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### THE IMPACT OF DEVELOPING E-COMMERCE MARKETING CAPABILITIES AND EFFICIENCY ON ENHANCED PETROLEUM PRODUCT EXPORT PERFORMANCE

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#### **Abstract**

E-commerce marketing capabilities play an important role in a fast and changing environment. It can be emphasized that organizations with access to such capabilities can be forerunners among other organizations in terms of knowledge acquisition, storage and transfer. Technology is effective in quantity and quality of export performance, and e-commerce marketing capabilities are among the key factors in improving and enhancing export performance. The current research aims to investigate the effect of developing of e-commerce marketing capabilities and efficiency on enhanced petroleum product export performance. This study is a descriptive-survey research in terms of data collection method and an applied research in terms of purpose. The research statistical population consists of the companies active in the field of oil, gas and petrochemicals, of which 165 people were selected as the sample and their information was collected through a questionnaire and was analyzed using confirmatory factor analysis and structural equation modeling in PLS Software. Results of this study demonstrated that the development of e-commerce marketing capabilities and efficiency is effective in enhanced performance of petroleum product exports. On the other hand, the effect of distribution efficiency on petroleum product e-commerce performance has been significant.

#### **INTRODUCTION**

At the beginning of the twenty-first century, the global rapid and all-around changes have transformed the environment for the activities of organizations in such a way that organizations and their managers have to find new ways of action to adapt to global changes and developments so that they can remain in the domestic and international competition field (Gallego & Casillas, 2014). Thus, companies (including manufacturing and service) enter competition in

the international arena with different incentives such as acquiring international reputation, ensuring long-term growth, increasing profitability and taking advantage of economies of scale benefits or for reasons like domestic market saturation, the intensity of competition in the domestic market and government rules and regulations. Regardless of the incentive to enter international markets, the main concern of companies is to improve export performance (Green et al., 2008). On the other hand, with the advent of the third millennium, we witness the tighter competition of governments and economic poles in the world, especially in the business sector, and each of them is trying to gain more share of the privileges, facilities and opportunities available in the global trade (Wang, 2013). In this regard, e-commerce as one of the most important tools, to a large extent, provides countries with indicators such as increased business efficiency, information release and clarification and the development of scientific, cultural, and commercial relationships at the international level to gain competitive advantage and increase exports. This tool has practically offered a wide range of competitive advantages to leading countries. With respect to the various problems faced by the Iranian economy, specific strategies have been raised for the development of the country, including export jump strategy which balances the relative share of the country from the world population with its relative share from the global trade, and e-commerce is one of the tools that can help the country and companies in this context (Mathews et al., 2015).

Based on the foregoing, e-commerce should be considered seriously in the country and in companies. Complexity and intensity of competition in foreign markets have made export-manufacturing companies, including oil companies, faced with numerous problems, some of which are the result of the inability or weakness of companies to carry out marketing activities (Takata, 2016). Therefore, the familiarity of the mentioned companies with the capabilities and benefits of e-marketing and its techniques and methods and how to use them can resolve some of the marketing-related export problems and increase the effectiveness of export marketing activities. With this argument, the use of the Internet in export marketing is essential for contributing to export development. On the other hand, the changes and developments in socioeconomic systems of the present age are rooted in advances and changes created in science and technology, which in turn have led to changed interests and tastes (Tuan, 2012). Undoubtedly, today's organizations face widespread international developments and threats. Hence, the guarantee and continuity of life and the survival of organizations require new solutions and methods to deal with problems, which are highly dependent on innovation, invention and creation of new products, processes and methods (Mysen, 2013). One of the environmental values in the internationalization of competition is the ability to develop marketing capabilities and competitive advantage. One of the most important and fundamental mechanisms for creating relative and competitive advantage in the dynamic and changing environment of today's industry is the use of marketing effectiveness systems in products and production processes and to achieve this, continuous attention to quality and customer needs is inevitable. For this purpose, it is necessary to consider e-commerce capabilities, and managers should turn to roles that are appropriate to the changing environmental conditions (Julian et al., 2014).

Managers increasingly tend to expand organizations and influence the market and subsequently, the competition world specifically represents commercial Darwinism. Managers should properly view the market and its key factors (Narver et al., 2012; Kim, 2010). So, it seems that with increased competition in the markets, the existence of a widespread and comprehensive insight into the market to empower organizations is felt more than ever. According to Green et al. (2008), an important issue that can be addressed is that e-commerce plays an important role in export performance in these companies. Thus, although the issue of the effect of e-commerce marketing capabilities on export performance has a long history in the competitiveness of competitive firms, unfortunately in our country, the importance and position of this sector has not been addressed properly in the fields of science and policy-making (especially in the oil industry). Consequently, exiting the current situation and moving towards more competitive advantages require changing the attitude from traditional to modern methods based on managers' attitude. However, the inappropriate conditions in the process of implementing desirable e-commerce marketing capabilities are caused by having only a technological look into business management whereas understanding communicative capabilities is a process that should be consistent with all the activities inside and outside the organization, managerial requests, and human resource abilities. The inconsistency between the performance of human resources (in terms of distribution and promotion), the demands of the customers and the services provided has reduced the competitiveness of oil, gas and petrochemical companies. Hence, it is essential to identify an appropriate solution to improve efficiency for developing the effectiveness and capabilities of e-commerce marketing in this regard and also developing the distribution and promotion efficiencies of exports by these companies.

## **RESEARCH LITERATURE**

Due to the impact of the Internet on trade and the formation of digital economy foundations, Internet marketing has been fundamentally considered as a key factor in competitiveness of international markets in order to achieve the goals of modern marketing in electronic transactions (Zhou et al., 2012). Increased speed in computation, rapid information processing, the ability to search and increase accuracy, elimination of unnecessary intermediaries and doing jobs electronically overshadow the exchange process, decrease the time of transactions and increase productivity. The importance of marketing and e-commerce is on the rise. In today's markets, the customer is equal to a real customer plus a virtual customer and internet marketing is based on this (Abdolbaqi, 2015). On the other hand, two phenomena of globalization and e-commerce have brought numerous challenges and competitive opportunities for small and large organizations. Small and medium-sized enterprises are particularly faced with these new opportunities. Although more than half of the countries' employment and value added are related to these companies, they are not properly active in export activities and e-commerce (Do'aei, 2010). The most important problem and obstacle faced by these companies in exporting includes the lack of sufficient capital and capacity and complexity and difficulties in providing services in international markets. The Internet offers a number of economical and cost-effective ways to attract foreign customers and provide services to them, based on which these obstacles can be

removed as far as possible by reducing the costs related to geographic scopes (Kim, 2010). The global expansion of e-commerce has increased exports through the Internet. Export companies are increasingly trying to identify the potential of the Internet to boost the existing export activities and find new export customers. The Internet can be an effective marketing tool for exporters. The effective use of the Internet is a low-cost way to enter the global markets for the companies that intend to enter the export area. This is especially true for small and medium-sized enterprises and companies operating in a small part of the world market (Salehi, 2015). Acedo (2007) states that for exporters who lack the necessary financial and human resources to conduct formal marketing research, the Internet offers opportunities to support activities to collect market-related competitive information for export planning and creation of export strategies (Wang, 2013). Companies using the Internet can not only benefit from it as an effective tool for establishing global communications but also enter international transactions at a lower cost with customers who are very remote geographically (Ajrami et al., 2016). However, today, globalization has become an undeniable necessity for companies and countries. Although there is no single definition of globalization, a major feature of globalization that is agreed upon is integration in economics, politics, environment and social development. Information technology includes various roles such as production, distribution and use of information. These activities consist of different media from radio to satellite and Internet (Akbari-nezhad, 2014).

Cadogan (2012) argues that in the context of globalization, the development of information technology increases information richness in society. If the various sectors of the society, especially the commercial sector, enjoy sufficient information richness, the successful presence of companies and businesses in various sectors of that society in the field of competition and global markets can be expected. According to Lawrence, the economic effects of e-commerce have an important role in expanding exports and increasing the global presence of third world countries (Cadogan, 2012).

In this respect, Gary et al. (2017) have investigated the development of e-commerce marketing capabilities and efficiency on enhanced performance of investment in B2B exports. Evidence shows that specific e-commerce marketing capabilities directly increase distribution efficiency and communications of a company, leading in turn to increased export performance of the investment market. In general, the analyses provide the support needed to combine the construct of e-commerce with the RBV theory in export marketing. Further, Song et al. (2017) have examined the role of communication capabilities in the relationship between marketing capability and export performance. The research statistical population encompassed managers of export companies and sampling was done randomly. According to the Cochran formula, the sample size was estimated to be 230 people. The required information was collected through random sampling method. The results demonstrated that there is a significant positive relationship between communication marketing and relationship performance and these capabilities always affect the export performance of small and medium-sized enterprises. Additionally, communication capability plays a positive role in the

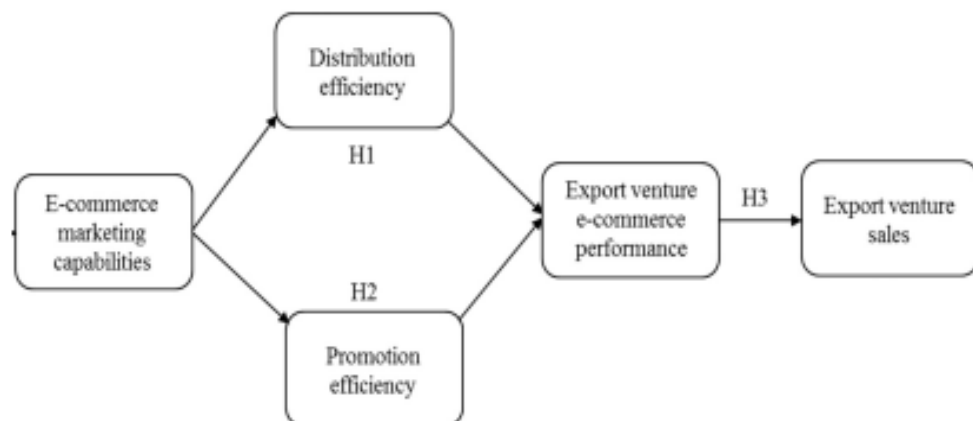
relationship between marketing capability and export performance. Also, Mathews et al. (2016) conducted a study in which Internet marketing capabilities and international market growth were assessed. The results disclosed that companies expanding the capabilities of Internet marketing enjoy the benefits of reduced information uncertainty and increased capacity with regard to international networking capabilities. Moreover, Internet marketing capabilities indirectly lead to the growth of international market when companies take a high level of international strategic orientation. Overall, Internet marketing capabilities promote the organization's ability to create other internal capabilities within the company, which in turn has a positive impact on the growth of international market. The results indicate that all the hypotheses of the researchers are confirmed.

According to theoretical foundations, the main research hypotheses are as follows:

1. E-commerce marketing capabilities have a positive impact on petroleum products distribution efficiency.
2. E-commerce marketing capabilities have a positive impact on petroleum products promotion efficiency.
3. Distribution efficiency has a positive impact on petroleum products e-commerce performance.
4. Promotion efficiency has a positive impact on petroleum products e-commerce performance.
5. E-commerce performance has a positive impact on the risk of petroleum products export sales.

**RESEARCH CONCEPTUAL MODEL**

The research model has been selected considering that it directly refers to the concept of e-commerce marketing capabilities. The current research model specifically emphasizes the concepts of e-commerce marketing capabilities and efficiency and increased export performance in a comprehensive manner and is applied based on the study by Gary et al. (2017). Besides, the selected model focuses on increased export performance, which is one of the important reasons for its choice.



**Figure 1** Research conceptual model by Gary et al. (2017)

## RESEARCH METHODOLOGY

The present study is an applied research in terms of purpose and a survey research in terms of data collection method. The structure of this research is based on the structural equations modeling. Thus, partial least squares (PLS) method has been employed to analyze the data because first, the mentioned method does not rely on assumptions such as the normal distribution of observed references and the high sample size and second, according to Kline (2011), this method is used to predict and discover potential relationships. The statistical population of this research is composed of 520 employees of oil, gas and petrochemical companies in Tehran, of whom the subjects were chosen through simple random sampling method. From the participants, 180 questionnaires were collected but only 165 questionnaires were recognized as proper for analysis. A standard questionnaire has been applied to measure the effect of variables on each other. This standard questionnaire is derived from the research by Gary et al. (2017).

To test the research hypothesis, the questionnaire reliability was assessed through Cronbach's alpha coefficient. This coefficient was obtained to be more than 0.7 for all variables of the research conceptual model; the obtained number shows good validity and internal consistency of the research constructs (Table 1).

**Table 1** Cronbach's alpha of variables

Variable	Cronbach's alpha
E-commerce marketing capabilities	0.777
Petroleum products distribution efficiency	0.812
Petroleum products promotion efficiency	0.852
E-commerce performance	0.782
Risk of export sales	0.802

## RESULTS

In this research, five main variables have been selected that are examined based on a conceptual model. The description of variables is important in that the results of testing the research hypotheses are extracted based on the data and indicators of these variables. Research data has an interval scale. To describe the research variables, central indices and dispersion have been used, which are addressed in the following. The research statistical population comprised 520 employees of oil, gas and petrochemical companies. Thus, from the limited population, a sample size of 290 was obtained using the sampling formula. From the participants, 180 questionnaires were collected and 165 subjects were chosen as the sample and data were collected from the questionnaires. Considering the selection of a 5-point Likert scale for the questionnaire items, the values obtained from respondents' opinions should be examined to make it clear whether or not their average responses differ from number 3 (the middle number of the Likert scale). An average value of less than 3 indicates that the population under study has an unfavorable situation (in the case of inverse variables, the reverse is true). Furthermore, the greater absolute value of skewness and kurtosis coefficients suggests difference and deviation of the sample from normal distribution in terms of symmetry so that

if the absolute value of these coefficients ranges between 1 and -1, it represents non-deviation of distribution and variable curve in comparison with a normal distribution.

**Table 2** Descriptive indicators for dimensions of research variables

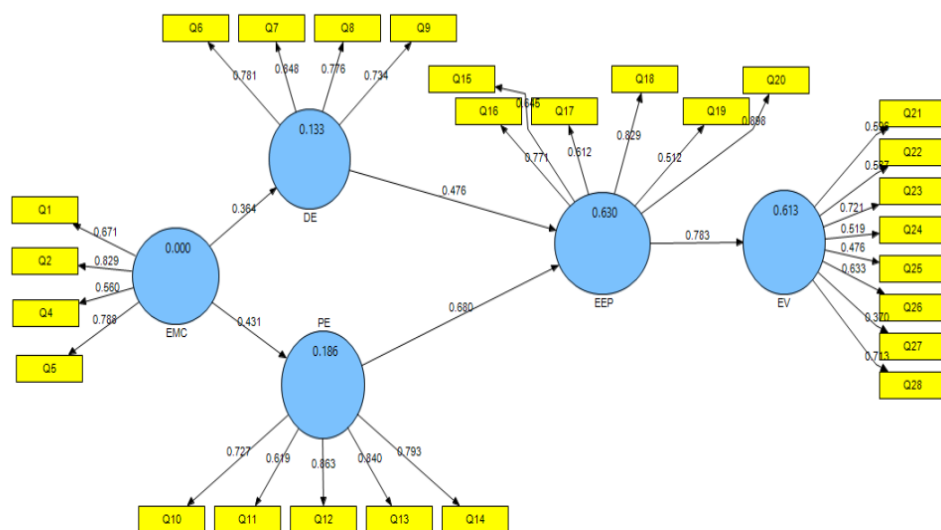
Research variable	Sample size	Mean	Standard deviation	Skewness	Kurtosis
E-commerce marketing capabilities	165	3.26	3.092	-0.291	0.577
Petroleum products distribution efficiency	165	3.17	3.381	0.210	-0.284
Petroleum products promotion efficiency	165	3.47	4.628	-0.318	-0.737
E-commerce performance	165	3.86	2.329	-0.609	-0.322
Exports venture	165	3.19	2.014	-0.598	-0.344

According to Table (1), it can be observed that all variables are in good conditions.

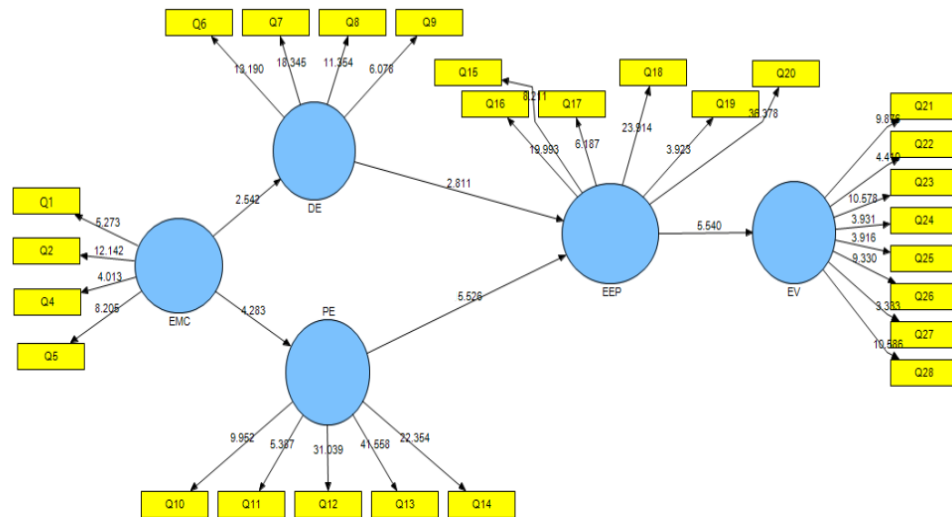
**Data Analysis**

In this study, structural equation modeling has been applied to test the research hypotheses and fit of the conceptual model. There are different approaches to structural equation modeling, meaning that structural equation modeling can be done based on different statistical methods, corresponding to the type of variables and characteristics of the research statistical sample. One of the statistical methods in this regard is the partial least squares method. Software that uses structural equation modeling based on this statistical method is compatible with the existence of conditions such as the collinearity of independent variables, non-normality of data and small sample size (Henser et al., 2015). In the current study, SmartPLS software has been employed, which is helpful and widely-used in structural equation modeling based on partial least squares method.

The software output after testing the research conceptual model is shown in Figures 2 and 3.



**Figure 2** Overall research model in the standard mode



**Figure 3** Overall research model in a significance state

In Figure (3), obvious and hidden variables and also path coefficients and factor loadings are displayed. The numbers observed between the model hidden variables (variables represented by a circle) and obvious variables (variables represented by a rectangular, which are sub-components of the hidden variable) show factor loadings. Relationships defined between the hidden variables are the research hypotheses and the numbers shown on these relationships are path coefficients.

According to Figure (3), the first hypothesis indicating the effect of e-commerce marketing capabilities on petroleum products distribution efficiency is accepted with 99% probability with regard to the value of the critical factor or t-value (2.542) which is outside the range of -1.96 to 1.96.

The second hypothesis suggesting the impact of e-commerce marketing capabilities on petroleum products promotion efficiency is accepted with 99% probability with regard to the value of the critical factor or t-value (4.283) which is outside the range of -1.96 to 1.96.

The third hypothesis showing the effect of distribution efficiency on petroleum products e-commerce performance is accepted with 99% probability with respect to the value of the critical factor or t-value (2.811) which is outside the range of -1.96 to 1.96.

The fourth hypothesis indicating the effect of promotion efficiency on e-commerce performance through the role of organizational entrepreneurship is accepted with 99% probability with respect to the value of the critical factor or t-value (5.526) which is outside the range of -1.96 to 1.96.

The fifth hypothesis demonstrating the impact of e-commerce performance on exports venture is accepted with 99% probability with respect to the value of the critical factor or t-value (5.540) which is outside the range of -1.96 to 1.96.



Table (3) has displayed the results of the causal analysis of structural equation model for testing the research hypotheses

**Table 3** Results of research hypotheses

Research hypotheses	$\beta$ coefficient	t-statistic	Hypothesis state
E-commerce marketing capabilities $\longrightarrow$ Distribution efficiency	0.364	2.542	H1 Confirmed
E-commerce marketing capabilities $\longrightarrow$ Promotion efficiency	0.341	4.283	H1 Confirmed
Distribution efficiency $\rightarrow$ E-commerce marketing capabilities	0.476	2.811	H1 Confirmed
Promotion efficiency $\rightarrow$ E-commerce marketing capabilities	0.680	5.526	H1 Confirmed
E-commerce performance $\longrightarrow$ Exports venture	0.783	5.540	H1 Confirmed

**OVERALL MODEL TESTING (PLS, GOF)**

Table (4) shows the validity, reliability and fit of the model. Convergent validity has been used in this research, meaning that the markers of each construct eventually provide a good separation in terms of measurement relative to other constructs of the model. To put it simply, each marker measures only its own construct and their combination is such that all constructs are well separated from each other. With the help of the extracted mean variance index, it was determined that all of the studied constructs have an extracted mean variance of higher than 0.5. Composite reliability (CR) indices have been applied to examine the questionnaire reliability. All of these coefficients are higher than 0.7, indicating the reliability of the measurement tool.

**Table 4** Fit of the model

Hidden variables	AVE	CR	R <sup>2</sup>	$\sqrt{AVE}$	$\sqrt{R^2}$	GOF
E-commerce marketing capabilities	0.812	0.920	0.511	0.843	0.849	0.715
Petroleum products distribution efficiency	0.612	0.861	-			
Petroleum products promotion efficiency	0.773	0.940	-			
E-commerce Performance	0.658	0.777	0.844			
Risk of export sales						

This index shows the agreement between the quality of the structural model and the measured model and is equal to:

$$GOF = \sqrt{AVE} \times \sqrt{R^2}$$

In which,  $\overline{AVE}$  and  $\overline{R^2}$  are the average of AVE and R<sup>2</sup>. The value of GOF being higher than 0.4 indicates the fit of the model. The fit index is equal to 0.715, which is greater than 0.4 and suggests good fit of the model. Put simply, the data of this research are properly fitted to factor structure and the

theoretical foundation of the research and this suggests that the questions are consistent with the theoretical constructs.

## CONCLUSION

The purpose of this study was to demonstrate the importance of developing e-commerce marketing capabilities and efficiency in increasing the petroleum products export performance. The results revealed that e-commerce marketing capabilities and efficiency are a key factor in improving performance and have a significant positive and direct impact on petroleum product exports. In a similar study by Gary et al. (2012), the existence of a significant positive relationship between these variables was also confirmed. According to the research findings, oil companies can be recommended to make attempts for the establishment and proper use of e-commerce in the export process. Moreover, based on the obtained findings, the strategic results, i.e. entry into new markets, improved market share, creation of a positive mentality and awareness of products and trademarks in international markets can be achieved by using the Internet in customer-related marketing activities, i.e. promotion of products, services, capabilities and trademarks of the company, response to questions of international customers and the like, and marketing activities associated with distribution channels such as sellers' access to various pieces of information and marketing research activities.

Besides, it is suggested that with increased e-commerce marketing capabilities in performance decisions of the management, companies develop their sustainable competitive advantage and strengthen the efficiency of petroleum product exports by utilizing the benefits associated with performance management. In this way, with the rapid growth of new technologies, oil companies need to act differently, compared to the previous time, for their survival and progress. Particularly, oil, gas and petrochemical companies should seek new sources of competitive advantage and apply new forms of competition, which require a clear understanding of the nature and dynamics of competition in the export market. In this context, a similar study by Gary et al. (2017) also emphasized the development of this relationship. Therefore, given the development of oil companies and the expansion of competition space between them, if these companies cannot develop their distinct e-commerce marketing capabilities to achieve export efficiency, the pioneering competitors will penetrate the market by providing better services and will take the market leadership. These competitors will guarantee their profitability in the short term and their survival and growth in the long run. Hence, the mentioned companies enjoy export efficiency when they can stabilize their position in the desired market by offering a superior value based on the development of e-commerce marketing capabilities. According to the results of this research, the knowledge acquired by oil companies will improve e-commerce marketing in terms of petroleum product exports performance. In other words, the capital obtained from interacting with e-commerce marketing will affect the learning of these companies from each other and can prepare the ground for improving efficiency in the form of new products and services. However, it can be argued that e-commerce marketing is the company's specific asset. This ability to quickly introduce petroleum products and adopt new processes for the competitiveness of oil companies is very important.

Furthermore, in future studies, in addition to the impact of e-commerce marketing on the development of export performance in the field of petroleum products, the effect of other factors such as learning culture and knowledge management capabilities affecting service innovation should be examined. The present research is conducted only among the members of oil, gas and petrochemical companies. Thus, it is recommended in future research to investigate the factors influencing export performance among the members of these companies in other provinces of the country. This makes it possible to compare between different provinces. It is suggested that future researchers evaluate this model among other companies in certain industries such as insurance companies, pharmaceutical companies, telecom companies and other top-tech companies. The investigation of other oil companies in future studies can be used to clarify other hidden aspects of the issue.

### RESEARCH LIMITATIONS

Since the research sample includes the companies exporting oil, gas and petrochemical products, there is a need for more extensive research. Additionally, the scope of this study embraces the research on companies exporting oil, gas and petrochemical products, which makes it difficult to generalize and evaluate the e-commerce marketing capabilities in relation to other industries.

Another research limitation was related to the fear of experts and specialists from answering the questionnaire and the respondents' lack of trust in the purpose of the model and its being non-political. As a result, the research may lose its power for the accurate development of the issues.

### REFERENCES

- Akbari-nezhad et al. (2014). Investigating the impact of market orientation and commercial communications on export performance. *New Marketing Research*, 3(4), 59-76.
- Dehqanan, H. & Jadidi, N. (2015). The impact of strategic orientations on the specialized marketing capabilities of small and medium-sized enterprises. *First International Conference on Management, Economics, Accounting and Educational Sciences*, 21, 156-172.
- Do'aei, H. & Hosein Robat, S.M. (2010). Market-oriented foreign trade, international commercial relations and export performance: A case study of exporting companies in Mashhad. *Business Management Journal of Faculty of Management of Tehran University*, 61, 2-82.
- Sheikh Esmaeili, S., Salimi, V. & Tara, P. (2015). The effect of marketing capabilities on export performance using specific sources of evaluation of manufacturing companies. *Second National Conference on Marketing Research*, 15, 117-140.
- Salehi, N. (2015). The impact of marketing capabilities on competitive advantage and export performance mediated by risk management. *Second National Conference on Management and Planning Sciences, Training and Standardization of Iran*.
- Abdolbaqi, A. & Daryayi, M.H. (2015). Investigating the relationship between operational marketing capabilities and financial flexibility of companies. *Marketing Management Studies*, 20(62), 143-162.