Identification and Ranking of Projects Funded by the Steel Industry by Using of Multi Criteria Decision Making (MCDM)

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Abstract

In developing countries such as Iran, where most infrastructure projects, How to attract funds for investment because of the volume of investment needed and highly sensitive issues such projects in terms of political, economic and security the success of this project affect. Given the current situation of industrialization and increasing population rate of steel consumption, steel production per capita as an indicator of the development of any country. Since Iran is rich in minerals including iron ore, and energy sources (gas, etc.) is, in recent years several projects in the country, the industry is defined. In this regard, the selection criteria for funding projects with in time and budget specified steel quality of the ultra-high is applicable. In this study based on indicators derived from history and literature, questionnaires Takhys effective indicators of financing projects in the steel industry, paired comparison questionnaire tabloid indicators and Scale and intensity of the indicators were prepared and distributed among experts in the field. By analyzing data from questionnaires using SPSS software, and the summary indicators and Algorithms as well as the disposal of AHP, was ranked steel projects. Finally, the algorithm DEMATEL intensity between factors (extent and impact of variability on each other) was determined.

Keywords: Financing, Steel making, Financial indicators, Multi-criteria decision making, AHP, DEMATEL

1. Introduction

While the large investment in infrastructure projects in developing countries is an urgent need for governments unable to provide enough money to finance the project. To solve this problem, new methods of project financing governments must operate these methods allow the private sector to participate in infrastructure projects and public does not infrastructural projects is the owner forever. Recently, the use of contracts for the construction, operation and transition to privatization, attracting foreign capital, technology and technical skills to access and benefit from efficient management, the Iranian government has been. The most important and most effective way of achieving the development objectives of a country's economic structure with active financial markets. Due to poverty and lack of financial savings in most developing countries, domestic resources for capital formation in these countries is not sufficient to achieve the goals of development and infrastructure projects and Given the current situation of industrialization and increasing population rate of steel consumption, steel production per capita as an indicator of the development of any country is. Over the last years in order to better project management goals and projects emerged that the application of knowledge, skills, tools and activities to meet the needs and expectations of the management of the trustees and beneficiaries of the project. An important purpose of project management, cost reduction and quality improvement projects and implement it. There are obvious risks in any project that have a significant impact on cost and time. In the context of financial management in order to maximize the positive events and minimizing the consequences of adverse events emerged. In recent years, the market has driven the work implementing the contract in which the amount and timing of completion of work is guaranteed. Government, investors and employers to ensure that the amount and timing of projects, the amount does not exceed the agreed time and are willing to pay the extra amounts are more than the standard minimum common. Contracts Engineering-Procurement-Construction of a proper and safe way to carry out large projects to achieve these goals. An important issue in this regard is the foundation of how important the method of financing the project.
2. Literature review

Rahimi in his thesis entitled The relationship between modes of financing and changes in capital spending target to investigate this issue, The percentage change between modes of financing and whether there is a significant relationship between the cost of capital. The results suggest that in most cases between modes of financing and changes in capital costs, there is a linear relationship But the significance of this relationship varies depending on the method of financing and the period of investigation. (Mohammad Rahimi, 2012).

Mr. Abbasi's article entitled Ethics and pour the position of funding and financing system of financial intermediaries to have economic freedom index. (Said Purethics, Mustafa Abbasi, 2010).

In his article titled Assessment of the optical link between financing and investment decisions regarding company assets and resources To assess the relationship between financing structure and composition have been invested. The results obtained confirm the main hypothesis of the study indicate that there is a relationship between the sources of financing and investment decisions regarding the assets In the case that only certain specific variables are indicators of corporate finance. (M Dshn, SyedYOUsf Srknanyone, Y Nuri Fard, 2009).

Parviz’s thesis entitled to choose the most suitable model for the design of EPC projects to select the most appropriate method of financing is a method of financing. Then, based on factors that can result in a new model of financing of the utmost importance to be introduced to the following order of precedence: (M. Parvizi, 2010)

<table>
<thead>
<tr>
<th>Tax</th>
<th>21</th>
<th>Cost</th>
<th>22</th>
<th>Time</th>
<th>11</th>
<th>Capital and Technology</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>22</td>
<td>Time</td>
<td>11</td>
<td>Capital and Technology</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxes (taxes feasibility)</td>
<td>23</td>
<td>Facilities</td>
<td>13</td>
<td>Economic plan</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital and Technology</td>
<td>24</td>
<td>Refund</td>
<td>14</td>
<td>Responsibility</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquidity</td>
<td>25</td>
<td>Resources (financial costs)</td>
<td>15</td>
<td>Economic</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>26</td>
<td>Ownership</td>
<td>16</td>
<td>Law</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses</td>
<td>27</td>
<td>Collateral</td>
<td>17</td>
<td>Control</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warranty</td>
<td>28</td>
<td>Price</td>
<td>18</td>
<td>Cost</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>International council</td>
<td>29</td>
<td>Government</td>
<td>19</td>
<td>Financial Institutions</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit Participation</td>
<td>30</td>
<td>Transfer able securities</td>
<td>20</td>
<td>Funds</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Makoooye in his article titled Iran's steel industry supply chain strategy using system dynamics analysis to examine the steel industry are discussed. In this regard, the identification of key variables and their interactions are formulated in terms of causal loops, The design of the original model in terms of the accumulation curve and the simulation software has been completed. Can be added to the model variables, and any strategies and solutions in the tested model. After running the model, and examine its impact on a number of variables were introduced as variables, A number of critical variables in the model, the decision-makers and others who are not in control of the steel executives were offered for those variables in the steel industry is modeled separately. In two separate studies, Bvynystyn, January Jryvryvand Lee (1998) and KarkvychandLevine (2000) using cross-convergence of positive impact of FDI on economic growth as exogenous factors have been emphasized. (B. Barber, B. Amiri, 2009).

Mantell's book project management to finance the deal. Proper selection of projects that can be done on investment is vital for long any company. Model selection criteria in selecting projects for the company, which is based on directed feedback is important:
1. Realism
2. Feature
3. Flexibility
4. Easy to apply
5. Cost

"Improving long-term stock market and economic growth" is another article from Ross Levine and Srazrvs. In this paper, the authors have tried to study the effect of the financial system and economic growth. For this purpose, the authors have considered the following function:

\[(\text{Growth}) = \alpha X + \beta (\text{Stock}) + u\]

Where, X control variables, \(\alpha\) the coefficient vector of variables X, \(\beta\) and \(u\) estimated coefficients on the Stock such errors. Instrumental variables used in this article, such as: log of real per capita GDP, log of school enrollment rates, tips, Political instability (number of revolutions), the black market exchange rate, the GDP share of government consumption to GDP ratio and the total value of shares trade-in. The relationship between economic growth and stock market development are also considering the above factors and utilizes a two-stage least squares method have been investigated , The results show a significant positive relationship between real GDP growth and stock market development component designated for capital there. (Levin, Ross and Sera Zervos, 2000).
Alfredo and his colleagues (2003) on the positive role of foreign direct investment on economic growth have stressed, however, that the effect of financial markets and systems of host countries to absorb more capital of foreigners, are very important. Hertz risk analysis of traditional financial analysis and analyzing the most common decisions relating to distinguish knows. Risk analysis usually means the use of financial measures in determining the desirability of investment projects. The major difference between the traditional financial analysis, risk analysis, risk analysis is the uncertainty in the data related to the decision to intervene. (Hertz, Sept-Oct 1999)

In 2008, in an article entitled Viras comparison between project finance and financial modeling fine model for PPP projects in Germany have to choose the most efficient financial model. This article is a fine model of project financing as a key figure in the past two consecutive projects, corporate finance, public and private (PPP) in Germany have been compares. The comparison of the basic features of both models in order to predict their relative advantages and short comings of the general social perspective explains. Economic Feasibility Study (plan) as a tool for selecting the most efficient financial model, is presented. The comparison of the cost of construction and the close relationship between financial costs and risk transfer revealed. Research findings indicate that the economic feasibility studies, public policy makers to assess the cost of PPP projects in the financial model, enables. (Hans Wilhelm Alfen, Dirk Daube, Sussan Vollrath, 2008)

An article titled "Improving stock market and financial intermediaries generation” is another of the original Dmyryg-tookbootty and Ross Levine. In this study several different indicators of financial intermediaries and markets in developing and industrial countries share for 44 years from 1989 to 1993 introduced has been calculated. (Amiyatosh , 2008)

3. Research Methodology

The purpose of this study was to identify and prioritize a long index fund projects in the steel industry is a MCDM method, is that the industries. On the other hand the results of research on this type of project management, finance companies, investment companies, contractors and consulting engineers can use. Therefore, the type of research can be classified as applied research that has been conducted library and field methods. Data collection via the Internet by visiting the library and libraries to collect the data.

1.3. The main objective of this research with a goal and four minor face

A) The main purpose:
Identification and ranking of projects funded by the steel industry with multi-criteria decision-making methods.
B) sub-goals:
- Identify key indicators affecting the financing of projects in the steel industry
- Ranking indicators affecting the financing of projects in the steel industry
- Set priorities for each of these indicators
- Determine the effectiveness and influence of each indicator on each other

2.3. Population

The population of this research is the steel industry experts. This is generally project-based firms in the steel industry have been conducted with managers. This research has been conducted between the years 2012-2013. In this study, the combination of AHP and DEMATEL method is used.

3.3. AHP

Saaty (2000) has evolved the AHP which can enable decision makers to represent the interaction of multiple factors in complex situations. The process requires the decision makers to develop a hierarchical structure for the factors which are explicit in the given problem and to provide judgments about the relative importance of each of these factors, specify a preference for each decision alternative with respect to each factor. It provides a prioritized ranking order indicating the overall preference for each of the decision alternatives. An advantage of the AHP over other multicriteria decision making methods is that AHP is designed to incorporate tangible as well as non-tangible factors especially where the subjective judgments of different individuals constitute an important part of the decision process.

The main procedure of AHP using radical root method is as follows:

• Step 1:
  Determine the objective and the evaluation factors. Develop a hierarchical structure with a goal or objective at the top level, the factors at the second level, and the alternatives at the third level.

• Step 2:
  Find out the relative importance of different factors with respect to the goal or objective:

  * Construct a pair-wise comparison matrix using a scale of relative importance. The judgments are entered using the fundamental scale of the AHP (Saaty, 2000) as given in Table 1. Assuming N factors, the pair wise comparison of factor i with factor j yields a square matrix $A_{1N \times N}$ where $a_{ij}$ denotes the relative importance of factor I with respect to factor j. In the matrix, $a_{ij} = 1$ when $i = j$ and $a_{ij} = 1/a_{ji}$
• Find the relative normalized weight (Wi) of each factor by calculating the geometric mean of ith row and normalizing the geometric means of rows in the comparison matrix.

\[ GM_i = \left( \prod_{j=1}^{N} a_{ij} \right)^{1/N} \]  

(1)

and

\[ W_i = \frac{GM_i}{\sum_{i=1}^{N} GM_i} \]  

(2)

• Calculate matrix A3 and A4 such that \( A3 = A1 \times A2 \) and \( A4 = A3/A2 \)
where \( A2 = [W1,W2,Wi, \ldots ,WN]^T \)

• Find out the maximum eigen value \( \lambda_{max} \) which is the average of matrix A4.

• Calculate the consistency index, CI = \( (\lambda_{max} - N) / (N - 1) \). The smaller the value of CI, the smaller is the deviation from the consistency.

• Obtain the random index (RI) for the number of factors used in decision making. Table 2 helps the users for this purpose (Saaty, 2000).

• Calculate the consistency ratio, CR = CI/RI. Usually, a CR of 0.1 or less is considered as acceptable as it reflects an informed judgment which could be attributed to the knowledge of the analyst about the problem under study.

• Step 3:
The next step is to compare the candidate alternatives pair wise with respect to how much better (more dominant) in satisfying each of the factors. It is nothing but ascertaining how well each candidate alternative serves each factor. If there are M numbers of candidate alternatives, then there will be N number of M \( \times \) M matrices of judgments since there are N factors. Construct pair wise comparison matrices using a scale of relative importance. The judgments are entered using the fundamental scale \( N \) of the AHP (Saaty, 2000). The steps are same as that suggested under Step 2. In the AHP model, both the relative and absolute modes of comparison can be performed. The relative mode can be used when users have prior knowledge of the factors for different alternatives to be used, or when quantitative data of the factors for different alternatives to be evaluated is not available. The absolute mode is used when data of the factors for different alternatives to be evaluated are readily available. In the absolute mode CI is always equal to 0 and complete consistency exists, since the exact values are used in the comparison matrices.

\[ GM_i = \left( \prod_{j=1}^{N} a_{ij} \right)^{1/N} \]  

(1)

and

\[ W_i = \frac{GM_i}{\sum_{i=1}^{N} GM_i} \]  

(2)

• Step 4:
The next step is to obtain the composite weights for the alternatives by multiplying the relative normalized weight (Wi) of each factor (obtained in Step 2) with its corresponding normalized weight value for each alternative (obtained in Step 3) and making summation over all the factors for each alternative.

4.3. DEMATEL

Battelle Geneva Institute created DEMATEL in order to solve difficult problems that mainly involve interactive man-model techniques as well as to measure qualitative and factor-linked aspects of societal problems (Gabus & Fontela, 1972). In addition, DEMATEL has been utilized in numerous contexts, such as industrial planning, decision-making, regional environmental assessment, and even analysis of world problems (Huang, Shyu, & Tzeng, 2007); in all cases, it has confirmed interdependence among criteria and restricted the relations that reflect characteristics within an essential systemic and its developmental trends (Liou et al., 2007).

The foundation of the DEMATEL method is graph theory. It allows decision-makers to analyze as well as solve visible problems. In doing so, decision-makers can separate multiple measurement criteria into a cause and effect group to realize causal relationships much more easily. In addition, directed graphs, called digraphs, are much more helpful than directionless graphs since they depict the directed relationships among subsystems. In other words, a digraph represents a communication network or a domination relationship among entities and their groupings (Huang et al., 2007).

The steps in DEMATEL are as follows (Liou et al., 2007):

Step 1:
Calculate the initial average matrix by scores. Sampled experts are asked to point the direct effect based on their perception that each element i exerts on each other element j, as presented by aij, utilizing a scale ranging from 0 to 4. No influence is represented by 0, while a very high influence is represented by 4. Based on groups of direct matrices from samples of experts, we can generate an average matrix A in which each element is the mean of the corresponding elements in the experts’ direct matrices.

Step 2:
Calculate the initial influence matrix. After normalizing the average matrix A, the initial influence matrix D, [dij]nxn is calculated so that all principal diagonal elements equal zero. In accordance with D, the initial effect that an element exerts and/or acquires from each other element is given. The map depicts a contextual relationship among the elements within a complex system; each matrix entry can be seen as its strength of influence. This is depicted in Fig. 1; an arrow from d to g represents the fact that d affects g with an influence score of 1. As a result, we can easily translate the relationship between the causes and effects of various measurement criteria into a comprehensible structural model of the system based on influence degree using DEMATEL.

Step 3:
Develop the full direct/indirect influence matrix. The indirect effects of problems decreases as the powers of D increase, e.g., D2, D3,..., D∞, which guarantees convergent solutions to the matrix inversion. From Fig. 1, we see that the effect of c on d is greater than that of c on g. Therefore, we can generate an infinite series of both direct and indirect effects. Let the (i,j) element of matrix A be presented by aij, then the direct/indirect matrix can be acquired by following Eq. (3) through (6)

\[ D = s \bullet A, \quad s > 0 \]  
\[ [d_{ij}]_{nxn} = s[a_{ij}]_{nxn}, \quad s > 0, \quad i, j \in \{1,2,...,n\} \]  
\[ s = \max_{1 \leq i \leq n} \sum_{j=1}^{n} |a_{ij}| - \max_{1 \leq i \leq n} \sum_{j=1}^{n} |a_{ij}| \]  
\[ \lim_{m \to \infty} D^m = [0]_{nxn} \quad \text{where} \quad D = [d_{ij}]_{nxn} \]  
\[ 0 \leq d_{ij} < 1 \]  

The total-influence matrix T can be acquired by utilizing Eq. (7). Here, I is the identity matrix.
If the sum of rows and the sum of columns is represented as vector \( r \) and \( c \), respectively, in the total influence matrix \( T \), then

\[
T = D + D^2 + \ldots + D^m = D(I - D)^{-1} \quad \text{when } m \to \infty \quad (7)
\]

where the superscript apostrophe denotes transposition.

If \( r_i \) represents the sum of the Ith row of matrix \( T \), then \( r_i \) presents the sum of both direct and indirect affects of factor \( i \) on all other criteria. In addition, if \( c_j \) represents the sum of the jth column of matrix \( T \), then \( c_j \) presents the sum of both direct and indirect affects that all other factors have on \( j \). Moreover, note that \( j = i(r_i + c_j) \) demonstrates the degree to which factor \( i \) affects or is affected by \( j \). Note that if \( (r_i - c_j) \) is positive, then factor \( i \) affects other factors, and if it is negative, then factor \( i \) is affected by others (Liou et al., 2007; Tzeng et al., 2007).

Fig 1. An influential map

Step 4:
Set the threshold value and generate the impact relations map. Last, we must develop a threshold value. This value is generated by taking into account the sampled experts’ opinions in order to filter minor effects presented in matrix \( T \) elements. This is needed to isolate the relation structure of the most relevant factors. In accordance with the matrix \( T \), each factor \( t_{ij} \) provides information about how factor \( i \) affects \( j \). In order to decrease the complexity of the impact relations-map, the decision-maker determines a threshold value for the influence degree of each factor. If the influence level of an element in matrix \( T \) is higher than the threshold value, which we denote as \( p \), then this element is included in the final impact relations map (IRM), (Liou et al., 2007).

4. Applying integrated Model

The index rating of three steel projects in Asia, steel making projects in White Plains and steel projects Shadegan AHP method is used for ranking, were used. Hence, the first tabloidhorns using a hierarchical structure (as per Exhibit 2) to select the best project design.
The analytic hierarchy process elements, each element of the pair at a higher level compared to their corresponding weights are calculated. The relative weight of these weights is called. Hence, to obtain numerical value preferences of all matching technique is used. Soto sum rows, each row, the total number of respondents (n=12) were divided. The numerical value of each of the paired comparisons were calculated and rounded off with the column averages, the numeric value of each of the paired comparisons is given in Table3.

<table>
<thead>
<tr>
<th>The final value of preferences</th>
<th>Average Rows</th>
<th>Total Rows</th>
<th>Paired comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>606</td>
<td>80</td>
<td>Need to exchange / Stable trade</td>
</tr>
<tr>
<td>8</td>
<td>8.1</td>
<td>98</td>
<td>Need to exchange / Type of contract</td>
</tr>
<tr>
<td>6</td>
<td>6.4</td>
<td>77</td>
<td>Need to exchange / Risk</td>
</tr>
<tr>
<td>9</td>
<td>8.5</td>
<td>103</td>
<td>Need to exchange / Project conditions</td>
</tr>
<tr>
<td>5</td>
<td>5.08</td>
<td>61</td>
<td>Stable trade / Type of contract</td>
</tr>
</tbody>
</table>
Since the criteria are weighted to reflect their importance in determining the weight of each criterion relative to its share option is the standard option. The final weight for each option that can be easily obtained by multi plying the weight of each criterion (Matrix 1) the choice of the weights of the criteria (matrix 2) is obtained.

Matrix 1. Normalized of relative to each other

<table>
<thead>
<tr>
<th>Choosing the Best Project</th>
<th>Need to exchange</th>
<th>Stable trade</th>
<th>Type of contract</th>
<th>Risk</th>
<th>Project conditions</th>
<th>Average Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to exchange</td>
<td>0.65</td>
<td>0.80</td>
<td>0.56</td>
<td>0.37</td>
<td>0.32</td>
<td>0.54</td>
</tr>
<tr>
<td>Stable trade</td>
<td>0.09</td>
<td>0.11</td>
<td>0.35</td>
<td>0.31</td>
<td>0.11</td>
<td>0.19</td>
</tr>
<tr>
<td>Type of contract</td>
<td>0.08</td>
<td>0.02</td>
<td>0.07</td>
<td>0.25</td>
<td>0.32</td>
<td>0.15</td>
</tr>
<tr>
<td>Risk</td>
<td>0.11</td>
<td>0.02</td>
<td>0.02</td>
<td>0.06</td>
<td>0.21</td>
<td>0.08</td>
</tr>
<tr>
<td>Project Conditions</td>
<td>0.07</td>
<td>0.04</td>
<td>0.01</td>
<td>0.01</td>
<td>0.04</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Matrix 2. Summarizes the Projects relative weights to the criteria

<table>
<thead>
<tr>
<th>The relative weights</th>
<th>Need to exchange</th>
<th>Stable trade</th>
<th>Type of contract</th>
<th>Risk</th>
<th>Project conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miyaneh</td>
<td>0.71</td>
<td>0.54</td>
<td>0.67</td>
<td>0.64</td>
<td>0.65</td>
</tr>
<tr>
<td>Sefid Dasht</td>
<td>0.22</td>
<td>0.30</td>
<td>0.23</td>
<td>0.27</td>
<td>0.23</td>
</tr>
<tr>
<td>Shadegan</td>
<td>0.07</td>
<td>0.16</td>
<td>0.10</td>
<td>0.09</td>
<td>0.12</td>
</tr>
</tbody>
</table>

The results obtained using the AHP method options, the final weights are ranked according to Table 4.

Table 4. Projects Ranking

<table>
<thead>
<tr>
<th>Weight</th>
<th>Projects</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.66</td>
<td>Miyaneh</td>
<td>1</td>
</tr>
<tr>
<td>0.24</td>
<td>Sefid Dasht</td>
<td>2</td>
</tr>
<tr>
<td>0.10</td>
<td>Shadegan</td>
<td>3</td>
</tr>
</tbody>
</table>
In order to obtain the phase relationship of each of the indicators used in relation to each of DEMATEL, DEMATEL method to identify and evaluate the relationship between standards and is used to map the network of relationships. To obtain the numerical value of the index of each factor of the total matching techniques are used. Soto sum rows, each row, the total number of respondents (n=12) were divided. The numerical value of each of the paired comparisons were calculated and rounded off with the column averages, the numeric value of each is obtained. (See Tables 5).

Table 5. Paired comparisons between the numerical values of Severity Index

<table>
<thead>
<tr>
<th>The final value of relationships</th>
<th>Average Row</th>
<th>Total Rows</th>
<th>Paired comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3.67</td>
<td>44</td>
<td>Stable trade / Need to exchange</td>
</tr>
<tr>
<td>2</td>
<td>2.25</td>
<td>27</td>
<td>Type of contract / Need to exchange</td>
</tr>
<tr>
<td>3</td>
<td>2.8</td>
<td>34</td>
<td>Risk / Need to exchange</td>
</tr>
<tr>
<td>1</td>
<td>1.33</td>
<td>16</td>
<td>Project conditions / Need to exchange</td>
</tr>
<tr>
<td>2</td>
<td>2.1</td>
<td>26</td>
<td>Type of contract / Stable trade</td>
</tr>
<tr>
<td>4</td>
<td>3.58</td>
<td>43</td>
<td>Risk / Stable trade</td>
</tr>
<tr>
<td>3</td>
<td>2.8</td>
<td>34</td>
<td>Project conditions / Stable trade</td>
</tr>
<tr>
<td>3</td>
<td>2.75</td>
<td>33</td>
<td>Risk / Type of contract</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>36</td>
<td>Project conditions / Type of contract</td>
</tr>
<tr>
<td>1</td>
<td>1.4</td>
<td>17</td>
<td>Project conditions / Risk</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Need to exchange / Stable trade</td>
</tr>
<tr>
<td>3</td>
<td>3.25</td>
<td>39</td>
<td>Need to exchange / Type of contract</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Stable trade / Type of contract</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Need to exchange / Risk</td>
</tr>
<tr>
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<td>17</td>
<td>Stable trade / Risk</td>
</tr>
<tr>
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<td>45</td>
<td>Type of contract / Risk</td>
</tr>
<tr>
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<td>3.3</td>
<td>40</td>
<td>Need to exchange / Project conditions</td>
</tr>
<tr>
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<td>1.5</td>
<td>18</td>
<td>Stable trade / Project conditions</td>
</tr>
<tr>
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<td>3.6</td>
<td>44</td>
<td>Type of contract / Project conditions</td>
</tr>
<tr>
<td>4</td>
<td>3.5</td>
<td>42</td>
<td>Risk / Project conditions</td>
</tr>
</tbody>
</table>

DEMATEL method of determining the significance (weight) of each criterion measure the impact of each measure on the other measures of the system and its ability to scale with the rest of the play. Finally, with respect to (R + J) index was more interaction with the other system parameters and then order risk indicators, project conditions, a stable currency and trade balance are gone. It should be noted that the (RJ), risk indicators, project requirements, cutting and stable currency and the Group's trade balance index set belonging to the group are disabled. (According to Table 6)

Table 6. The influence of the elements together

<table>
<thead>
<tr>
<th>Ranking</th>
<th>The maximum total row (R)</th>
<th>Ranking</th>
<th>The maximum total column (J)</th>
<th>Ranking</th>
<th>According to (R+J)</th>
<th>Ranking</th>
<th>According to (R-J)</th>
</tr>
</thead>
<tbody>
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<td>Project conditions</td>
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<td>Risk</td>
<td>1.67</td>
<td>Type of contract</td>
<td>2.40</td>
<td>Risk</td>
<td>0.68</td>
</tr>
<tr>
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<td>Type of contract</td>
<td>1.40</td>
<td>Risk</td>
<td>2.35</td>
<td>Project conditions</td>
<td>0.58</td>
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<tr>
<td>Stable trade</td>
<td>1.03</td>
<td>Project conditions</td>
<td>0.85</td>
<td>Project conditions</td>
<td>2.27</td>
<td>Need to exchange</td>
<td>0.46</td>
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5. Conclusions and recommendations

In the current climate, due to the increasing industrialization of society and the increasing rate of steel consumption, steel production per capita of any country is regarded as a marker development. Since the Iranian iron ore rich in minerals and energy resources (gas, etc.) is, in recent years several projects in the country, the industry is defined. In this regard, the selection criteria for funding projects with time and budget specified steel quality of the ultra-high is applicable. In this study based on indicators derived from history and literature, questionnaires Takhys effective indicators of financing projects in the steel industry, paired comparison questionnaire tabloid indicators and scale and intensity of the indicators were prepared and distributed among experts in the field. By analyzing data from questionnaires using SPSS software, and the summary indicators and Algorithms as well as the disposal of AHP, was ranked steel projects. Finally, the algorithm DEMATEL intensity between factors (extent and impact of variability on each other) was determined.

5.1. Suggestions for Future Research

1. Specifically, this series of researches on upstream and downstream industries related to steel industry, Pelletizing projects and industries such as rolling, apply to Steel industry in order to provide a comprehensive model for financing.

2. To increase the accuracy of other methods such as AHP, Fuzzy, GTMA and... Be used to provide a template or rating.

3. Indexes of the parameters to be measured in other countries.

6. References