Examination of the Relationship between the Tendencys to Export the Goods, Innovation, and the Enterprise Size

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Article Info

Article history:
Received 12 October 2014
Received in revised form 26 December 2014
Accepted 11 January 2015
Available online 20 January 2015

Keywords:
Export, innovation, small-enterprise, medium enterprise.

Abstract

The current research aims at giving a deepened insight about the relationship between export volume as well as innovation and the small and medium enterprises (SMEs). The current study is descriptive and applicable in goal. The data collection was done in a pilot study, by using questionnaires. The face and content validity of the questionnaire were confirmed by the supervisor and the experts, and the reliability of it was approved to be 0.76, using alpha Cronbach. The primary analysis on the data was done based on modelling the structural equation and using Lisrel software. The results indicate that the firm size is not a determinant factor in innovation and export volume. Also, the results show that there is a significant relationship between innovation and export volume. However, the firm size does not influence the export volume. The findings are in compliance with the previous studies on business enterprises and innovation management.

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Introduction

Today, no country is totally isolated from other countries in the world. Economic sources, technology, and the people’s life level in a country are relatively dependent on the economic conditions of other countries, to which they are related via a complex flow of goods, services, capital, and technology [1]. Countries will increase their production, via international exchanges, and boost up their profit. By importing, they obtain the goods that they are not able to provide and by exporting, they send their excessive products to other countries [2]. Economic enterprises, which have access to the foreign market through exporting the goods, grow rapidly and, thereby, provide domestic and foreign market with the products which have higher qualities. Due to the fast changes in the international economy, the act of planning to have activities in foreign markets is much more difficult and complex. Different variables play role in this area, among which the following are studied: the intensity of the competition, fast political and economic changes, growth of business obstacles and limitations in different countries, more tendency toward protective policy, fast developments, and innovation in technology. Exports are the easiest and cheapest way to enter the foreign market [3]. Many countries’ experience indicates that the small and medium enterprises (SMEs) can become the basics for the economic and regional developments and they can find a place to harmonize the country resources, which result in the higher income and creating job opportunity at regional and national level. Small-medium sized enterprises are flexible and innovative and, with regard to the fact that in many industries, small and medium enterprises (SMEs) have relatively significant advantages to the large enterprise; they are faster and more efficient to react appropriately to the increasing changes of world market [4]. The aim of the present research is to find if there is any relationships between the tendency to export, innovation, and the enterprise size in small and medium industries. Also, it explores the impact of the enterprise size on the export and innovation.
The conceptual model of the study:

The theoretical frame of the study is taken from the Plabarber and Alegry (2007). They studied the enterprise size, tendency to export, and innovation, as the main variables in an analytical model. Since the enterprise size can influence the export volume and innovation result, it is considered as an independent variable. The innovation result impacts on the export volume and both variables are considered as dependent variables. That is, the conceptual model is drawn as follows:

![Diagram of conceptual model]

MATERIALS AND METHODS

The current research is of descriptive type, since it accounts the research variables. The study is applicable because the aim is to investigate home and foreign factors affecting the choice of innovative and fast production operational abilities and these factors’ effect on the operations in production firm. In this study, piloting was sued to gather data and the instrument was a questionnaire. The questionnaire includes 14 items, of which 8 (items 1 through 8) were used to tap innovation in small and medium enterprises (SMEs), 2 items (items 9 and 10) were related to the size of the firms, 4 items (from item 11 through 13) were used to tap the tendency to export in small and medium enterprises (SMEs). The questionnaire is based on 5-point Lickert-Scale, ranging from very agree to very disagree (very disagree, disagree, neutral, agree, very agree), in which 5 points is devoted to very disagree and 1 to very agree. Since the structural equation technique is used, the sample size is calculated as follows:

\[ 5q < n < 15q \]

Where \( q \) is the number of the variables.

\[ 15 \times 14 \leq n \leq 5 \times 14 \]

\[ 210 \leq n \leq 70 \]

Stevens takes 15 items for each change in structural equation model. However, Lohin (1992), who reports the results similar to the Monte Carlo, using the analytical factor model, from studying the research maximum values concludes that for such models, the researcher should plan to study on, at least, 100 cases or more [5]. In current research, since structural equation models are used, among the statistical sample, according to the foresaid reason and based on the supervisors and counselor’s idea, 120 reliable questionnaires were distributed, from which 108 were returned to be examined.

In order to validate the questionnaire’s content, the supervisor’s and experts’ opinions were used, and to determine the reliability of the questionnaire, Cronbach alpha coefficient was applied which turned out to be 0.76, which is an acceptable and appropriate reliability. In the current research, to investigate the relationship between the model elements, structural equation modelling was used. Also, the researcher used the structural equation modelling for the purpose of confirmatory function study. The Lisrel software was exploited to analyze the hypotheses.
Results:

In order to analyze the hypotheses of the study and by considering the fact that presented model is related to the existing factors' effect on each other, the structural equations were used. As it can be seen in Figure 1, the variables which are defined in the model are assumed as dependent variables in some equations and independent variables in other equations and this point has produced a correlational relationship in the equations format. Thus, all the equations must be considered simultaneously.

This group of the equations are in fact, the equations which specify the given relations among the latent variables in the model. By establishing such relations, the standardized regression coefficient (path coefficients, the same as B) can be calculated.

Considering the above structural model, the structural equations can be obtained:

\[ \gamma_{ij} \]: the structural coefficients from extrinsic to intrinsic variable

\[ \beta_{ij} \]: the structural coefficients of intrinsic variables

1) \( INNOV = \gamma_{11} \times SIZE + \xi_1 \)

2) \( EXPIN = \gamma_{12} \times SIZE + \beta_{11} \times INNOV + \xi_2 \)

Fig. 1: Parameter value of “t” for each coefficient.

In order to evaluate each of coefficients, t-test was used. The values obtained from t-test are shown in Figure 2.

Fig. 2: The estimated values for each of directional coefficients.
Summary of evaluated results: Table 1 depicts the $\gamma$ coefficient and parameter $t$, and the significance value of these coefficients with R coefficient. Table 1 $\gamma$ coefficient and $t$ variable values and the significance of the coefficient.

Investigating the variables impact on each other: a summary of the results of structural equation, including the path coefficient and the related $T$ values, are shown in Table 2.

Table 2: A summary of direct impacts of independent latent variables on dependent ones.

<table>
<thead>
<tr>
<th>significance</th>
<th>Compared to critical value</th>
<th>$T$</th>
<th>Structural coefficient</th>
<th>parameters</th>
<th>relationships</th>
<th>hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>insignificant</td>
<td>1.02/1.96</td>
<td>1.02</td>
<td>0.15</td>
<td>$\gamma_{11}$</td>
<td>SIZE $\rightarrow$ INNOV</td>
<td>$H_1$</td>
</tr>
<tr>
<td>Significant</td>
<td>1.65/1.96</td>
<td>1.65</td>
<td>0.25</td>
<td>$\gamma_{12}$</td>
<td>SIZE $\rightarrow$ EXPIN</td>
<td>$H_2$</td>
</tr>
<tr>
<td>significant</td>
<td>3.61/1.96</td>
<td>3.61</td>
<td>0.60</td>
<td>$\beta_{11}$</td>
<td>INNOV $\rightarrow$ EXPIN</td>
<td>$H_3$</td>
</tr>
</tbody>
</table>

As can be observed from obtained results in Table 2, the impact of enterprise size on innovation is 0.15 and considering the variable value $T$, that is 1.96 > 1.02, the coefficients are not significant. Interpretation of other results of the table is done as the preceding part.

Goodness of fit tests:
A) Root Mean Square Error of Approximation (RMSEA): this index is based on the non-centered parameter of $\chi^2$ and is less influenced by the sample size. RMSEA is able to evaluate non-fit mean for every degree of freedom.

The value of RMSEA in the current research is:
Root Mean Square Error of Approximation= 0.096
Since RMSEA= 0.096, the research data for this model have a rather appropriate goodness.

B) Goodness of fit index (GFI) and adjusted goodness of fit index (AGFI): these values are influenced by the sample size and for the models that are specified weakly can be very large. The values more than 0.9 for these two indices indicate a very appropriate goodness of fit for the model.

The obtained values for this model in this regard are
Goodness of fit Index (GFI)= 0.85
Adjusted Goodness of Fit Index (AGFI)= 0.87
Both obtained indices show that the research data has a rather appropriate fit for the model.

C) Root Mean Square Residual (RMSR) and Standardized Root Mean Square Residual (SRMSR) for which the values of less than 0.08 show the good fit of the model.

The values obtained by the software in this regard are:
Root Mean Square Residual (RMSR)= 0.071
Standardized RMSR= 0.079
And it is observed that RMSR value for this research is an appropriate one. Moreover, SRMSR has the appropriate value of 0.079.

E) Normed Fit index (NFI), Non-Normed Fit Index (NNFI) and Comparative Fit Index (CFI): the values more than 0.9 for these indices indicate the appropriate fit of the model.

The obtained values for these indices are as follows:
Normed Fir index (NFI)= 0.85
Non-Normed Fit Index (NNFI)= 0.83
Comparative Fit Index (CFI)= 0.86
Increment Fit Index= 0.87
Here, all the indices values are more than 0.9, which means the data can fit the model appropriately.

Results of rejection or acceptance of the hypotheses
Hypothesis 1: There is a significant relationship between innovation and the tendency to export in small and medium enterprises:

Table 3: The extent of relationship between innovation and the tendency to export in small and medium enterprises.

<table>
<thead>
<tr>
<th>significance</th>
<th>Compared to the critical values</th>
<th>$T$</th>
<th>Structural coefficient</th>
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<td>3.61</td>
<td>0.60</td>
<td>$\beta_{11}$</td>
<td>INNOV $\rightarrow$ EXPIN</td>
</tr>
</tbody>
</table>

Dependent variable: the tendency to export independent variable: innovation
Bearing the results of data analysis of the relationship between innovation and tendency to export in small and medium enterprises in mind, it can be said that the directional coefficient ($\beta_{11}$) equals 0.60 and the obtained t value is $3.61 > 1.96$, which is within the level of significance. That is hypothesis 1 is not accepted and with 95 percent sure, the innovation with a positive and significant path coefficient has a positive impact on the tendency to export. Hence, or each unit increase in innovation, the tendency to export increases 0.69 unit.

Hypothesis 2: The enterprise size has no impact on the tendency to export in small and medium enterprises:

| Table 4: The extent of relationship between the enterprise size and the tendency to export |
|---------------------------------|---------------------------------|----------------------|----------------------|----------------------|
| **Hypothesis 2: The enterprise size has no impact on the tendency to export in small and medium enterprises:** |
| **Table 4:** The extent of relationship between the enterprise size and the tendency to export |
| significance | Compared with critical value | t | Structural coefficient | parameters | relationship |
| significant | 1.65<1/96 | 1.65 | 0.25 | $\gamma_{12}$ | SIZE $\rightarrow$ EXPIN |

Dependent variable: the extent of tendency to export dependent variable: enterprise size

Bearing the results obtained from data analysis of the relation between enterprise size and the extent of tendency to export in mind, it can be said that the path coefficient ($\gamma_{12}$) equals 0.25 and the obtained t value for this coefficient is $1.65 < 1.96$, which is insignificant in 0.05 level of significance. As a result, the researcher’s claim is accepted and with 95 percent sure, we can say that the enterprise size has no positive relationship with the tendency to export.

Hypothesis 3: The enterprise size has no impact on the innovation in small and medium enterprises:

| Table 5: The extent of the relationship between the enterprise size and the innovation in small and medium enterprises. |
|---------------------------------|---------------------------------|----------------------|----------------------|----------------------|
| **Hypothesis 3: The enterprise size has no impact on the innovation in small and medium enterprises:** |
| **Table 5:** The extent of the relationship between the enterprise size and the innovation in small and medium enterprises. |
| significance | Compared with critical value | t | Structural coefficient | parameters | relationship |
| insignificant | 1.02<1/96 | 1.02 | 0.15 | $\gamma_{11}$ | SIZE $\rightarrow$ INNOV |

Dependent variable: innovation in small and medium enterprises/independent variable: enterprise size

Bearing the results of analysis of the relationship between the enterprise and innovation in small and medium enterprises in mind, it can be said that the path coefficient ($\gamma_{11}$) equals 0.15 and the t value obtained is $1.02 < 1.96$, which is not significant in 0.05 level of significance. As a result, the researcher’s claim is accepted and with 95 percent sure, the enterprise size has no impact on the innovation in small and medium enterprises.

Conclusion:

According to the results obtained from testing hypothesis 1, it can be said that in the small and medium enterprises, innovation is independent of the tendency of the enterprise to export. That is, in the statistical population of the study, the tendency to export has no significant relationship with innovation. The data obtained in the current research proved the theoretical reasons related to the relationship between innovation and tendency to export to be dubious. That is, more investigation is needed to determine the existence of such relationship. Plabarber and Alegry confirmed such relationship, by analyzing the main model and giving convincing documents which were the indicator of the positive and significant relationship between innovation and tendency to export. They claimed that innovation increases the tendency to export for the enterprises of the study. The difference in our results with those obtained by plabarber and Alegry may lie in the fact that they did their research in scientific industries, i.e., biotechnology and in such an industry, the mentioned relationship stands out very clearly. Based on the obtained results of testing hypothesis 2, with 95 percent sure we can say that the size of the enterprise has no impact on the tendency to export. The relationship between enterprise size and the tendency to export is very weak and has no statistical significance. Thus, the size of enterprise plays no role in tendency to export in small and medium enterprises. The enterprise with any sizes, took procedures to export the goods and were successful. The results show that the enterprise size cannot predict the export activities in an enterprise, but some other factors, including the capabilities, resources, and other characteristics, may play role in these activities. Plabarber and Alegry in their study show that the factors that are dependent on the enterprise size has no statistical significance and, therefore, claimed the same as we do. They considered the enterprise conditions more important than its size. In their study, it was shown that the enterprise size typically indicate the availability of the management and financial resources. They showed that the important factor in this regard is the technological assets, which can be well developed even in small enterprises.

REFERENCES


