

## Evaluation and Grading the Financial Performance of Financial Investment Firm Accepted in Tehran Exchange: Applying AHP, Shanon and Topsis

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**Abstract:** Evaluating financial performance of the companies and reporting the data and information will provide a chance for the investors to invest accurately and will provide this will result in increasing the competitions in market and consequently society will be develop. This article which will be implemented and done in Tehran attempts to grade the financial investment companies regarding the financial criteria. Nine financial investment companies regarding the financial criteria, Nine financial investment companies has been evaluated and graded for a period from 2008-2009 at this article. The criteria of financial performance of investment companies at exchange have been determine and identified after review of literature, regarding the nature of financial investment companies, studying the article at this area, paying attention to views of financial experts. To increase the authenticity of the research, the weight of financial proportion has been measured both with AHP method, expert's view and with Anthropy Shanon and its reason is under the data transmittal of each criterion and then these weight have been blended together with average weights. Finally, algorithm TOPSIS has been implemented for grading investment companies regarding final weight. The companies have been graded and ranked under the preference and priority of the financial evaluated proportions after employing the above methods and the companies with better performance were graded and ranked higher according to preference of these proportions.

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**Key words:** evaluating the performance, the financial investment companies, Anthropy Shanon, AHP, TOPSIS

### 1. Introduction

One of the main elements of stable economic growth and development in countries is investment issue. Also, in capital market and Stock Exchange Market, the role of investment companies as financial intermediaries has major importance. The efficiency of these companies has been one of the influencing phenomena on capital markets in the economy sector. Since by increasing their efficiency, it can be efficiently contributed to the country's economic performance improvement, there is a need to evaluate their activities and performances based on an appropriate mechanism (Qayi, Alirezaei, Nikoomaram, 2006).

Assessment of companies listed in Stock Exchange requires identifying several factors so that the decision-making process is accompanied by complexity and difficulties. The decision-making has been always a difficult process, and in current situations that rapid and increasingly changes occur, the decision-making trend has undoubtedly accelerated. Ranking the listed Companies in Tehran Stock Exchange according to the financial criteria is among the important topics that unfortunately, little research has been done in relation so far.

Investment companies are a form of financial intermediaries that integrate the participants' funds in the market and use these funds to purchase a portfolio of securities such as stocks and bonds (Abdo Tabrizi, 1998).

Considering that the experts in financial management area know the investment companies as one of the enabling tools of market and the capital, we decided to review the performance of the financial investment companies, hoping that addressing this issue will make it easier for further research in different dimensions and with the aim of creating a boom in the capital market. We wish that the present study will be associated with useful results for the investors and economic planners of our beloved homeland.

### 2. Defining of the basic concepts Performance Evaluation

Evaluation shows that which tasks do not proceed in accordance with scheduling and goals. The evaluation also shows in which items it is going well. Thus, based on them, the next successes can be achieved. This reveals the necessity of considering the performance evaluation category. The performance evaluation is a process by which the employee performance is measured, and when it is

done properly, all the employees, supervisors, managers and ultimately the organizations will benefit from it (Madani Mohammadi, 2007).

Table 1: Summary of researches

| Row | Research Topic   | Researcher       | Year | Results  |
|-----|--|------------------|------|--|
| 1   | Designing a decision-making model to formulate the priority strategy of companies' assignment covered by the Oppressed and Disabled Veterans Foundation using decision-making techniques | Fazaeli          | 1999 | The obtained results suggest that the Department of Mines and Petroleum products has been the best industrial group of the Industries and Mines Organization and Textile groups are the weakest industrial groups of this organization |
| 2   | Evaluation of parent investment companies based on hierarchical analysis process   | Heibati          | 1999 | Rating of parent investment companies  |
| 3   | Financial assessment of companies listed in Tehran Stock Exchange based on hierarchical analysis process   | Abbasnejad       | 2002 | Rating of companies listed in Tehran Stock Exchange  |
| 4   | Assessing the economic performance of companies listed on Tehran Stock Exchange; the 9-item indices for about 170 companies in 13 industries   | Moemeni          | 2005 | Rating of companies listed in Tehran Stock Exchange  |
| 5   | Evaluate the performance of airline companies  | Fang & Wong      | 2000 | Rating of airline companies  |
| 6   | Assessment article of financial performance of agriculture - business companies with multi-indicators decision making system approach  | Calpgrass et al. | 2004 | Assessment of financial performance and rating of agriculture - business companies   |
| 7   | Applying fuzzy multi-criteria assessment to evaluate the financial capabilities of Taiwan airlines   | Wong             | 2008 | Evaluate and rating the financial capabilities of 3 airline companies in Taiwan  |
| 8   | A classification method for determining fiscal representing rates  | Wong             | 2008 |  |
| 9   | Evaluation of the Turkey's banking sectors using fuzzy AHP and fuzzy TOPSIS  | Sim et al.       | 2009 | Evaluation of 5 Bank of Turkey using 27 financial criteria And 5 non-financial criteria  |

### Decisions-making

Decision-making can be defined as how to act and/or moving in a given direction, which has been chosen among different ways and methods by realization and consciously to achieve a desired goal (Massi, 1987, 42). In an age characterized by rapid and increasing changes and developments, the decision-making rate has also accelerated, and the need for rapid decision making to deal with rapid interactions in environment has created such conditions that the time of reflection, thinking and decision-making for the manager has been reduced significantly. In fact, today's managers find themselves forced to make more decisions regarding more, more widespread and more various issues in shorter time (Toffler, 1980).

### Rating

Rating the companies is considered as one of the most important tools to identify the strengths, weaknesses, opportunities and external threats to the

companies. The companies' rating follows several internal and external goals. Among the most applied companies' rating purposes, some can be mentioned as follows:

- Ability to compare the company with the competitors, to determine the internal strengths and weaknesses and environmental opportunities and threats in order to help developing appropriate strategies consistent with environment and the firm's capabilities.
- Improvement of guiding and direction of the performance of the company's senior managers and its various units based on the assessments.
- Re-considering of the past investments and decision-making on new investments according to the performed rankings based on performances evaluation.

- Assisting to the creditors in selecting top companies in the future credit granting.
- Revision in decision-making on purchase and making the customers loyal to the superior companies.
- Helping the government and governmental agencies revision and decision-making on support, intervention, punishment or rewarding and directing the companies (Qodratian Kashan & Anvari Rostami, 2005).

### Capital

The capital means investable and savings resulting funds that are applied as machinery, buildings, tools, skills or cash. In economics, any wealth used to produce more wealth is called the capital (Momeni and Najafi Moghaddam, 2005).

### Investment companies

The investment companies are the tools that investment the money in a number of securities to benefit their shareholders from diversified advantages of portfolio and performance management (Admister, 1988). The services provided by the investment companies to their customers, include risk reduction, financial intermediation among individuals and financial markets as well as ease of communication (Rose and Fraser, 1988). These institutions have also developed a structure in which the active person in the securities market will encounter lower operational and transitional costs, and ultimately will get more profits (Dietrich, 1996).

Summarized in the following formats, the main reasons for the importance of these companies can be outlined as:

- Capital resources mobilization and participation of people in capital formation through gathering the wandering capitals, which exist as scattered and sometimes in small amounts in the community, and concentration of the collected funds to conduct them toward the priorities with economic advantage.
- Providing liquidity to investee companies and sharing in production issue, especially in secondary markets that give the opportunity to the production units to attract new capital through new equity publishing or debt securities issuance.
- Reducing the investment risk (Shahdaii, 2009).

### 3. The Problem definition

The existence of an organized and efficient capital market is inevitable for achieving economic growth and development. Indeed, economic growth and savings resources are interdependent and need each other, and with no doubt, the lack of financial resources is the major barrier to economic growth.

Creation and development of capital markets requires directing the people's savings and excess liquidity toward economic productive and useful activities. Such a capital market not only prevents the over-increase of consumption and use of public savings in non-productive sectors, but also causes increased production and decreased inflation. Meanwhile, the owners of the savings will benefit good bonuses and profits, which will increase the motivation of the general public for more savings.

Establishment of such a capital market requires a variety of measures and policies of which one of the most important is providing the investment companies. Since the creation of investment companies and starting their activities in the world, their role in the world's capital market has been considered as one of the major players, so that they still play an effective and undeniable role in today's markets. Obviously, whenever these companies have been active and efficient, the financial markets in the concerned countries have become more prosperous (Raei, 1997).

Rating companies in different industries can explicitly mirror the situations of different companies than to their competitors and identify the internal strengths and weaknesses and external opportunities and threats of the companies; but the more important is the ranking model, appropriate criteria and mathematical technique for such ranking. What will be studied in this study includes financial performance evaluation and ranking financial investment companies listed in Tehran Stock Exchange. Given the above points, the following questions will be answered in this study:

- What are the most important components and effective indices for financial performance evaluation in ranking the companies?
- How are the priorities and coefficient importance of each of the effective components in evaluating the financial performance of companies and their rankings?
- What is the rating order of financial investment companies listed in Tehran Stock Exchange?

### 4. The proposed solutions

The proposed solutions include scientific research, problem-solving methods and following a step by step, logical, systematic and accurate method to identify the problems, collecting data, data analysis and valid conclusions from them (Sekaran, 2007). Without measurement, there will be no basis for evaluating, and what cannot be evaluated, would not be also possible to be properly being managed. Therefore, it is necessary to use a scientific model for performance evaluation of the investment companies

for applying proper and effective management in order to be able to make continuously measurement of their efforts level and their work results (Qayi, Alirezaei and Nikoomaram, 2006).

The multi-criteria models are used for selecting the best option and several criteria (not the ideals) are considered simultaneously in decision makings. The decision matrices in these methods are two-dimensional matrices, in which the rows are the options and columns form the criteria. The quantitative values of each column are normalized by hourly method, which is the same option weight in proportion with the criterion. The set of techniques in MADM can be classified into two categories, including compensatory techniques and non-compensatory techniques (Asgharpoor, 2009).

In this study, after a comprehensive review of the discussion literature and considering the nature of the investment companies, the measures (ratios) of financial evaluation of investing companies listed in the stock market have been identified. After extracting the data on financial ratios using the Rahavard Novin software, a program was prepared in EXCEL to make the necessary calculations in it. First, the inconsistency rate of the paired comparisons tables were calculated, and the tables with the rate of inconsistency over 0.1 were excluded from the calculations. Among the fourteen completed comparisons tables, two tables had inconsistency rates more than 0.1, which have been excluded from the calculations, since it was not possible to review them. Then, using the geometric mean, the paired comparison tables (completed by the experts) were combined, and using the AHP method – based on the experts' opinions – the financial evaluation criteria weights were calculated. In order to increase the research accuracy, these weights have been combined with the weights calculated using the Shannon entropy method, which logic is based on data distribution of each of the criteria. After determining the final weights of the criteria, the evaluation of the investment companies and their prioritization were performed using the TOPSIS method. The financial investment companies listed in Tehran Stock Exchange studied in this research included 9 companies, as the following: Atieh Damavand, Bu Ali, Bimeh, Toseae Melli, Sepah, Sanat o Maadan, Behshahr Group, Mellat and Melli.

## 5. The financial evaluation process of investment companies

### 5.1. Developing the evaluation criteria

Very valuable efforts have been carried out during the past years to develop appropriate and efficient criteria for financial assessment evaluation

of companies. However, these criteria have not been often studied themselves in comparative ratios by each other, and a similar significance weight has been considered for them.

In the present study, according to the performed studies, the nature of studied companies and considering the experts' opinions, fifteen criteria were adopted for financial evaluation of the companies. As mentioned above, the major problem of these criteria lies in the absence of their relative priority determination. This major weakness has been addressed in the current study. These criteria include:

- A. Fixed assets to total shareholders' equities ratio
- B. Fixed assets to long-term debts ratio
- C. Total debts to total assets ratio
- D. Total shareholders' equities to total debts ratio
- E. Working capital to total assets ratio
- F. Current assets to current liabilities ratio
- G. Immediate assets to current liabilities ratio
- H. Working capital to current assets ratio
- I. Operating income to fixed assets ratio
- J. Operating income to total assets ratio
- K. Profit to operating income ratio
- L. Income before taxing to operating income ratio
- M. Profit to operating income ratio
- N. Net income to total assets ratio
- O. Net income to shareholders' special equities ratio

To make the paired comparisons possible, the criteria have been grouped in four main categories of financial structure, debt capacity, return on investment and profitability.

### 5.2. Determination of criteria weights

In this step, using the questionnaires distributed among the experts, the final weights of AHP were obtained for each of the options (criteria). Then, using the Shannon entropy, the weight for each of the options was obtained.

### 5.3. Combining the AHP and SHANON weights and determining the final weights of the measures

To increase the accuracy of the present study, these two types of weights obtained from AHP and Shannon Entropy methods were combined together. So, the adjusted weight ( $w'_j$ ) is calculated as follows (Momeni, 2009):

$$\forall j \quad ; \quad \frac{\lambda_j \cdot w_j}{\sum_{j=1}^n \lambda_j \cdot w_j} = \text{the adjusted weight}$$

$$= w'_j$$

### 5.4. Ranking of investment companies using TOPSIS method

In this step, 9 investment companies were evaluated considering 15 criteria (financial ratios), and the selected option should be at the least distance from the positive ideal solution and at the farthest distance from the negative ideal solution. In this method, the best value that an indicator can have is

the positive ideal, and the worst value is considered as the negative ideal indicator.

**6. Final prioritization of financial investment**

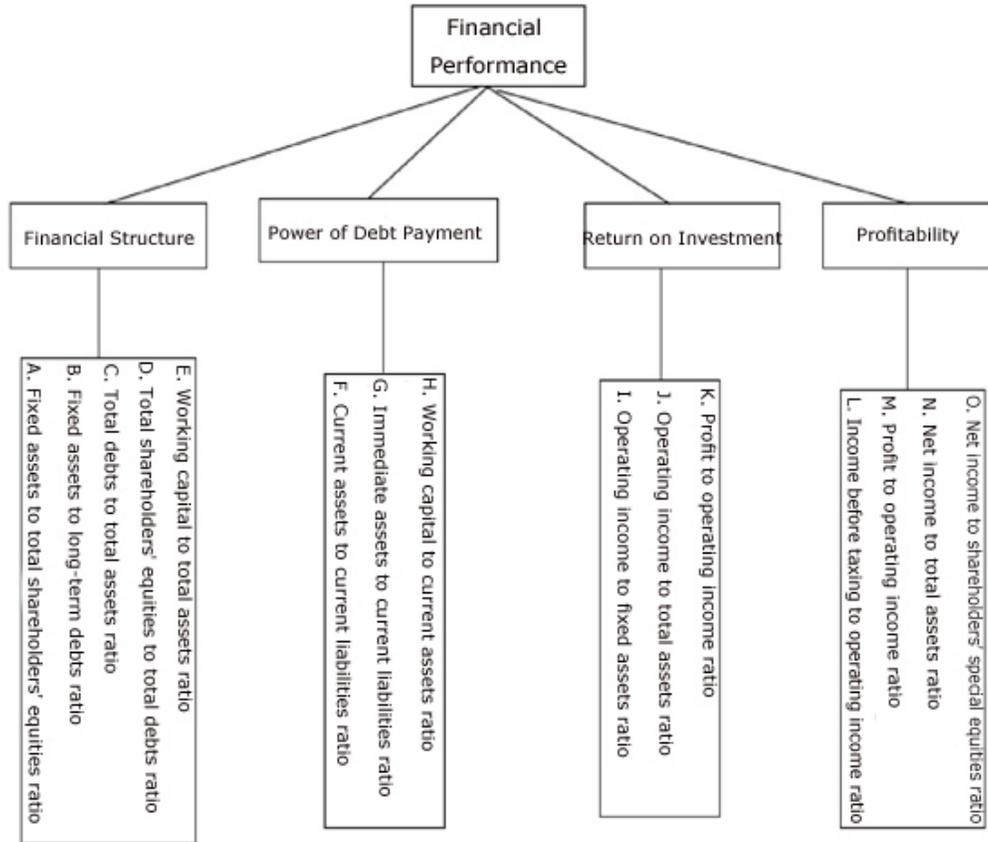


Figure 1: Overview of the studied financial criteria groups and subgroups

Table 2: Final prioritization of financial investment companies

| Prioritization order of financial performance | Option | Financial investment company name |
|---|--------|-----------------------------------|
| 1   | A5     | Sepah                             |
| 2   | A4     | Toseae Melli                      |
| 3   | A2     | Bu Ali                            |
| 4   | A1     | Atieh Damavand                    |
| 5   | A3     | Bimeh                             |
| 5   | A8     | Mellat                            |
| 7   | A9     | Melli                             |
| 8   | A6     | Behshahr Group                    |
| 9   | A7     | Sanat va Maadan                   |

**7. Conclusion**

Through evaluating the financial performance of companies and provide information, an appropriate opportunity will be provided for investors in order to perform correct investments, which causes the increased competition in the market and ultimately leads to the community development.

Combining two perspectives of the experts' opinions and use of data in weights calculation has been as the strengths of this study. Also, detailed evaluation of financial performance of the companies from the four dimensions, including financial structure, debt capacity, return on investment and profitability is the other unique feature of the present research.

### 7.1. Applications

It can be suggested based on the results of the study that for investment in the shares of investment companies, the best way is to study and evaluate the past years performance of these companies at first; then, predict their future performance and based on that, select the companies those can better meet the investor's expectations. Also, using the survey results, the competitive strength and the weakness of these companies can be identified. In studied ratios, except for C ratio that is the total debts to total assets ratio, the other ratios with more values would be better. Certainly, the companies with better financial performance - except for the C ratio, other ratios with high value - are placed in the higher ranks based on the priority of these ratios. Accordingly, it is recommended to the investors to take their steps toward appropriate investment by detailed identifying these companies through financial performance evaluation, which would increase the competition in market, and ultimately will lead to the community development.

### 7.2. Suggestions for future research

- It is possible the results obtained from the different performance evaluation indicators are not identical; hence, it is suggested that the performance evaluation will be performed based on non-financial (qualitative) criteria and the results will be compared with this study results.
- Conducting the research in the future and comparing its results with this research results and impact analysis of each of the ratios on success or failure of the investment companies.
- In the case of access to the appropriate and adequate information, the research will be done in longer periods.
- The investment companies will be evaluated with combined methods and the results will be compared with this study results.

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