Evaluating and Ranking the Financial Performance Of listed Companies in Tehran Stock Exchange the approach Combine stops is _ Fuzzy AHP (Case Study: Automotive And Auto Parts)

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INTRODUCTION

Most scholars in economics, capital formation and economic development have been the most important factor. Progressive economic development in the world, thanks to the stock market and capital market activities. Capital market in the form of a financial market, the confluence of supply and demand for financing medium and long term. A supplier in the market is often a savings of individual investors make up. As one of the centers of capital market funds, savings, and their liquidity by brokers and financial intermediaries in the investment business and will lead to long-term production (Gholizdeh, M.H., 1383). Achieving long-term and sustained economic growth requires the mobilization and allocation of resources in the national economy, and without the help of financial markets, particularly the extensive and efficient capital market is not easily possible. In a healthy economy, the financial system is in proper distribution of funds and resources are essential (Besley Scott, Eugene, F., 1999). Investment companies, which means they are investing money in a number of securitiesShareholders to benefit from the advantages of a diversified portfolio and management efficiency to (Tolga, E., M. Demircan, 2005).These institutions have created a structure in which an active market, securities are faced with and, ultimately, lower operating costs and transitional become more profitable (Moullin, Max, 2010.). Rest of the paper is structured as follows : Firstly the research background combined with relevant literature on the subject is provided, then a hybrid approach used in this paper are fully described. Finally, decision-making procedures described in the auto and auto parts industry ranking companies in Tehran Stock Exchange adopted the findings and results obtained are discussed.

Research History: Hierarchical analysis tool that is widely used in multi-criteria decision:

And the first time was introduced by Saaty. TOPSIS method for multiple criteria decision-making method is also useful in the real world issues that were originally raised by Huang and ions. (Momeni, M., 1387).
These models are rarely used in the evaluation and ranking of companies with financial ratios (a key factor in determining the value of the company) have been used. Some studies related to study abroad include: Muhammad Ali, A., et al (2007) model combining parametric and nonparametric ranking companies have distribution (Muhammad Ali, A., action, 2007).


Wang (2008) paper on the application of multi-criteria evaluation to assess the financial capability of Taiwan's airline emphasized that the financial impact on airlines are vital. In this paper, the selection criteria and their clustering TOPSIS method for evaluating and ranking the financial capability has been used 3 airlines in Taiwan. [8].

Artagral, Nielsen (2009) in the paper performance evaluation of Turkish cement, using the AHP and TOPSIS expressed in two ways. The purpose of this paper is a logical model in order to improve corporate performance with regard to financial ratios, was studied and at the same time a judgment is reasonable and correctly applied by decision-makers. AHP method is used to determine the criteria, and then the TOPSIS method to classify companies is (Ertugrul, I. and N. Karakasoglu, 2009).

Qi or Chi Sun (2010), the paper evaluates the performance of fusion procedures FUZZY AHP AND FUZZY TOPSIS, an assessment method based on a hierarchical analysis technique for ranking the performance data (Chi Sun, Chi, 2010).

Research questions:
1. What are appropriate indicators for ranking?
2. Evaluation and ranking criteria is how?
3. Ranking of listed companies based on what criteria?

Research objectives:
The main goal of this research is that a good model for evaluating and ranking companies listed group. And also study pursues the following objectives:
1. Find the most effective components and indicators for assessing the financial performance of companies
2. Set the priority and importance of each component of an effective factor in assessing the financial performance of companies
3. Determine the evaluation and ranking of listed companies in Tehran Stock Exchange (manufacturing and mining) using techniques FUZZY TOPSIS-FUZZY AHP
4. Provide practical suggestions to make decisions to invest.

MATERIALS AND METHODS

This study was a cross-sectional survey and the target is classified as applied research. Prepared in line with the research literature, as well as identify the variables and parameters of the library used. Method of data collection in the ranking criteria of 26 subjects from experts Stock Exchange city in Mazandaran were obtained by the method of documents referring to the financial instruments in the years 1385 to 1388 to collect relevant factors Rankings companies are discussed.

Methods of data analysis and information:
After gathering the necessary information through questionnaires and coded all of them, then went to SPSS. The data were analyzed as follows.
1. Alpha test is used to determine the reliability of the questionnaire.
2. AHP-FUZZY test to rank the factors and options for each of them

Fuzzy AHP technique:
In topic literature, phase consequential analysis procedure, there are different methods in which their difference is on theory structure. Computation and complication of these methods leads to non-usability of these methods. Where change analysis method is easier than other FAHP method and is similar to traditional AHP. We preferred them to other methods in this study. Extent analysis method has been introduced by change in 1996 and is a Chinese researcher. Used numbers in this method are triangle phase numbers. (Bozbura, etal, 2006: 360) in extent analysis method, for every couple comparing matrix row, \( S_k \) value is a phase number and be computed as:

\[
S_k = \sum_{j=1}^{n_k} M_{ij} \times \left[ \sum_{i=1}^{n_k} \sum_{j=1}^{n_k} M_{ij} \right]^{-1}
\]

(1)
Whereas:
\[
\left[ \sum_{i=1}^{m} \sum_{j=1}^{n} M_{ij} \right] = \left( \sum_{i=1}^{m} \sum_{j=1}^{n} l_{ij}, \sum_{i=1}^{m} \sum_{j=1}^{n} m_{ij}, \sum_{i=1}^{m} \sum_{j=1}^{n} u_{ij} \right)
\]

By reversing above relation, we have:
\[
\left[ \sum_{i=1}^{m} \sum_{j=1}^{n} M_{ij} \right]^{-1} = \left( \frac{1}{\sum_{i=1}^{m} \sum_{j=1}^{n} l_{ij}}, \frac{1}{\sum_{i=1}^{m} \sum_{j=1}^{n} m_{ij}}, \frac{1}{\sum_{i=1}^{m} \sum_{j=1}^{n} u_{ij}} \right)
\]

k indicates row number, i, j indicates chooser and indicators.

After computing \( s_k \) we should got their greatness ration to each other. in general, if \( M_1, M_2 \) were two phases number, their greatness ratio would be computed as:
\[
V(M_1 \geq M_2) = \begin{cases} 1 & \text{if } m_1 \geq m_2 \\ hgt(M_1 \cap M_2) & \text{o.w} \end{cases}
\]

in equation 4 , we have:
\[
hgt(M_1 \cap M_2) = \frac{u_1 - l_2}{(u_1 - l_2) + (m_2 - m_1)}
\]

The amount of number greatness of triangle phase number from k other fuzzy number would be achieved by equation here:
\[
V(M_1 \geq M_2, ..., M_k) = V(M_1 \geq M_2, ..., M_1 \geq M_k)
\]

In order to compute indicators weight in couple matrix comparing , we have:
\[
W' = \text{min} \{V(S_i \geq S_k)\} \quad k = 1,2, ..., n, k \neq i
\]

At last, indicator vector weight would be as:
\[
W' = [w'(x_1), w'(x_2), ..., w'(x_i)]
\]

Normalized weight would be as:
\[
W_i = \frac{W_i}{\sum W_i}
\]

w is fuzzy number (Lotfi, Mohammad. 1376)

**Data analysis:**
According to the steps listed weight of each index options and gain the weight each is calculated in the table below:

<table>
<thead>
<tr>
<th>Priority</th>
<th>Rating</th>
<th>Options</th>
<th>Row</th>
<th>Priority</th>
<th>Rating</th>
<th>Options</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>0.0084</td>
<td>The ratio of fixed assets to equity</td>
<td>10</td>
<td>6</td>
<td>0.094</td>
<td>The total assets turnover</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>0.0099</td>
<td>Equity or capital ratios</td>
<td>11</td>
<td>8</td>
<td>0.035</td>
<td>Fixed asset turnover</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>0.0118</td>
<td>Debt coverage ratio</td>
<td>12</td>
<td>3</td>
<td>0.125</td>
<td>Inventory turnover ratio</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>0.119</td>
<td>Gross profit margin ratio</td>
<td>13</td>
<td>7</td>
<td>0.082</td>
<td>The average collection period</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>0.151</td>
<td>The net profit margin ratio</td>
<td>14</td>
<td>5</td>
<td>0.106</td>
<td>Grades ratio of working capital</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>0.14</td>
<td>Than investment returns</td>
<td>15</td>
<td>14</td>
<td>0.0109</td>
<td>Long-term debt to equity ratio</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>0.051</td>
<td>Ratio, return on equity</td>
<td>16</td>
<td>15</td>
<td>0.0103</td>
<td>Current debt to equity ratio</td>
<td>7</td>
</tr>
<tr>
<td>10</td>
<td>0.024</td>
<td>Current Ratio</td>
<td>17</td>
<td>12</td>
<td>0.014</td>
<td>Total debt to equity ratio</td>
<td>8</td>
</tr>
<tr>
<td>13</td>
<td>0.01</td>
<td>Acid ratio</td>
<td>18</td>
<td>13</td>
<td>0.0110</td>
<td>Debt ratio</td>
<td>9</td>
</tr>
</tbody>
</table>

**Conclusions:**
According to the comparisons made, applying the conceptual model of this research for companies and investors make the right decision would be very helpful. As a result, ranking of companies that are in the first category need to develop appropriate strategies to maintain their position. While weaker companies turn their attention to narrow the gap with stronger companies and try to improve their position in the rankings.
Ranking of companies based on criteria using the technique TOPSIS, during which 31 companies manufacturing vehicles and vehicle parts were evaluated and graded rank, represents the investment company, Iran Khodro, respectively, Car parts, head DeNA, Saipa, tractor engine makers, rank first to fifth account.

REFERENCES