

Ranking multidisciplinary industrial investment firms' performance Hierarchical method (AHP) (Case Study: Shasta companies, Ghadir, Omid, Social Security and National Development)

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Abstract

Multi-disciplinary industrial companies play an important role in the capital market of Iran And many investors prefer to instead direct investment in stock companies, By buying stocks multidisciplinary Industrial (Holdings) indirectly attempt to investing in their stock. For this reason, rank and compare the company based on their past performance in order to select the appropriate stock for the purchase and investment, Is of great importance. The aim of this research is applied. The purpose of this research is multidisciplinary industrial performance ratings are investment companies And based on the firm's hierarchy have been ranked. In this study, Expert Choice and Excel software was used for data analysis. The results indicated that the selected indicators and the importance of each of them, Ghadir Investment is the best performance in the year under consideration.

Keywords: Investment, AHP, multi-disciplinary industry and capital markets.

Introduction:

One of the most important ranking points, Identify weaknesses, opportunities and threats are considered external companies Including existing methods for ranking in the national and international levels, Incomprehensiveness them and they emphasize the main indicators such as sales or earnings; One could

say the goal Ranked lists available, Only the ranking of the largest companies, not the best of them. Company rankings, many targets within and outside the organization follows. Indulge in ease of calculation and easy to prepare ranking data has caused companies Until now ranking methods have a far cry from its original goals . Among the most important practical purposes rankings can be stated as follows:

- 1- Allows comparisons with competitors, determine the strengths and weaknesses of civil and environmental opportunities and threats and capabilities to help enterprise strategies appropriate to the environment;
- 2- Improvement, guiding and directing the performance of senior managers of the company and its various units based assessments;
- 3- Revision of past investments and decisions regarding new investments were made on the basis of rankings based on performance assessment
- 4- Help creditors to choose the best company in future credit;
- 5- Appeals and decision loyal customers to buy and top companies;
- 6- Help to revise and decision-government and government agencies in support
- 7- Intervention, punitive, encourage and guide the Company.

Today, many organizations and journals at home and abroad in the ranking companies abroad and Industry Week, Business Week, Fortune Venture is. Institutional sources such as magazines such as industrial management organization in the country are among the organizations and magazines. A major limitation of most methods of evaluation and ranking lists available inside and outside the country, lack of integrity and the majority of them based on only one main indicators such as sales or income. Today's organizations are involved in the turbulent environment and to improve the competitiveness and even survival Need to determine their strengths and weaknesses, threats and opportunities to ensure that they achieve their fundamental goals. Company rankings and only allows you to determine your strengths and weaknesses, threats and opportunities provides Is based on a comprehensive assessment of corporate performance. Comprehensive assessment of corporate performance should be drawn up which led to formulate appropriate performance indicators, The establishment of performance standards, notification and announcement of the results of the evaluated party And develop a plan to improve and develop qualitative and quantitative performance.

Many investors and stock portfolios, rather than direct investment in the stock, By buying shares of investment companies and holding companies, acting in their portfolio investments in stock . This type of investment risk is relatively low. Firstly, because investment companies to invest in stocks of various companies, have diverse portfolios that idiosyncratic risk is reduced On the other hand, due to the use of experts in the field of investment and learn more and are more likely to succeed than when. Because of the above, acquiring shares of investment companies is of special importance. But in order to invest in these companies, in the first place sufficient knowledge of the company acquired And secondly, by ranking them, distinguish which companies are to invest more appropriate. Generally, these companies can be classified as investment companies and holding companies

The first group of management without their involvement, to buy and sell shares of companies engaged in short sales and profit for the term. In contrast, investment holding with more and earn higher ownership percentage, Winning seats on the board of the company had tried to interfere in the policy

altogether. In a classification other, he pointed to two main investment companies and holding companies, The first batch only be investing in a particular industry and the second in several different fields working. Social Security Investment Company is one of the largest holding in the country, Among the companies that invested in several different industries. Such firms in Tehran Stock Exchange are known as multi-disciplinary industry Include four Ghadir Investment Company, the investment pension fund, Omid Investment and investment groups are national development. Comparison of these companies through Analytical Hierarchy Process (AHP) is done

Literature and History Research

Theoretical Foundations

Performance:

Performance evaluation, management will help to position the organization at any given moment is under control. As a result of the implementation of evaluation functions in the organization:

- the integrity of the organization's strategy and its path will ensure continuity.
- lack of employee skills and training needs are determined.
- information needed for planning and development, especially in the field of human resources is provided.
- appropriate feedback on the goals presented.
- a balance between the various conflicts in the organization is possible (conflict between profit growth and other stakeholders)
- ambiguity and space organization becomes transparent.

Information collected key process areas from previous experience, to plan the future activities (nooralizadeh, 1379).

Performance appraisal systems that are decades of experience in management literature, These systems into two general categories of traditional systems and modern systems divide. In general, traditional systems have greater emphasis on the individual as the subject of evaluation And while the new emphasis on processes in the system.

The decision has been a difficult process and rapid changes in current conditions that And occur increasingly accelerated decision-making has become undoubtedly songs . Need to make quick decisions and good quality in the face of the verb Environmental interactions, imposes certain requirements on decision-makers. Explaining the pattern of the fact that relationships between variables reveal a useful tool In the decision, and this pattern "model" is called. Decision models have evolved over time from abstraction to reality And is now open models, behavioral models and classic alternatives are The environment will be considered. Person or organization rarely, only on the basis of a criterion to decide. Most are multi-criteria decision making. Multi-criteria decision-making models are divided into two groups, as follows:

- A) The multi-objective decision-making model
- B) multi-attribute decision models.

Comparison of traditional and modern performance appraisal systems (Simons)

New system (strategy-oriented) performance evaluation	Traditional systems performance assessment
Emphasizes evaluate the performance of event-(emphasis on individual events) retrospective indices Emphasis on control Create an atmosphere of distrust reduce (or eliminate) the spirit of creativity and innovation Due to the problems Result-oriented (focusing on outcome) focusing solely on performance evaluation Discrete and periodic evaluation	Emphasis on Process Evaluation Emphasis on evaluating various aspects of the organization strategy-oriented (emphasis on the performance and strategy of direction) retrospective and prospective indices Emphasis on Establishing trust and cooperation Build and promote the spirit of creativity and innovation establishing causal relationships and roots of problems processual (emphasis on the outcome and the process of achieving it) Emphasis on understanding the goals and strategies to assess performance evaluation as an ongoing process

AHP model or MADM will be among the models.

Analytical Hierarchy Process

Analytical Hierarchy Process or AHP first time in 1970 by an Iraqi man named Thomas was proposed hours. This method, like what is done in the human brain, the analysis of the issues. AHP enables decision makers and the interaction of many complex situations and uncertain to date. This process helps decision makers to set priorities based on the objectives, set their own knowledge and experience, so consider your feelings and judgments. To solve problems through AHP decision to issue carefully and with all the details, explained in detail to draw any hierarchical structure. AHP is based on three principles:

A) the principle of hierarchical tree, b) the formulation and determination of priorities and c) the principle of logical consistency of judgment.

AHP process is performed based on pairwise comparison and decision-making hierarchy of the work by drawing starts its decision. Various options are effective factors in the decision to be taken in the hierarchy. Then paired comparisons carried out which factors and their assessment will determine the coefficient. The total weighted assessment option that gained the most as the best option is chosen. Then, instead of alternatives, synonyms, such as strategy, strategy, strategy, etc. is used.

AHP mathematical principles

In the basic concepts of math used in AHP, is presented. Estimated weight (W) which are obtained from pair-wise comparison tables is one of the objectives of decision makers. Paired comparison matrix inverse of a matrix $A = a_{ij}$ because:

$$a_{ij} = \frac{1}{a_{ji}} \quad : \quad i, j = 1, 2, \dots, n$$

The estimated weights are done on a relative scale factor will be of a positive value. The vector W of CW vectors in which $C > 0$ and need to be normalized so that their sum is equal to one.

If paired comparisons are completely compatible

$$i, j, k = 1, 2, \dots, n \quad : \quad a_{ik} \cdot a_{kj} = a_{ij}$$

A matrix components and no errors will not be completely compatible and can be made the following statement:

$$a_{ij} = \frac{w_i}{w_j}$$

$$a_{ij} = a_{ik} \cdot a_{kj} = \frac{w_i w_k}{w_k w_j} = \frac{w_i}{w_j}$$

In this way it is possible to calculate the columns of the matrix A final weight was normal:

$$w_i = \frac{a_{ij}}{\sum_{k=1}^n a_{kj}} \quad i = 1, 2, \dots, n$$

In normal conditions always will be some errors of judgment. One of the methods of estimation of weight in this situation, using specific vector and the weighting vector W will be elements of the matrix A.

$$AW = \lambda_{max} \cdot W$$

And maximum value matrix, or:

$$w_i = \frac{\sum_{j=1}^n a_{ij} w_j}{\lambda_{max}} \quad i = 1, 2, \dots, n$$

Using a normal scale to adapt to the particular vector.

Thomas hour that λ_{max} positive to negative matrix is always greater than or equal n and n equal if and only if A matrix will be consistent

. The λ_{max} -n good measure of inconsistency that after normalization, we have:

$$C.I. = \frac{\lambda_{max} - n}{n - 1}$$

N different random matrix to calculate the mean C.I. Finally they called random index to measure the compatibility matrix of paired comparisons person C.R. Extracted:

$$C.R. = \frac{C.I.}{R.I.}$$

If C.R. < 0.1 , the compatibility comparisons will be accepted.

Following the evaluation of maternal investment companies listed on the Tehran Stock Exchange on the last year of financial performance presented by AHP technique

Research background:

David and Shahmoradi in an article titled identify factors affecting foreign direct investment in Iran And 46 countries conducted within the framework of an integrated model. The aim of this study was to evaluate factors Foreign Direct Investment in 47 countries over the course of 2002. The results showed that according to the legal infrastructure, encouraging And strengthen private sector investment, due to the efficiency and productivity of investment Made in infrastructure and research and development, pay attention to efficiency, productivity and labor skills And measures to increase political stability might be able to attract more foreign direct investment result.

Hosseini Zadeh Bahrain article titled factors affecting investment in Iran has released security And about the security of investment and the causes of lack of investments in it in two ways to be elaborated

Is. Glvbrmn (2002) examines the relationship between economic integration and foreign direct investment in North America and Europe was conducted. His studies showed that no affinity between trade flows and foreign direct investment in North America did not exist, While Europe Union trade and foreign direct investment are complementary

Chanlay (1997) Determinants of foreign direct investment during the period of 8 years 1994 to 1987 About 31 developing countries examined using a modified gravity model. The results indicated that the size of the Market, GDP growth, wages efficient industrial sector, remote (it is estimated that the relative distance from the center of the global economy), Foreign direct investment and economic openness to foreign direct investment significantly effective. Zonooz and Kamali dehkordi in a study of the effect of FDI on economic growth in 67 countries to conclude shewas host countries of foreign direct investment, Host countries to strengthen economic growth and the development of host countries to attract FDI is effective on Significant differences between the determinants of economic growth in oil-rich countries there to other countries.

Mahdavi and colleagues in an article the impact of financial market development The impact of FDI on economic growth in host countries using panel data in 57 countries concluded The developed countries in terms of financial market impact of FDI on economic growth positive And in Less developed countries in terms of financial market impact of foreign direct investment on economic growth is not the meaning Da. Ahmadi et al in their study as economic growth and foreign direct investment in developing countries: An analysis based on the data panel concluded that in all three groups of countries a statistically significant positive correlation between economic growth and FDI flows there. There is strong evidence of causality between these two variables there are in all income groups. Banga (2009) as well as Chanlay to access information, In particular, investment agreements and government policies affect how the flow of foreign direct investment, Using data from 10 developing countries similar equation estimates. The findings indicate that the size of the market, the cost of labor, secondary school enrollment ratio, External debt and power consumption, factors affecting foreign direct investment flows.

The results also show that investment agreements with developed countries has a positive impact and meaningful And regional agreements have different effects on foreign direct investment. Syvda (2002), using cross-sectional data from 71 developing countries to other developing countries in Central Africa difference between attracting foreign investment has examined. The openness of the economy, infrastructure (number of telephone lines per thousand inhabitants) and Factors affecting the rate of return on investment as foreign direct investment have been considered. Avenue (2013) studies, in comparison with other countries of the Middle East and North Africa has done developing in terms of

attracting FDI. Schumpeter (1911) The importance of well-developed financial intermediaries to increase technological innovation, capital and economic growth has proposed a century ago

Studies also confirms that well-functioning financial markets by reducing transaction costs, capital dedicated In projects with high efficiency resulting in high economic growth is guaranteed (Goldsmith, 1969, McKinnon, 1973 and Shaw, 1973).

In addition, MacKinnon argues that the development of financial markets to foster acceptance of the technologies with the best performance and the process of learning by doing is necessary and sufficient. Rajan and Zingales (1998) find that financial development, foreign financial firms reduce costs and contribute to promoting growth. In recent endogenous growth models have regard to the domestic financial sector transmission mechanism is selected, the technology level of international capital flows and economic growth (World Bank, 1989, Levine, 1997 and Liu, 1998).

Well-developed financial system from two lanes to collect the may increase the amount of available venture financing. Monitoring of investment projects, that reduce costs and increase productivity in project underway to obtain the information it provides Accelerate economic growth (Greenwood, 1990, Levine, 1991, Sean Paul, 1992). The financial system in general and specific institutions may reduce the risk associated with technology upgrades or adoption of new technologies by firms help. Therefore, financial institutions positively affect the speed of technological innovation and thus increase economic growth (Huang and Zhu, 1999). Azerbaijani and colleagues in his research examines the relationship between foreign direct investment, trade and growth in the context of a widespread pattern Lag concluded The only short-term foreign direct investment has been the impressive growth and have a negative effect. Both short-term and long-term trade variable in a significant and positive effect on economic growth. Moses A. (2012) in their study as the overflow inflow of foreign direct investment on economic growth in Malaysia effective?

Which in the period 1999 to 2008 do concluded that the inflow of foreign direct investment and inputs used in production has a negative effect on total factor productivity. Aligo Kiel et al (2011) in their study of growth and foreign direct investment as input: Not only on increasing foreign direct investment into economic and political note, but within them as well.

Research Tools and Methodology

The present study is an applied research regarding the fact that in the present study was to describe the objective of the action Can be among the study was descriptive research. In descriptive studies, regardless of the causes of cases and events just how the quality and quantity of data is intended (khaki). In this research, researchers are looking to rank the performance of investment company multidisciplinary industrial.

Explaining evaluation criteria In this study, use of financial ratios stack up in comparison with the ratios for the five companies holding companies, Were collected and then a couple of Chartered Financial were asked to choose their most important ratios Finally, after a five studies on the most appropriate financial ratios for these companies were recognized:

1. net profit to equity
2. The growth of earnings per share
3. investment income investment value

4. Cash operating profit
5. The total debt to total assets

It should be noted that the stock price is guaranteed Rations, such as p / E removed. Because the Social Security Investment Company (Shasta) .It was not possible to compare it to other company provides. In this study, the parent company financial statements (not consolidated financial statements) have been cited And only on the basis of one year (the latest audited financial statements of companies) calculations have been done .Naturally, it is possible to increase the period of time (5 years) compared fuller carried out between companies. Financial statements used are as follows:

Social Security Investment Company financial statements of the fiscal year.

Ghadir Investment Company financial statements for the fiscal year.

Pension Fund Investment Company financial statements for the fiscal year.

Omid Investment Management Company's financial statements for the fiscal year.

In this study, Expert Choice software and Excel is used.

Research Findings

The research The information needed to calculate financial ratios mentioned five of the company's financial statements (including balance sheets, profit and loss and cash flow) Financial ratios were then calculated and recorded. In the second stage, the experts were asked to five financial ratios (indexes), Based on the weight of weights they mean that after receiving them, Paired comparison of the table indexes and other normative paired comparison (information) Were written in the last column regularly and they were average.

Main hypothesis:

Of the surveyed firms have different priorities.

Table 2. Preliminary data

Index	Alternative	Year under review
Net income to equity	Social Security Investment Company	
Growth in earnings per share	Ghadir Investment Company	
Investment income to average investment	National Pension Investment Company	
Operating cash operating profit	Omid Investment Management Group Company	
Total debt to total assets	National Development Investment Corporation	

Table 3. Index

Average	Total debt to total assets	Operating cash operating profit	Investment income to average investment	Growth in earnings per share	Net income to equity	Index
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	Net income to equity
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	Growth in earnings per share
0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	Investment income to average investment
0.1000	0.1000	0.1000	0.1000	0.0999	0.0999	Operating cash operating profit
0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	Total debt to total assets

According to information, indices for each of the separate standards were raised And then in the next column to the norm (normalized), respectively.

Table 4. net profit to equity

Normalized net profit to equity	Net income to equity	Alternative
0.2134	53.9	Social Security Investment Company
0.2429	61.35	Ghadir Investment Company
0.1942	49.04	National Pension Investment Company
0.1985	50.12	Omid Investment Management Group Company
0.1510	38.14	National Development Investment Corporation
	252.55	Total

Table 5. Growth in earnings per share

Normalized net profit to equity	Net income to equity	Alternative
0.2711	115.43	Social Security Investment Company
0.2479	105.56	Ghadir Investment Company
0.0689	29.32	National Pension Investment Company

0.1802	76.71	Omid Investment Management Group Company
0.2320	98.77	National Development Investment Corporation
	425.79	Total

Table 6. Investment income Investment

Investment income investment normalized	Investment income Investment	Alternative
0.1779	46.22	Social Security Investment Company
0.2283	59.33	Ghadir Investment Company
0.1969	51.16	National Pension Investment Company
0.2308	59.97	Omid Investment Management Group Company
0.1661	43.17	National Development Investment Corporation
	259.85	Total

Table 7. operating cash flow to operating profit

Normalized operating cash operating profit	Operating cash operating profit	Alternative
0.3532	46.51	Social Security Investment Company
-0.0074	-0.97	Ghadir Investment Company
0.4334	57.06	National Pension Investment Company
0.0924	12.16	Omid Investment Management Group Company
0.1284	16.91	National Development Investment Corporation
	131.67	Total

The only question in this case, the ratio of debt to assets. Since the increase of this ratio, the greater is the risk of the company, Therefore, the lower the index, in terms of investment is desirable. The first of these indicators was reversed and then normal. Then the normative criteria matrix-vector multiplication index was weighed. The ranking of companies based on AHP and based on financial indices, respectively.

Table 8. The total debt to total assets

Total debt to total assets was reversed to normal	Reverse total debt to total assets	Total debt to total assets	Alternative
0.0790	0.0293	34.18	Social Security Investment Company
0.4532	0.1678	5.96	Ghadir Investment Company
0.1633	0.0605	16.54	National Pension Investment Company
0.1337	0.0495	20.21	Omid Investment Management Group Company
0.1708	0.0632	15.82	National Development Investment Corporation
	0.3702		Total

Table 9. matrix multiplication

Final ranking		Weight		Reverse total debt to total assets	Operating cash operating profit	Investment income investment	Growth in earnings per share	Net income to equity	Alternative
0.219	=	0.3	*	0.079	0.3532	0.1779	0.2711	0.2134	Social Security Investment Company
0.2485		0.3		0.4532	-0.0074	0.2283	0.2479	0.2429	Ghadir Investment Company
0.176		0.15		0.1633	0.4334	0.1969	0.0689	0.1942	National Pension Investment Company
0.1773		0.1		0.1337	0.0924	0.2308	0.1802	0.1985	Omid Investment Management Group Company
0.1782		0.15		0.1708	0.1284	0.1661	0.232	0.151	National Development Investment Corporation

Table 10. The final result

Final ranking	Alternative
0.249	Social Security Investment Company
0.219	Ghadir Investment Company
0.178	National Pension Investment Company
0.177	Omid Investment Management Group Company

Discussion and Conclusion

One of the most interesting topics company's stakeholders, recognizing the relative status and rank of the company's performance compared with similar companies competing. A crucial question in this regard include:

- Ranking methods are there?
- Most of these methods is perfect?
- Qualitative and quantitative factors and indicators affecting evaluate and rank are there?
- Priority and relative importance of each component, model parameters evaluate and rank how?
- Suitable mathematical model to determine the final ranking companies is what model

This research aims to rank the performance of investment companies Industrial multidisciplinary hierarchical approach (AHP) Shasta companies, Ghadir, hope, retirement was a country and national development. The results showed Ghadir Investment with Social Security Investment Company 219/0 241/0 ranked first and second place respectively Groups of national development, investment and retirement savings of hope are next ranked country. So based on selected indicators and the importance of each of them, Ghadir Investment is the best performance in the year under consideration. The researchers suggested that in order to do research in this area in terms of financial and non-financial variables as well as new models such as neural networks and Decisions such as ants and genetic algorithms to rank their companies. Also, since the purely financial measures used in this study, it is suggested Other researchers also non-financial indicators with the financial indicators combined and made more comprehensive rankings. Researchers can also see the method used in this research to companies operating in other industries will also be assessed in other industries.

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