challenges and changes in management processes have also highlighted the role of these institutions.

Therefore, attention to factors affecting the growth and creation of a suitable platform for updating technology and organizational innovation is essential. Additionally, innovation and innovative entrepreneurial orientation can bring certain advantages for innovative companies that the benefits directly or indirectly affect the company's export performance. So the main question of the research is whether organizational innovation, through technological innovation and entrepreneurial orientation, affect export performance?

## 2. Subject Literature and Research Background

Exports are one of the most vital parts of each country's economy. Exporting goods and services is the most important source of foreign exchange earnings in each country, which holds the pulse of the active economy of the

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world. Under these situations, companies are trying in different ways to sell their goods and services around the world and maximize their profits (Karampour, 2012).

Companies with export can offer their products in foreign markets with the least involvement in local activities. However, the development of exports and the correct entry into the global market, as well as maintaining the conditions and persistence in it cannot be achieved except with a definite and sustainable export strategy. Thus, considering the necessity and importance of developing export activities, companies need to identify the factors affecting their export performance for survival and success in these activities (Shamsuddoha & Yunus, 2006).

One of the important factors affecting export performance is innovation and enjoyment of appropriate technology, which can play a very important role in economic prosperity and maintaining competitiveness. Maintaining competitiveness in industries with high technology for the national economy is of great importance, because high-tech industries lead to higher value added products and higher levels of productivity. The results obtained from the overflow of activities with superior technology to other sectors of the economic system will lead to increased productivity and business expansion (Seyoum, 2004).

Thus, the most important factor in the survival and strong presence of any firm in the domestic and international economic arena is the further development of an entrepreneurial approach with innovation. The increasing development of these businesses, in general, increases the productivity of the factors produced and, in the long run, creates a wealth and competitive advantage for the country's economy and ultimately guarantees the survival of sustainable development in the country. Moreover, it should be noted that the existence of environmental challenges and changes in management processes have also highlighted the role of these institutions.

The traditional concept of entrepreneurship or entrepreneurial activity was an immediate action to create new products or services or create a new business, which would lead to the abandonment of existing products or services and relationships with market. But entrepreneurship, rather than to be considered as an event or incident, is seen today as a process rooted in organizational culture, seeking to create value by available resources through exploiting opportunities (Tajeddini, 2010).

Entrepreneurial orientation refers to a set of measures and policies that underpin the emergence of entrepreneurial decisions and activities in companies. That is why many researchers consider it as a strategic orientation to realize the competitive advantage of companies, in which companies achieve this by designing, developing, and implementing their own goals and strategies based on entrepreneurial principles. As well as, the entrepreneurial orientation is a kind of management philosophy and overall behavior of the company associated with the entrepreneurial nature (Rauch et al., 2009).

Therefore, development and innovation in production

technology should be emphasized for the production of products or the provision of services and the entry into international markets. From this perspective, intra-organizational entrepreneurship involves producing new products, improving the quality of the current product, and applying modern production methods and procedures.

## 2.1. Research Background

### 2.1.1. Internal Researches

Darisavi (2008) conducted a study entitled "Examining the barriers to exports of non-oil exports" that the results of this study showed that the export development strategies were the study of successful economic policies and the scientific investigation of all theoretical aspects and the evaluation of performance of firms affecting the development of exports and dealing with economic challenges.

Feizi (2010) presented a study entitled "Investigating the barriers to export citrus and providing strategies to increase exports". The results of this study indicated that important components such as the facility and storage of the packaging system warehouse, the transportation system and the proper marketing, and the importance and impact of each of these four components in increasing the export of citrus should be examined and identified.

Rahmany (2005) carried out a study entitled "Identifying and prioritizing export barriers and providing export development strategies for Small to Medium Enterprises (SMEs)". The results indicated that hypothesis of the cultural level of society in conjunction with exports and lack of specialized training was rejected. While some previous works have focused on barriers to company exports, there is a lack of studies on evaluating the effects of these issues on export performance, particularly in developing countries. It is hoped that results of this article will help managers and policy makers to improve the company's performance and, consequently, the country.

Shojaei (2007) conducted a study entitled "Evaluation of non-oil export development strategies". The results of this study showed that, based on evaluating the average score of conservative strategies in the quantitative strategic planning matrix, the strategy of focusing on manufactured products and influence in the regional and halal markets was selected as the best strategy.

Kazemi (2012) conducted a research entitled "Identifying factors affecting the export of technology-based products with an entrepreneurial and market-oriented approach". In his research, he showed that entrepreneurship and human resource management were the crucial significant drivers for innovation and customer value.

Hasanpour (2013) performed a study entitled "Development of export of high-tech products". The results of the research indicated that innovation contributed to the sustainability and development of the competitiveness of the industries and had a strong relationship with research and development as well as human resource capabilities.

Safari & Ghareh Bashlouni (2014) carried out a study entitled "Investigating the relationship between entrepreneurial marketing and marketing performance through innovation" (Case study: Companies active in three industrial automation, telecommunications and communications, and computer & digital equipment industries). The results of evaluating the intended model showed that entrepreneurial marketing had an impact on innovation, and innovation affected the marketing performance of all three industries. As well as, learning orientation and organizational structure had a mediated effect on the relationship between entrepreneurial marketing and innovation.

Garousi & Zamani (2015) carried out a research entitled "Explaining the impact of market orientation and management innovation on firm performance, with an emphasis on the mediated role of technological innovation". The results of this study indicated that market orientation and management innovation had a positive and significant effect on technological innovation. Also, all three variables of market orientation, management innovation, and technological innovation in products and processes can lead to superior performance of the firm.

Karami et al. (2017) examined the effect of entrepreneurial orientation on export performance of small and medium companies with mediated role of learning ability. The results of studies done by the researchers confirmed the impact of entrepreneurial orientation on export performance and the mediated role of learning ability in this model.

#### 2.1.2. External Researches

Kedia (2002) conducted an empirical investigation entitled "Factors inhibiting export performance of firms". The results showed that the most important factors to export barriers were lack of information technology-based programs, lack of specialized consulting services, lack of communication infrastructure (highways and airports, etc.), and lack of physical geographical spaces.

Tesfom (2006), in a study entitled "A classification of export marketing problems of small and medium sized manufacturing firms in developing countries," pointed out that export barriers often affect the competitive advantage of firms. Therefore, product barriers influenced by the export and marketing strategy of the company can be grouped into the appropriate quality and technical capability of the product. Also, the risk of non-payment by foreign buyers was another barrier to exports.

Carlos (2010) published carried out a study entitled "Export Barriers: Investigating the attitudes of SMEs and exporters/non-Exporters". The results indicated that lack of knowledge of potential markets, lack of qualified personnel in exports, lack of technical fitness and lack of qualified personnel resources were the main barriers to exports; and control of the flow of physical products and understanding of the target market were considered to be the biggest export

barrier.

Alderdeh (2013) conducted a study entitled "Export Barriers and International Route: Comparison of Different Companies and New International Investments". The results indicated that export barriers can be, in fact, the prediction of international route. Thus, international route is gradual, which is affected by the lack of skill and knowledge due to positive management orientations and lack of confidence in the destination market.

Alderdeh (2014) conducted a study entitled "Examining barriers to exports in a varying organizational environment." The results of this study indicated that the main barriers to exports in changing environments were government non-cooperation, competition of firms in foreign markets, advertising and pricing policies, high foreign tariffs, and lack of financial capital.

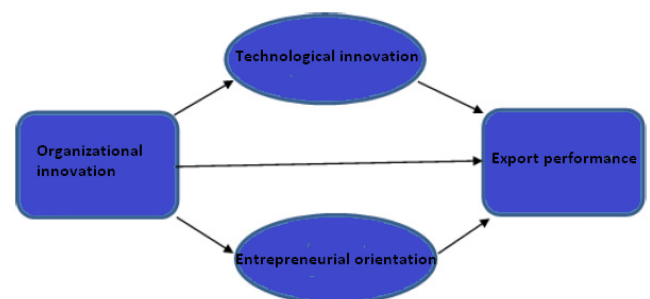
Dohse et al. (2018) acknowledged that the innovation capability is one of the main factors contributing the creation of a competitive advantage, especially in the field of exports.

### 3. Research Hypotheses

- 1) Organizational innovation affects export performance.
- 2) Organizational innovation affects technological innovation.
- 3) Organizational innovation affects entrepreneurial orientation.
- 4) Technological innovation affects export performance.
- 5) Entrepreneurial orientation affects export performance.
- 6) Organizational innovation affects export performance through technological innovation.
- 7) Organizational innovation affects export performance through entrepreneurial orientation.

### 4. Research Models and Variables

Conceptual model of research derived from the Rebaou's??? Model is presented in the following format:



#### 4.1. Research Variables

In this study, organizational innovation is the independent variable of the research, export performance is the dependent variable, and entrepreneurial orientation and technological innovation are the mediating variables. Table 1 shows type

of variables, name of variables, and the Latin equivalent of the variables.

**Table 1.** Research variables

Row	Latin Name of Variables	Type of Variables
1	Export performance	Dependent variable
2	Entrepreneurial orientation	Mediator variable
3	Technological innovation	Mediator variable
4	Organizational innovation	Independent variable

## 5. Statistical Population

In each statistical survey, community is a set of elements we want to make inference in it. Regarding the research objective, which investigated the mediating role of technological innovation and entrepreneurial orientation in the impact of organizational innovation on export performance, so statistical population of the study consisted of all Iranian exporters including 235 exporters.

## 6. Data Analysis Method

In this study, inferential statistical methods are used to analyze the data obtained from the samples. To do this, model is measured in the first stage and then structural model of the research is examined using the Smart PLS software.

To investigate the research hypotheses using the Smart PLS software, the bootstrapping test is also performed to calculate t value.

In order to test the research conceptual model, the least-squares modeling technique (PLS) has been used.

### 6.1. Structural Model Fitness

In order to examine the fitness of structural model in a research, R2 or R-squared coefficients are related to the dependent variables of the model. The criterion is used to connect the measurement part and the structural part applied in structural equations modeling and indicates the impact of an independent variable on a dependent variable. One of the main advantages of the PLS method is that it can reduce errors in measurement models or increase the variance

between variables and items. One of the most useful measures in this case is R-squared value about the dependent variables of the model.

The R-squared value of the study is presented in Table 2.

**Table 2.** R Square value for the dependent variable of the model

Variable	R Square
Technological innovation	0.574
Entrepreneurial orientation	0.623
Export performance	0.834

The R2 values for the endogenous variables of the research model are compared with three values of 0.19, 0.33 and 0.67, which are presented as a criterion value for weak, moderate and strong R2 values. Given the resulting R-squared value for the variables of technological innovation, entrepreneurial orientation and export performance, all of which are more than 0.33, these results confirm the suitability of the above structural model fitness in a relatively strong level.

### 6.2. Structural Model Results

Significance coefficients of the model paths indicate whether the research hypotheses are significant or not? As mentioned above, considering the number of statistical population of 235 people, if these coefficients are greater than 1.96, then the relevant hypothesis is significant at 95% confidence level and confirms the hypothesis. If the coefficients are greater than 2.58, it indicates the significance of hypotheses at the 99% confidence level and the coefficients greater than 3.27 indicates the significance at 99.9% confidence level. In this way, the significance of the effects of the variables and the non-rejection/rejection of the hypotheses is determined using the bootstrapping test. The next step is to determine the intensity of the effects of the variables on each other using the standard path coefficients (Beta coefficients).

Table 3 shows the results of structural model for testing research hypotheses. Considering the values presented in this table, when the significance number is greater than 1.96, then the hypothesis is confirmed. Thus, according to the results reflected in the table, all research hypotheses are confirmed.

**Table 3.** Summary of the structural model results for testing hypotheses

Hypotheses	Standard Coefficient	Significance Number	Hypothesis Result
1) Organizational innovation affects export performance.	0.164	2.478	Confirmation
2) Organizational innovation affects technological innovation.	0.758	13.322	Confirmation
3) Organizational innovation affects entrepreneurial orientation.	0.789	18.227	Confirmation
4) Technological innovation affects export performance.	0.203	2.515	Confirmation
5) Entrepreneurial orientation affects export performance.	0.605	6.993	Confirmation
6) Organizational innovation affects export performance through technological innovation.	0.154	2.515 and 13.322	Confirmation
7) Organizational innovation affects export performance through entrepreneurial orientation.	0.477	6.993 and 18.227	Confirmation

## 7. Interpretation of Research Hypotheses

H1: Organizational innovation affects export performance.

According to the research findings, the hypothesis was confirmed with a significance number of 2.478 and a standard coefficient of 0.164 at 95% confidence level. The significance number of this hypothesis is greater than 1.96, which indicates the direct impact of organizational innovation on export performance with influence coefficient of 0.164 at 95% confidence level.

H2: Organizational innovation affects technological innovation.

According to the research findings, the hypothesis was confirmed with a significance number of 13.322 and a standard coefficient of 0.758 at 99.9% confidence level. The significance number of this hypothesis is greater than 3.27, which indicates the direct impact of organizational innovation on technological innovation with influence coefficient of 0.758 at 99.9% confidence level.

H3: Organizational innovation affects entrepreneurial orientation.

According to the research findings, the hypothesis was confirmed with a significance number of 18.227 and a standard coefficient of 0.789 at 99.9% confidence level. The significance number of this hypothesis is greater than 3.27, which indicates the direct impact of organizational innovation on entrepreneurial orientation with influence coefficient of 0.789 at 99.9% confidence level.

H4: Technological innovation affects export performance.

According to the research findings, the hypothesis was confirmed with a significance number of 2.515 and a standard coefficient of 0.203 at 95% confidence level. The significance number of this hypothesis is greater than 1.96, which indicates the direct impact of technological innovation on export performance with influence coefficient of 0.203 at 95% confidence level.

H5: Entrepreneurial orientation affects export performance.

According to the research findings, the hypothesis was confirmed with a significance number of 6.993 and a standard coefficient of 0.605 at 99.9% confidence level. The significance number of this hypothesis is greater than 3.27, which indicates the direct impact of entrepreneurial orientation on export performance with influence coefficient of 0.605 at 99.9% confidence level.

H6: Organizational innovation affects export performance through technological innovation.

According to the model output, significance coefficient of the two paths between variables of organizational innovation and technological innovation as well as the technological innovation on the export performance is 13.322 and 2.515, both of which are greater than 1.96, indicating the indirect

impact of organizational innovation through the mediating variable of technological innovation on export performance at 95% confidence level, which leads to the confirmation of this hypothesis. In order to evaluate the intensity of impact, standardized coefficients of the path between variables of organizational innovation and technological innovation (0.758) as well as technological innovation on the firm's export performance (0.203) show that organizational innovation indirectly affects export performance through mediating variable of technological innovation at a rate of  $0.154 = (0.203 * 0.758)$ .

H7: Organizational innovation affects export performance through entrepreneurial orientation.

According to the model output, significance coefficient of the two paths between variables of organizational innovation and entrepreneurial orientation as well as the entrepreneurial orientation on the export performance is 18.227 and 6.993, both of which are greater than 3.27, indicating the indirect impact of organizational innovation through the mediating variable of entrepreneurial orientation on export performance at 99.9% confidence level, which leads to the confirmation of this hypothesis. In order to evaluate the intensity of impact, standardized coefficients of the path between variables of organizational innovation and entrepreneurial orientation (0.789) as well as entrepreneurial orientation on the firm's export performance (0.605) show that organizational innovation indirectly affects export performance through mediating variable of entrepreneurial orientation at a rate of  $0.477 = (0.605 * 0.789)$ .

## 8. Conclusions

Exports are known as the most common way for companies, especially small and medium enterprises (SMEs), to enter foreign markets. One of the main reasons for this is that exports need less resources compared to other internationalization methods. Hence, export sales are increasingly considered as an appropriate way for the company growth. Therefore, this study examined the mediating role of technological innovation and entrepreneurial orientation in the impact of organizational innovation on export performance. The results obtained from statistical analysis of the collected questionnaires from the studied sample including 235 top exporters indicated that organizational innovation, entrepreneurial orientation, and technological innovation affect the export performance. Other research results showed that organizational innovation affects entrepreneurial orientation. And organizational innovation affects export performance through technological innovation and through entrepreneurial orientation. Results of this study are in line with results of the research performed by Rebaou??? et al. (2017).

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