EVALUATION OF EXPORT FINANCING METHODS IN SMES DEVELOPMENT

Pezhman Arzhang1, Naser Hamidi2

1MSc. Business Administration, Department of Business Management, Qazvin Branch, Islamic Azad University, Qazvin, Iran
2Associate Prof. Faculty member Islamic Azad University of Qazvin, Department of Industrial Management, Qazvin, Iran

Abstract
Financing and investment are important factors of development. Access to adequate financial resources of one of the most successful companies in the field of export. The purpose of this study is to evaluate of export financing methods in SMEs Development. In this study, data were collected using questionnaires and the sample size of this study, 28 experts are exported. We used the Delphi method to identify the export financing methods. Then the export financing methods of the method of paired comparisons were weighted and prioritized. In this study, export financing methods, 10 were selected and small and medium enterprises in the five areas included: food products, health products, metal products, wood products, plastic products, through using Borda method, were ranked. As a result, the production of plastic products according to known export financing methods, won first rank.

Keywords: Export financing methods, SMEs development, Borda method

1. Introduction

Globalization is a major challenge for businesses today face [4]. The most important problem for small and medium enterprises (SME) sector is its lack of adequate access to finance [17]. Can contribute to the learning process by exporting firms through its operations to identify foreign markets [16]. Financing and investment are important factors of development. Access to finance is a major obstacle to economic actors [19]. For a country’s exports, more jobs, and many other benefits will follow surpluses [15]. Small and medium-sized enterprises active in the international export activity usually takes place [4]. Financial shocks and their impact on the world’s most active company in exporting has [8]. Small and medium enterprises is an important part of the economy [17]. One of the concerns of developing countries in the international trade in recent years, the competition is low [3]. One of the major problems of limited access to external finance companies, Especially companies in exporting to different countries is [12]. Research on the growth of exports and R & D firms have done it [11]. Small and medium enterprises contribute to economic growth and job creation in the country [1]. As the purpose of this study, the following research questions are posed:

RQ1. What methods in the field of export financing for small and medium enterprises development impact?
RQ2. How are these priorities?
RQ2. How is severity of the impact of these factors on the small and medium enterprises development?

2. Literature review

Allan Riding an article by "Financing new venture exporters" Reviews, How can small and medium-sized exporting and non-exporting firms to finance their own deals. In this study, to conclude that small and medium enterprises exporter generally seek financing from external sources are, because the designs emerging small and medium enterprises is difficult to get a loan [12]. In other studies it was found that the growth opportunities, tax shield and internal resources influence the capital structure of small and medium enterprises are. Moreover, the empirical evidence obtained confirms that small and medium enterprises are clearly different behavior than large firms exert, These firms often have concerns about their finances [6]. Two new methods of financing mechanisms to finance the forfaiting and factoring applicable throughout the world [10]. Some studies show that less access to credit and lack of competitiveness of banks in order to finance Create constraints for small and medium enterprises in the field of finance [18].

2.1. Export financing methods

Finance industry through new financing methods, the need for financial investors is providing [10]. Financed through investment in two ways, direct and indirect investments are made. The case of direct investment is joint venture and indirect investment is buy back. Financing for economic activity, import, export, production and service requirements [19].

2.2. Small and medium enterprises (SMEs)

The definition of small and medium enterprises is different in countries and regions of the world’s. In fact, the economic and industrial conditions prevailing in each country, it is representative of small and medium enterprises. Some of criteria that typically defines small and medium industries are used to contain Number of employees, capital, asset size, total sales volume and production capacity is. But the most common criteria for defining small and medium industries, is a measure of the number of employees [7].

3. Methodology

In this study using the Delphi method and interaction with experts, important methods were identified. Then this methods were weighted and prioritized by the method of paired comparisons. Finaly severity of the impact of these factors on the small and medium enterprises development was determined by the Borda method.

![Fig. 1. Model procedure of the current research.](image-url)
3.1. Delphi method

The Delphi method is a structured communication technique, originally developed as a systematic, interactive forecasting method which relies on a panel of experts [5]. The experts answer questionnaires in two or more rounds. After each round, a facilitator provides an anonymous summary of the experts’ forecasts from the previous round as well as the reasons they provided for their judgments. Thus, experts are encouraged to revise their earlier answers in light of the replies of other members of their panel. It is believed that during this process the range of the answers will decrease and the group will converge towards the "correct" answer. Finally, the process is stopped after a pre-defined stop criterion (e.g. number of rounds, achievement of consensus, stability of results) and the mean or median scores of the final rounds determine the results [13]. Delphi is based on the principle that forecasts (or decisions) from a structured group of individuals are more accurate than those from unstructured groups [14].

3.2. Paired Comparisons

In a paired-comparison task, respondents are presented with pairs selected from an item set and are instructed to select the more preferred item from each pair. With \( n \) items, there are \( \binom{n(n - 1)}{2} \) pairs of items. For instance, \( n = 6 \) pairs can be constructed with \( n = 4 \) items. If the \( n = 4 \) items are labeled \{A, B, C, D\}, the following pairs can be constructed: \{A, B\}, \{A, C\}, \{A, D\}, \{B, C\}, \{B, D\}, \{C, D\}. A resenation of the pairs in this order may result in strong carry-over effects. To control for this effect, it is important to randomize the presentation order of the pairs as well as the order of items within each pair. The observed paired-comparison responses can be coded as follows:

\[
y_{il} = \begin{cases} 
1 & \text{if item } i \text{ is preferred over item } k \\
0 & \text{if item } k \text{ is preferred over item } i 
\end{cases}
\]

where \( l \) indicates the pair \( \{i, k\} \). Thus, we obtain a pattern of \( \bar{n} \) binary responses from each respondent [9].

3.3. Borda Method

Step 1: Acquire \( R_j \) matrix. Results ranking decision makers for each index, as the \( R_j \) matrix is formed.

\[
A_j = \begin{bmatrix}
   r_{i,j}^1 & \cdots & r_{i,j}^n & \cdots & r_{i,j}^k \\
   \vdots & & \vdots & & \vdots \\
   r_{m,j}^1 & \cdots & r_{m,j}^n & \cdots & r_{m,j}^k \\
\end{bmatrix}
\]

\[
R_j = \begin{bmatrix}
   \vdots & \vdots & \vdots \\
   \vdots & \vdots & \vdots \\
   \vdots & \vdots & \vdots \\
\end{bmatrix}
\]

(1)

Step 2: Acquire \( B_j \) matrix. Results ranking decision makers for each index, as the \( R_j \) matrix is formed. Then the \( R_j \) matrix is converted to a Borda - number.

\[
A_j
\]
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(2)

\[
B_j = \begin{bmatrix}
    b_{1j}^{1} & \cdots & b_{1j}^{p} & \cdots & b_{1j}^{k} \\
    \vdots & \ddots & \vdots & \ddots & \vdots \\
    b_{mj}^{1} & \cdots & b_{mj}^{p} & \cdots & b_{mj}^{k}
\end{bmatrix}
\]

Step 3: Obtain the collective agreement matrix \((R_G)\).

\[
A_I = \begin{bmatrix}
    X_1 & \cdots & X_i & \cdots & X_n \\
    r_{11} & \cdots & r_{1i} & \cdots & r_{1n} \\
    \vdots & \ddots & \vdots & \ddots & \vdots \\
    r_{m1} & \cdots & r_{mi} & \cdots & r_{mn}
\end{bmatrix}
\]

\[
R_G = \begin{bmatrix}
    r_{11} & \cdots & r_{1i} & \cdots & r_{1n} \\
    \vdots & \ddots & \vdots & \ddots & \vdots \\
    r_{m1} & \cdots & r_{mi} & \cdots & r_{mn}
\end{bmatrix}
\]

(3)

Step 4: Obtain the weighted collective agreement matrix \((Q_G)\).

\[
A_I = \begin{bmatrix}
    I & \cdots & t & \cdots & m \\
    q_{11} & \cdots & q_{1t} & \cdots & q_{1n} \\
    \vdots & \ddots & \vdots & \ddots & \vdots \\
    q_{m1} & \cdots & q_{mt} & \cdots & q_{mn}
\end{bmatrix}
\]

\[
Q_G = \begin{bmatrix}
    q_{11} & \cdots & q_{1t} & \cdots & q_{1n} \\
    \vdots & \ddots & \vdots & \ddots & \vdots \\
    q_{m1} & \cdots & q_{mt} & \cdots & q_{mn}
\end{bmatrix}
\]

(4)

Step 5: Form the linear assignment (LP) model:

\[
\text{max} : \sum_{i=1}^{m} \sum_{t=1}^{m} q_{it} \cdot h_{it}
\]

(5)

\[
\text{st} : \sum_{i=1}^{m} h_{it} = 1 \quad t = 1, \ldots, m
\]

(6)

\[
\sum_{t=1}^{m} h_{it} = 1 \quad i = 1, \ldots, m
\]

(7)

\[
h_{it} = 0 \text{ or } 1
\]

(8)

Step 6: Priorities for alternatives to solve the LP model or the Hungarian method[2].

4. Results
In this study the financing methods weight calculation method of paired comparisons is used. The results of the weight of each financing methods is shown in Table 1.

30
Table 1: Results of prioritization based on weight

<table>
<thead>
<tr>
<th>Financing methods</th>
<th>Loan</th>
<th>BOT</th>
<th>Forfaiting</th>
<th>Joint venture</th>
<th>BLT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights</td>
<td>0.203</td>
<td>0.180</td>
<td>0.150</td>
<td>0.136</td>
<td>0.101</td>
</tr>
<tr>
<td>Priority</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financing methods</th>
<th>Buy Back</th>
<th>Factoring</th>
<th>BRT</th>
<th>BOOT</th>
<th>BOO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights</td>
<td>0.071</td>
<td>0.056</td>
<td>0.045</td>
<td>0.030</td>
<td>0.025</td>
</tr>
<tr>
<td>Priority</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Areas of activity smes are shown in Table 2.

Table 2: Symbols of Smes

<table>
<thead>
<tr>
<th>Symbols</th>
<th>SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&lt;sub&gt;1&lt;/sub&gt;</td>
<td>Food products</td>
</tr>
<tr>
<td>A&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Health products</td>
</tr>
<tr>
<td>A&lt;sub&gt;3&lt;/sub&gt;</td>
<td>Metal products</td>
</tr>
<tr>
<td>A&lt;sub&gt;4&lt;/sub&gt;</td>
<td>Wood Products</td>
</tr>
<tr>
<td>A&lt;sub&gt;5&lt;/sub&gt;</td>
<td>Plastic products</td>
</tr>
</tbody>
</table>

Ranking smes, using linear allocation Borda is calculated as follows:

Step 1. rank 5 Smes for 10 index reviewed by experts, A decision consists of 28 experts (K = 28), 5 options (M = 5) went for a 10 index rating. expert ranked first result is as follows. D2 matrices ...And D28 are the same set.

Table 4: The results of the first rank expert

<table>
<thead>
<tr>
<th></th>
<th>X&lt;sub&gt;1&lt;/sub&gt;</th>
<th>X&lt;sub&gt;2&lt;/sub&gt;</th>
<th>X&lt;sub&gt;3&lt;/sub&gt;</th>
<th>X&lt;sub&gt;4&lt;/sub&gt;</th>
<th>X&lt;sub&gt;5&lt;/sub&gt;</th>
<th>X&lt;sub&gt;6&lt;/sub&gt;</th>
<th>X&lt;sub&gt;7&lt;/sub&gt;</th>
<th>X&lt;sub&gt;8&lt;/sub&gt;</th>
<th>X&lt;sub&gt;9&lt;/sub&gt;</th>
<th>X&lt;sub&gt;10&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&lt;sub&gt;1&lt;/sub&gt;</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>A&lt;sub&gt;2&lt;/sub&gt;</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>A&lt;sub&gt;3&lt;/sub&gt;</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>A&lt;sub&gt;4&lt;/sub&gt;</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>A&lt;sub&gt;5&lt;/sub&gt;</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Step 2. Ranking Smes by 28 expert index and the decision matrix (Rj):
All judgments of 28 experts, each of the index in the matrix Rj (with 10 parameters) are summarized. Matrix R1 (ranking Smes by 28 per X1 index of economic experts) is as follows. R2 and R3 and matrices ... R10 are similarly regulated.
Table 5: Ranking of SMEs for each index

|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |    |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|    |
| A₁ | 5 | 2 | 3 | 4 | 5 | 1 | 5 | 3 | 5 | 3  | 1  | 3  | 5  | 4  |    |
| A₂ | 1 | 5 | 4 | 5 | 4 | 2 | 2 | 4 | 2 | 2  | 1  | 5  | 4  | 4  | 1  |
| A₃ | 2 | 3 | 2 | 1 | 3 | 4 | 5 | 1 | 4 | 5  | 4  | 5  | 3  | 3  | 1  |
| A₄ | 3 | 4 | 1 | 3 | 1 | 5 | 1 | 2 | 3 | 1  | 2  | 3  | 2  | 2  | 1  |
| A₅ | 4 | 1 | 5 | 2 | 2 | 3 | 4 | 1 | 4 | 3  | 4  | 2  | 1  | 1  | 5  |

Step 3. The conversion Rank of each matrix Rₖ for each decision maker, the number Borda matrix Bₖ is formed.

Table 6: Matrix Borda (Bₖ)

|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |    |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|    |
| A₁ | 0 | 3 | 2 | 1 | 0 | 4 | 0 | 2 | 0 | 2  | 4  | 2  | 0  | 1  |    |
| A₂ | 4 | 0 | 1 | 0 | 1 | 3 | 3 | 1 | 3 | 3  | 4  | 0  | 1  | 1  | 4  |
| A₃ | 3 | 2 | 3 | 4 | 2 | 1 | 2 | 0 | 4 | 1  | 0  | 1  | 0  | 2  | 2  |
| A₄ | 2 | 1 | 4 | 2 | 4 | 0 | 4 | 3 | 2 | 4  | 3  | 2  | 3  | 3  | 3  |
| A₅ | 1 | 4 | 0 | 3 | 3 | 2 | 1 | 4 | 1 | 2  | 1  | 3  | 4  | 4  | 0  |

Step 4. Forming a consensus matrix (RG) of the ratings for all indexes:
Sum of each row of the matrix Bₖ calculate the final ranking of each option per my agreement with group k is obtained.

Table 7 - RG as a group

<table>
<thead>
<tr>
<th></th>
<th>X₁</th>
<th>X₂</th>
<th>X₃</th>
<th>X₄</th>
<th>X₅</th>
<th>X₆</th>
<th>X₇</th>
<th>X₈</th>
<th>X₉</th>
<th>X₁₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>A₂</td>
<td>5</td>
<td>4.5</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2.5</td>
<td>4</td>
</tr>
<tr>
<td>A₃</td>
<td>4</td>
<td>4.5</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>A₄</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4.5</td>
<td>1</td>
<td>2</td>
<td>2.5</td>
<td>2</td>
</tr>
<tr>
<td>A₅</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4.5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Step 5. The weighty matrix (Qₖ), the weights of indexes. For five ranking, The five SMEs studied in a heavy matrix of collective agreement provided as follows:

Table 8 - Matrix weighty (Qₖ)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>0.402</td>
<td>0.383</td>
<td>0.157</td>
<td>0.030</td>
<td>0.025</td>
</tr>
<tr>
<td>A₂</td>
<td>0</td>
<td>0.292</td>
<td>0.015</td>
<td>0.115</td>
<td>0.576</td>
</tr>
<tr>
<td>A₃</td>
<td>0.101</td>
<td>0</td>
<td>0.096</td>
<td>0.474</td>
<td>0.327</td>
</tr>
<tr>
<td>A₄</td>
<td>0.236</td>
<td>0.086</td>
<td>0.504</td>
<td>0.136</td>
<td>0.035</td>
</tr>
</tbody>
</table>
Step 6. Solution Linear assignment problem
Max: $0.402 h_{1,1} + 0.383 h_{1,2} + 0.157 h_{1,3} + 0.030 h_{1,4} + \ldots + 0.035 h_{5,5}$
St. 
\[ \sum_{j=1}^{5} h_{ij} = 1, \quad i = 1,2,3, \ldots,5 \]
\[ \sum_{i=1}^{5} h_{ij} = 1, \quad j = 1,2,3, \ldots,5 \]
\[ h_{ik} = 0,1, \quad i,j = 1,2,3, \ldots,5 \]

Step 7. The final priorities of Smes using the Hungarian method are:

\[ A_5 > A_1 > A_4 > A_3 > A_2 \]

<table>
<thead>
<tr>
<th>Rank</th>
<th>SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plastic products</td>
</tr>
<tr>
<td>2</td>
<td>Food products</td>
</tr>
<tr>
<td>3</td>
<td>Wood Products</td>
</tr>
<tr>
<td>4</td>
<td>Metal products</td>
</tr>
<tr>
<td>5</td>
<td>Health products</td>
</tr>
</tbody>
</table>

Table 9: Prioritize the ultimate smes

5. Conclusions
Limited access to finance is one of the major problems with exporting companies operating in different countries is . To the extent that export companies in the field of international startups hope to lose and this endangers the national economy. Exports have always been one of the best tools for marketing activities outside of the country. Encourage companies to export to different countries, as an important activity, increase employment within the country, foreign exchange earnings, develop competitive situation improves. In this study, methods of financing, 10 were selected And small and medium enterprises in the five areas Included: food products, health products, metal products, wood Products, plastic products, through using linear allocation of Borda, were ranked. The ranking results are shown in Table 9. According to the survey results suggest:

1. Given that the main method of financing for small and medium enterprises, loans identified, Lending conditions for small and medium enterprises, to facilitate.
2. In subsequent studies used more Small and medium enterprises (SMEs).

References

